

The Economy: Do Voters get it Right?

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Abstract

In this essay we explore the extent to which aggregate evaluations of the economy and the actual economy are strongly related. We bring three novel additions to the existing empirical literature: we assess accuracy by examining the fit between mass evaluations of specific economic outcomes (inflation and unemployment) and fluctuations in these indicators; we examine these empirical relationships in a large number of diverse European economies; and we inform our analysis of economic evaluations with two important theoretical traditions (theories of attitude formation and theories of rational expectations). The empirical evidence present in this essay confirms that evaluations of the economy are quite accurate. This is the case over the long-term (which we estimate to be about six months): both expectations (future) and perceptions (past) closely track, respectively, future and past economic outcomes. In the short term, however, the evidence is more mixed. Our evidence on economic perceptions indicates that individuals seem to do quite well in perceiving even short-term fluctuations in prices. However, their expectations about short-term changes in either prices or unemployment are generally inaccurate (in that they are not well predicted by actual future outcomes). Instead, the evidence suggests that short-term changes in price expectations are better predicted by the past changes in inflation or, even better, by changes in past perceptions of inflation. Our analysis uncovered a general difference between the accuracy of inflation and unemployment expectations, with expectation of inflation being generally more accurate. Finally, our analyses provide support for the contention that short-term evaluations track negative fluctuations in the economy more accurately than positive ones.

Introduction

Subjective economic evaluations are widely employed in both micro- and macro-models of vote choice – the ubiquitous economic voting models.¹ But the inclusion of these subjective evaluations in voter preference models is controversial. At the individual-level, studies have documented the extent to which individuals are poorly informed about the real economy (Conover, Feldman and Knight 1986) or demonstrated that their economic evaluations are shaped by factors unrelated to the real economy (Duch, Palmer and Anderson 2000; Evans and Andersen 2006; Erikson 2004). But also at the aggregate level a number of recent studies suggest a disconnect between economic evaluations and the actual economy (De Boef and Kellstedt 2004; Haller and Horporth 1994). These are troubling findings because they raise questions about the appropriateness of a large number of economic voting models that include subjective economic evaluations as an independent variable.

Our concern in this essay is not to address the broader controversies concerning measurement error in economic perceptions and their implications for economic voting models but rather to focus on one specific empirical issue associated with the controversy. One of the implications of this debate is that subjective evaluations of the economy do not reflect actual objective economic outcomes. The contribution of this essay to the debate is simply to provide extensive cross-national evidence on the extent to which, in the aggregate, subjective economic evaluations track actual economic outcomes.

Kramer's classic 1983 essay is an important foundation for the notion that individual-level measures of subjective economic evaluations suffer from serious measurement error. He suggested that variations in economic evaluations were essentially variations in responses to a question regarding perceptions of a constant (the national economic outcome which does not vary in a cross-sectional survey). Any error in individual perceptions of this constant would likely, he argued, be influenced by vote preference. Kramer's conclusion was that this would inflate estimates of the magnitude of the economic vote. And there is a body of empirical literature documenting the factors that likely influence the "error" in individual evaluations. Partisanship, as Kramer points out, is one of the most important factors but other factors also can influence this measurement error such as attention to the media or information levels (Duch, Palmer and Anderson 2000; Wlezien, Franklin and Twiggs 1997; Hetherington 1996; Bartels 1996).

If in fact there is serious systematic error associated with individual-level measures of economic evaluations this would certainly raise the possibility that once averaged over individual respondents these evaluations might incorporate this error and hence deviate significantly from actual economic outcomes. One school of thought, however, concedes that at the individual level measures of economic evaluations are

¹ We use the term economic "perceptions" exclusively to refer to subjective perceptions of the past or current economy and economic "expectations" to refer to expectations of the future economy. When we mean to refer to both perceptions and expectations we use the term "evaluations".

rife with measurement error but that these evaluations aggregated to the macro-level provide a meaningful gage of economic sentiment:

“Whatever bizarre, confusing, or personally biased perceptions individual citizens bring to the evaluation task, in the aggregate all that idiosyncratic variation is self-canceling. The aggregate of individual expectations then becomes a quite orderly response to the flow of economic news (Erikson, Mackuen and Stimson 2002, p. 85).”

Empirically, Mackuen Erikson and Stimson (1992) establish their case by conducting standard Granger causality tests demonstrating first that the real economy causes economic sentiment and secondly that the real economy causes presidential approval. Just as importantly, they establish that the real economy’s impact on presidential approval is primarily through its affect on economic evaluations.

There is also a body of literature in economics that is concerned with aggregate economic perceptions. Much of the interest has focused on testing theories of rational expectations by determining the extent to which consumers anticipate price fluctuations. Implicit in much of this work – systematic measurement error associated with such factors as partisanship or media bias to our knowledge is rarely addressed in this literature – is the notion that there is no systematic measurement error in the aggregate series of inflation expectations. In fact there is considerable evidence that price expectations closely track future price fluctuations (Thomas 1999; Forsells and Kenny 2002). And even the literature that questions the rationality of consumer’s inflation expectations typically argues that consumers’ inflation expectations simply reflect past inflation outcomes or are the result of adaptive expectations – hence economic expectations closely track recent real economic outcomes.²

Thus while economic evaluations might be error ridden at the individual level, once aggregated to the national level they provide a reliable gage of mass economic sentiment. This suggests the real economy and the aggregate evaluations of the real economy should be highly correlated (again, recognizing that there is some disagreement regarding the precise functional form of this relationship).

This is not universally accepted. In fact another school of thought argues that the biases reflected in measures of economic evaluations at the individual level are also prevalent in aggregate series of economic evaluations. For example, Durr (1993) provides evidence that deviations between the real economy (as captured by four objective economic indicators) and economic expectations in the U.S. are systematically responsive to trends in president popularity. Specifically, when the president exhibited particularly high (or

² It should be pointed out that an important difference between the measurement of subject economic evaluations in political science versus economic research is the content of the survey instruments. One of the major factors contributing to endogeneity of economic perceptions in the political science realm is the fact that questions regarding economic evaluations are typically asked in survey instruments that include a battery of political partisanship and preference questions which might principally cause the bias (Palmer and Duch 2001; Erikson 2004). Instruments designed by economists to measure subject economic assessments are not likely to include these political items.

low) levels of popularity, economic evaluations were higher (or lower) than levels one would expect given the objective economy. This result is echoed in work by Freeman et al (1999), who re-examine the empirical estimates on which Mackuen Erikson and Stimson (1992) base their argument that economic sentiment mediates the impact of the real economy on presidential popularity. By accounting for the possibility that measures of popularity, economic performance and economic sentiment are cointegrated, the authors demonstrate that presidential popularity has a causal impact on business expectations and, consequently, that a considerable portion of the variance in economic sentiment is related to factors other than fluctuations in the real economy.

More recently, De Boef and Kellstedt (2004), adopting a strategy similar to Durr (1993), demonstrate once again that considerable variation in U.S. economic sentiment is unrelated to actual economic outcomes. They identify presidential popularity as having a significant direct impact on the U.S. consumer confidence series and demonstrate that media representations of the economy indirectly affect the consumer confidence series through its effect on evaluations of the government's handling of the economy.

While these are not the only studies that examine the relationship between the economic evaluations and the objective economy, they are representative of the main empirical messages in the literature. Thus, it seems that there are two divergent answers to the question of whether the aggregate economic evaluations closely track the economy in the United States. One view, which is prevalent in economics and identified with McKuen Erikson and Stimson in political science, claims that despite systematic influences of non-economic factors on individual economic evaluations, aggregate evaluations of the economy closely track (or predict) corresponding objective indicators. The second view, while recognizing the role of objective indicators in shaping evaluations, focuses much more on the disconnect between aggregate economic evaluations and the real economy induced by political variables (especially, presidential popularity).

There are a number of reasons that could account for these apparently contradictory conclusions in these two literatures and below we explain how our empirical strategy minimizes these factors. Ultimately, however, the goal of our empirical work is provide a more definitive answer to the question of whether economic evaluations track the real economy. But, how do we do this? What can we offer above and beyond the contributions that we have already briefly described? We provide three novel additions to the existing empirical work on this issue that we believe enhance our ability to adjudicate between these two different views of economic perceptions.

First, we argue that insights into the relationship between economic evaluations and actual economic outcomes must be grounded on evaluations of *specific* economic outcomes. Very few of the existing studies examine respondents' evaluations of specific indicators of the economy like inflation or unemployment. They focus instead on the correspondence between these kinds of economic indicators and

evaluations of the economy *in general* (Durr 1993; Freeman et al 1999; De Boef and Kellstedt 2004; Suzuki 1992; Nadeau et al. 1999; MacKuen, Erikson and Stimson 1992; Haller and Norpoth 1995; Goidel and Langley 1995; Krause 1997; Sanders and Gavin 2004). Most commonly, scholars have measured general economic evaluations using the University of Michigan's Index of Consumer Sentiment in the United States. This measure is an aggregation of responses to questions about current family finances, current business conditions, current buying conditions, next year's family finances, short-term business expectations, and long-term business expectations. The problem with using this measure to investigate a respondent's knowledge about the state of the macro economy is that it confounds that knowledge with the voter's unknown process of aggregating various kinds of information in making a general assessment. As such, it is unclear exactly what correspondence one would expect between this summary measure and specific economic indicators. Since the respondent's answer to any one of the questions that make up the index will likely combine his knowledge of various economic indicators (among other things) in potentially complicated ways, deviations between measures of the realized economy (e.g., an unemployment or inflation time series) and consumer sentiment may not be indicative of a lack of knowledge on the part of the voter. Rather, such deviations may simply reflect the weight the average voter places on that indicator in her overall assessment of the economy. The same critique applies to other common measure of general economic evaluations, as pointed out by Clark and Stewart (1994).³

Second, we are interested here in making a general statement about whether aggregated measures of economic perceptions closely track the real economy. The second school of thought described above implies that there are a number of political factors that can affect economic perceptions at the aggregate level: political events; how incumbent governments manage the macro-economy; and their ability to mobilize the media. This raises the possibility that in some national contexts characteristics of the political process or of political institutions could reduce or exaggerate any disconnect between the real economy and economic perceptions. By confining the empirical analysis to one national context we risk basing our conclusions on a case that is atypical. We could happen upon a national context in which the political context exaggerates the ability of incumbent governments to shape public perceptions of the economy or one in which we find a surprisingly large number of political events that impact economic perceptions. Similarly, a single national context could happen to have institutions or features of the political process that make it very difficult for the incumbent government to influence economic perceptions. Accordingly, we argue that efforts to empirically establish the fit between the real economy and economic perceptions be conducted in a reasonably large number of diverse national contexts.

³ For example, national election studies often ask a question similar to: – “Looking back over the last year, would you say that the economic situation in [name of country] has gotten much better, somewhat better, stayed the same, somewhat worse, or much worse.”

Finally, and maybe most importantly, this essay argues for a greater incorporation of theories of attitude formation in our understanding of the link between economic perceptions and the real economy. Our only intention in this essay is to answer a specific *descriptive* question: How accurately do aggregate economic evaluations track the actual economy? However, before we present the empirical analysis that answers this question, we review a number of important theoretical explanations of how individuals form their evaluations of the economy. This is an important step in the analysis, since we use these explanations to guide our examination of the data (e.g., which statistical models to use and what kind of deviations between evaluations and outcomes to look for). More specifically, our review of current theories alerts us to the possibility that the relationship between the economy and economic evaluations may be different in the short and long-term. Thus, unlike most previous empirical work, our investigation explicitly estimates both the short and long-term links between the real economy and economic evaluations. In addition, this theoretical review directs us to look for a number of systematic biases in the relationship between the economy and economic evaluations that are predicted by theories of economic evaluation in which information about the economy only reaches voters through the media.

Explanations of the Formation of Economic Evaluations

We distinguish between individuals' *perceptions* of the past or current economy and their *expectations* about the future economy. While the cognitive processes that generate both perceptions and expectations likely share much in common, there are issues associated with the correspondence between expectations and the real economy that are quite distinct from perceptions. Hence we begin with a section that explores theories of the formation of economic perceptions followed by a section that identifies the prevailing models of economic expectations..

Theories of the Formation of Economic Perceptions

To the extent that there is a theoretical literature on the nature and accuracy of economic perceptions, it has been dominated by the rational choice perspective in which the critical variables mediating whether people perceive economic change are the cost of obtaining economic information and

⁵ The argument is as follows: Zaller (1992) has convincingly shown that those most likely to receive media messages (the politically informed) are also more likely to be strong partisans and to reject non-conforming messages. Further, Duch, Palmer and Anderson (2000) and others have shown that partisan allegiances bias perception of economic performance (supporters of incumbents tend to report a better economy). This means that those people most likely to receive messages about the economy (the politically informed) are the ones least likely to have, on balance, accurate economic perceptions (Zaller 2000). In contrast, less well-informed, less partisan individuals will receive more accurate messages (though they will register fewer messages so individually may show greater variation in their perceptions). In the aggregate, this suggests that if the distribution of "in" and "out" partisans is roughly equal and this distribution remains constant, then aggregate perceptions should track the real economy well in both the long-term and the short-term.

the salience of that information to individual utility calculations. This perspective leads to two very different views. The less common view simply lumps economic information along with most other political information as both costly to obtain and of relatively low salience (on levels of political information see Delli Carpini and Keeter 1996; on levels of information about the economy see Paldam and Nannestad 2000). While people may be aware of their personal economic situation, economic aggregates like unemployment and inflation are assumed to be beyond most people's interest and so are not likely to be well known.

An alternative, more common, argument is that economic information is among the most easily collected information available to people (e.g., Kramer 1971, 134). Proponents of this view claim that economic information is not costly to obtain because it is pervasive in both the media and in the everyday experiences of people (who look for jobs, seek raises, and buy groceries). Further, economic performance is often salient in the everyday lives of individuals because they need to use this information to make important decision like whether to seek a new job, or whether to buy or sell a house. Indeed, the argument is that because economic information is more likely to be collected by a rational individual than other kinds of political information, economic information gets used as a heuristic in place of more costly and less salient information like candidate issue positions (Kramer 1971; Popkin 1991; Zaller 2000).

When we move beyond the rationalistic explanations of economic perceptions that have dominated discussion in the economic voting literature, we find a broader literature on public opinion formation that speak to the cognitive processes that promote – or undermine – a close fit between economic perceptions and the real economy. Zaller (1992) suggests that a person's expressed opinions, which might include opinions about the current or past state of the economy, are simply a sample of the media messages that the person has recently encountered and accepted. Ignoring for the moment the "acceptance" part of the person's processing of economic information, this view suggest that people's economic perceptions will be accurate to the extent that the media messages about the economy are, on balance, accurate. Further, since people sample from *recent* media messages, aggregate economic perceptions should track the mediated economy in the short-term as well as in the long-term. Although the logic is more complicated, the same picture of the connection between the real economy and economic perceptions emerges when one allows for the fact that in Zaller's model media messages are filtered by a person's partisan predispositions and rejected if they are out of step with these predispositions.⁵

Lodge's (Lodge et al 1995) "online" model of public opinion has also been widely influential, but implies a different relationship between the real economy and economic perceptions than does Zaller's model. In Lodge's view, opinion statements are nothing more than a report by the respondent of an affective "tally" that voters establish and update upon encountering new information. Importantly, the substantive content of the information is almost immediately forgotten, but its affective value is added to

the tally and thus retained indefinitely. For example, according to Lodge's model, if a person has established an online tally for inflation, upon encountering a newspaper story about inflation (or noticing an increase in gas prices) she would register an affective response in her online tally for inflation that would increment her general feeling about inflation in the "worse" or "bad" direction. Of course, if the person has not established an online tally for inflation, information about inflation will have no lasting effect on opinion.

So are people likely to have online tallies for economic aggregates like inflation and unemployment? In general, scholars of public opinion argue that people will establish an online tally whenever they expect that having an informed opinion on a topic will be necessary or useful, but in which the need for the opinion will not be so central to their important decision-making that they need to remember details. One important area of opinion that seems to meet these requirements is opinion about political candidates and politicians. In this case, voters know that they will need an opinion either to cast a vote or to engage in social conversations about politics, but their opinion is unlikely to matter so much to their consequential decision-making that it is worth knowing many details about why they like or do not like a particular candidate. It seems to us that opinion about economic aggregates may have a similar status: an opinion may be needed but it is not important that it be completely detailed and accurate. As Palmer and Duch (2001) illustrate, people are often called upon to discuss the economy in private conversation and to make decisions that require some assessment of the current economic situation. Thus, they may establish online tallies for relevant economic aggregates like unemployment and inflation and then consult their "feelings" about these indicators when called upon to express or use an opinion.

This model of opinion has two clear implications for how well economic perceptions should track the real economy. First, there should be no close correspondence between opinion about specific economic indicators and the actual value of those indicators because only the affective value of messages are retained, not their substantive content. However, less specific questions about indicators, like questions about general movements in the indicators, should be reasonably accurate. Thus, the voter, when asked about unemployment, may feel good about it and so report that unemployment has been improving, but she should be unable to tell a questioner what the current unemployment rate actually is. Second, because of the cumulative nature of the online tally, this general view can only change dramatically if there are consistent messages in one direction or the other. This implies that perceptions and economic aggregates should evidence a strong long-term connection, but no consistent short-term connection. In other words, people's opinions should track longer-term trends in economic aggregates but should not track more short-term changes.

All four of the explanations of economic perceptions discussed above are concerned with how individuals use or do not use the available information about the economy to form a perception. For any of

them to produce an accurate perception, however, the available information must itself be accurate. Further the prevailing view is that most of this information comes ultimately from the media rather than from personal experience. Consequently, no matter which model of opinion formation ones uses, perceptions will not accurately track the real economy if media messages about economic aggregates are systematically biased. There is some evidence in the U.S. context to suggest systematic distortions in media representations of the economy do in fact occur. For example, Mutz (1998) identifies three systematic distortions in the media message about the U.S. economy: 1) a preference for negativity; 2) an overemphasis on rare events; and 3) change preferred to status quo. Echoing the first of these findings, a number of other studies have also documented a general bias toward the reporting of negative economic news (MacKuen and Coombs 1981; Goidel and Langley 1995; Patterson 1993). Thus, there is some basis for expecting that citizens receive distorted cues regarding the economy. However, we would qualify this conclusion with skepticism that media biases can mask long-term trends in the economy and instead suggest that voters are able (ostensibly from non-mediated sources) to “get it right” eventually.

In this section, we have identified five distinct perspectives on how individuals acquire information regarding previous economic performance. Table 1 summarizes the hypothesized relationship between the real economy and perceptions associated with each of these perspectives. Conventional rational choice models come in essentially two flavors: Some rational choice models suggest that the cost of acquiring information about macro-economic performance is high and hence perceptions are likely to be weakly correlated with the real economy. However, more conventional rational choice perspectives argue the opposite: these costs are low and incentives for collecting economic information are high so we should expect a high correlation between perceptions and the real economy. Neither of these models makes any distinction between the ability of voters to track short-term or long-term trends in the real economy. We also proposed two models of economic perceptions that are implied by two widely accepted theories of public opinion formation and change. Zaller’s model implies that the average voter’s opinions about economic aggregates will be based on recently available relevant information so that economic perceptions should track economic reality in both the short-term and long-term.⁶ In contrast, online models of attitude formation predict that movements in perceptions will track long-term trends in the real economy but will not track short-term fluctuations. Finally, studies of information acquisition that recognize the important role of the media in shaping economic information suggest that, because of biases inherent in media cues, perceptions will not correlate well with short-term trends, though they may be sensitive to long-term trends.

⁶ Recall that this requires that the average voter be neither an “in” or “out” partisan.

	Rational Choice Models		Cognitive Models		Media Bias
Dependent variable	High Cost	Low Cost	Zaller	Online	
Short-term trends	Weak	Strong	Strong	Weak	Weak
Long-term trends	Weak	Strong	Strong	Strong	Strong

Theories of Economic Expectations

Theoretical models of rational economic voting often require that voters have accurate *expectations* regarding future economic outcomes. However, there is a debate in the literature as to what constitutes the correct model of how expectations are formed, and hence what constitutes an appropriately specified test of accuracy: a *rational expectations* model and a *rational adaptive expectations* model.

Rational Expectations. Rational expectations models view economic agents as forward looking and efficient consumers of economic information (Sargent and Wallace 1976; Lucas 1981). Initially developed in economics, rational expectations theory has had a significant impact on how economic voting scholars represent the acquisition of economic information (Alt and Chrystal 1983; Krause and Granato 1998). Rather than relying exclusively on retrospections, rational expectations models suggest that expectations incorporate any additional information that would produce better forecasts of future outcomes.

Erikson, Mackuen and Stimson’s (1992, 2002) model of economic information acquisition is decidedly in this rational expectations tradition, i.e., the voters in their model use available information to predict future economic outcomes. Further, their empirical work generally supports this view, since it shows (as does other work by Tims, Fan, and Freeman 1989) that in addition to information about the previous economy, people’s economic expectations incorporate media forecasts of economic outcomes (in Erikson, Mackuen and Stimson’s empirical model, expectations are strongly responsive to trends in the *Index of Leading Economic Indicators*).⁷ Overall, rational expectations theory suggests that voters should not systematically err in their predictions of the future course of the economy as long as there is any information available that could predict it. Thus, this model leads us to expect a strong correspondence between economic expectations and the realized economic future in both the short and long-term.

Rational Adaptive Expectations. Anthony Downs (1957), Morris Fiorina (1981) and many other political scientists have articulated different versions of the general argument that voters use past performance as an “economical” means for developing expectations of future performance. This line of

⁷ Since any intuitive forecasting “model” that rational voters might use to form their expectations about the economy would likely reflect the same information used in professional forecasting models, this evidence is broadly consistent with a strong version of the rational expectations argument. However, it is also consistent with a slightly weaker version that just has rational voters consuming media forecasts directly and using this information to inform their economic evaluations.

argument has much in common with the adaptive expectations literature in economics, though, unlike that literature, it has attempted to maintain the idea that such expectations are “rational” as an economizing device. For purposes of this paper, we will simply call this general argument the *rational adaptive expectations model*. What does this model assume about the acquisition of economic information? First, the model presumes that individuals have relatively accurate *perceptions* of the past or current economy upon which they base their expectations. Further, since rational voters use these perceptions as an economizing alternative to a more extensive information search, the costs of assessing current or past economic performance must be relatively low. Thus, this argument about expectation formation implicitly accepts the low-cost version of the rational perception formation theory discussed in the last section. Second, this model assumes that retrospective economic perceptions largely determine economic expectations, so that the latter is simply the former with the addition of random fluctuations (this is a point made by Erikson Mackuen and Stimson (2002, 92) and is also the conception of inflation expectations explored by Carroll 2003).

Table 2 summarizes the hypothesized relationships associated with the three models of expectations presented above. In the first row, rational expectations models suggest that individuals use all available information, efficiently, in arriving at expectations regarding future economic outcomes – accordingly both past perceptions and the past real economy should shape expectations and these expectations should be accurate – they should be closely linked to future economic outcomes. The second row in Table 2 summarizes the expectations of the rational adaptive expectations model. By assumption, the correspondence between the past economy and perceptions of the past should be strong. Likewise, by assumption, the perceptions of the past economy should be strongly related to perceptions of the future economy. These assumed relationships then imply, as is the case with the rational expectations theory, that perceptions of the future economy will be linked closely to the future economy. What differentiates the two perspectives is that rational expectations, while recognizing the importance of the past economy and past economic perceptions on future expectations, implies that their impact will be less strong than is the case with rational adaptive expectations. Accordingly, we characterize the impact of the retrospective economy and past economic perceptions in these two cases as moderate.

Table 2. Hypothesized correlation of expectations with perceptions and the real economy.			
	Perceptions of Past Economy	Retrospective Real Economy	Prospective Real Economy
Rational expectations	Moderate	Moderate	Strong
Rational adaptive expectations	Strong	Strong	Strong

We can glean two important insights regarding the relationship between aggregate economic evaluations in the real economy from Tables 1 and 2. First, most of the extant theory on economic evaluations suggests that there should be a strong long-term correspondence between expectations and the future economy as well as perceptions and the past economy. Only in the case of the seldom-used high cost version of the rational choice model of economic perceptions is it expected that evaluations will not track outcomes in the long-term.

In contrast, our theoretical expectations about the short-term connection between economic evaluations and the economic outcomes are more mixed. Specifically, there are a number of theories that predict significant short-term deviations in economic evaluations and so it is important that in our statistical analysis we are able to test for the existence of these deviations in the context of a long-term correspondence between the series.

Data and Research Design

Measuring Economic Evaluations and Economic Outcomes

Our empirical analysis attempts to evaluate how well aggregate economic perceptions track past and current economic outcomes and how well aggregate economic expectations track the future economy. To do this we examine graphs and estimate a number of statistical models in which the dependent variable is based on individual evaluations of macro-economic performance aggregated to the national level. Our measures of these evaluations come from the EU Consumer Confidence Surveys, which are administered monthly in each of the member countries of the European Union. Three different economic evaluations series are available: inflation perceptions, inflation expectations, and unemployment expectations. Each of these evaluations has a specific temporal horizon that is reflected in the question wording. Table 3 presents the specific question wording for each of the evaluation series.

Table 3. Measuring Economic Sentiment (EU Consumer Confidence Surveys)	
Evaluation	Question
Inflation Expectations	By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months?
Inflation Perceptions	How do you think that consumer prices have developed over the last 12 months?
Unemployment Expectations	How do you expect the number of people unemployed in this country to change over the next 12 months?
Source: European Union Harmonized Consumer Sentiment Questions (EU Users Guide). From the individual answers to these questions, the aggregate series were constructed by subtracting the percentage of positive answers from the percentage of negative answers. Thus, the theoretical range of the series is from -100 to 100. Finally, the series for each country are seasonally adjusted using the EU's "Dainties" methodology (see the Joint Harmonized EU Programme of Business and Consumer Surveys Users Guide, 2003). Note that prior to 2002 the questions did vary somewhat by country. A complete history of the question wording for each country, as well as what counted as positive and negative responses, is available at www.raymond Duch.com/economicvoting .	

Given these measures of economic evaluations, we selected our measures of “the real economy” in order to precisely match the temporal references in the questions in Table 3 (and in the associated response categories). For example, the surveys ask the following question about price expectations: “By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months?” In addition, the response categories offered are: “increase more rapidly”, “increase at the same rate”, “increase at a slower rate”, “stay about the same”, “fall”, and “don't know”. Question phrasing such as “increase at the same rate” imply not simply the direction and size of change but rather imply comparisons of the current situation with past outcomes. Accordingly, *the percentage change* in prices is the most appropriate economic indicator against which to benchmark the aggregate evaluations measured using this question.

In addition, to trying to match macro economic indicators to the type of evaluations questions asked, we also only use macro economic indicators as they were reported in the media at the time they were released by national statistical agencies, rather than as they were subsequently updated. This difference in the usual practice in economic voting studies is potentially important because there are often substantial revisions to economic time series that could not have been part of what was known to people at the time the surveys were conducted.⁸ Table 4 presents each of the aggregate economic measures that we use, their temporal horizon, and their source.

Table 4. Measuring Economic Performance			
Economy	Metric	Time Horizon	Source
Future Inflation	$(CPI_{t+12}-CPI_t)/CPI_t$	+ 12 Months	Consumer Price Index as reported by in <i>The Economist</i> .
Retrospective Inflation	(CPI_t-CPI_{t-12})	- 12 Months	Consumer Price Index as reported in <i>The Economist</i> .
Future Unemployment	$(Unemp_{t+12}-Unemp_t)/Unemp_t$	+ 12 Months	Unemployment rate as reported in <i>The Economist</i> .
Retrospective Unemployment	$(Unemp_t-Unemp_{t-12})$	- 12 Months	Unemployment rate as reported in <i>The Economist</i> .

Evaluating How Well Economic Evaluations Track the Real Economy in the Short and Long-Term

Our approach to investigating the short and long-term relationship between economic evaluations and the macro economy is to examine the relationships in each country rather than to pool all the data. Given the long time series available for each country, little is gained by adopting the more restrictive

⁸ As it turns out our intuition that there would be large differences between the reported series and the updated series, and that these would be consequential for the analysis, was wrong. The use of reported data here is not substantively important. One result of this is that we use it for both the prospective and retrospective analyses, despite the argument that rational expectations about the true economy, if they come from a correct “model” that citizens use to forecast the economy should be compared to the real economy not the reported one.

assumptions of pooled models. Each of our analyses begins with a graphical presentation of the relevant data and then proceeds to the specification and estimation of econometric models that allow us to quantify and formally test our visual impressions. This procedure makes it plain how strongly the data support or refute the various hypotheses proposed above and also clearly exposes any differences in tracking across countries or economic indicators.

Because the theoretical implications reviewed above suggest possible differences between long and short-term tracking between macro economic indicators and economic evaluations, we pay particular attention to examining such differences. In the statistical models, we do this by estimating dynamic time series models in the “error correction” form. Error correction models (ECMs) allow one to conveniently quantify both the long and short-term effects of changes in exogenous variables on a dependent variable and have also been adopted in the most recent econometric models of inflation expectations estimated in the literature reviewed above (Carroll 2003; Forsells and Kenny 2002; Krause and Granato 1998; Krause 2000). Generically, ECMs have the following form:⁹

$$(1) \quad \Delta y_t = \alpha - \delta \{y_{t-1} - \pi x_{t-1}\} + \beta \Delta x_t + \varepsilon_t$$

The symbol “ Δ ” indicates a first difference (i.e., $\Delta y_t = y_t - y_{t-1}$) and the term in brackets is called the “error correction” term. It represents the long-term equilibrium relationship between levels of x and y. A non-zero value for the error correction term indicates that the two series are out of equilibrium and so the δ parameter captures the rate of adjustment of the two series back to their equilibrium relationship.¹⁰ What is important for our purposes is that some of the change in y that we observe in a given month (i.e., change in perceptions or expectations) reflects neither the recent movements in x (i.e., change in the current economy) nor random noise. Instead, some of the observed change in y stems from adjustments to reestablish the equilibrium relationship between y and x that was upset in previous periods. For example, if we observe that perceptions of price changes do not track the month to month changes in prices very well but are generally correct at identifying a trend over a time span of six months or a year, one way to explain this is to assume that there is an equilibrium relationship in levels of prices and price expectations but that this equilibrium relationship can be upset by short-term (month-to-month) changes in prices that are not

⁹ A more general specification would allow lags of Δx_t . In our estimations we allowed for this possibility and in many cases discovered that including both Δx_t and its one-month lag gave a slight improvement in fit over equation (1). However, the fit of these models were only marginally better than the ones that contained only contemporaneous. Likewise, substituting the one-month lag of Δx_t for Δx_t in equation (1) resulted in similar estimates in some countries and somewhat worse fit in others.

¹⁰ A t-test for the statistical significance of δ is also a test of whether x and y are co-integrated. These series do appear to be cointegrated, but since we have adopted the ECM specification for substantive reasons the issue of whether x and y are integrated or cointegrated is not central to our investigation.

reflected in immediate changes in perceptions. Consequently, y_{t-1} will not be predicted well from x_{t-1} and the term in brackets in equation (1) will not be zero. However, because of the long-term relationship between prices and price perceptions (i.e., people perceive a longer-term trend or they “get it right in general”) some of the change in perceptions in the subsequent periods will be due to this long-term relationship and these changes will eventually re-establish the equilibrium relationship between prices and perceptions.

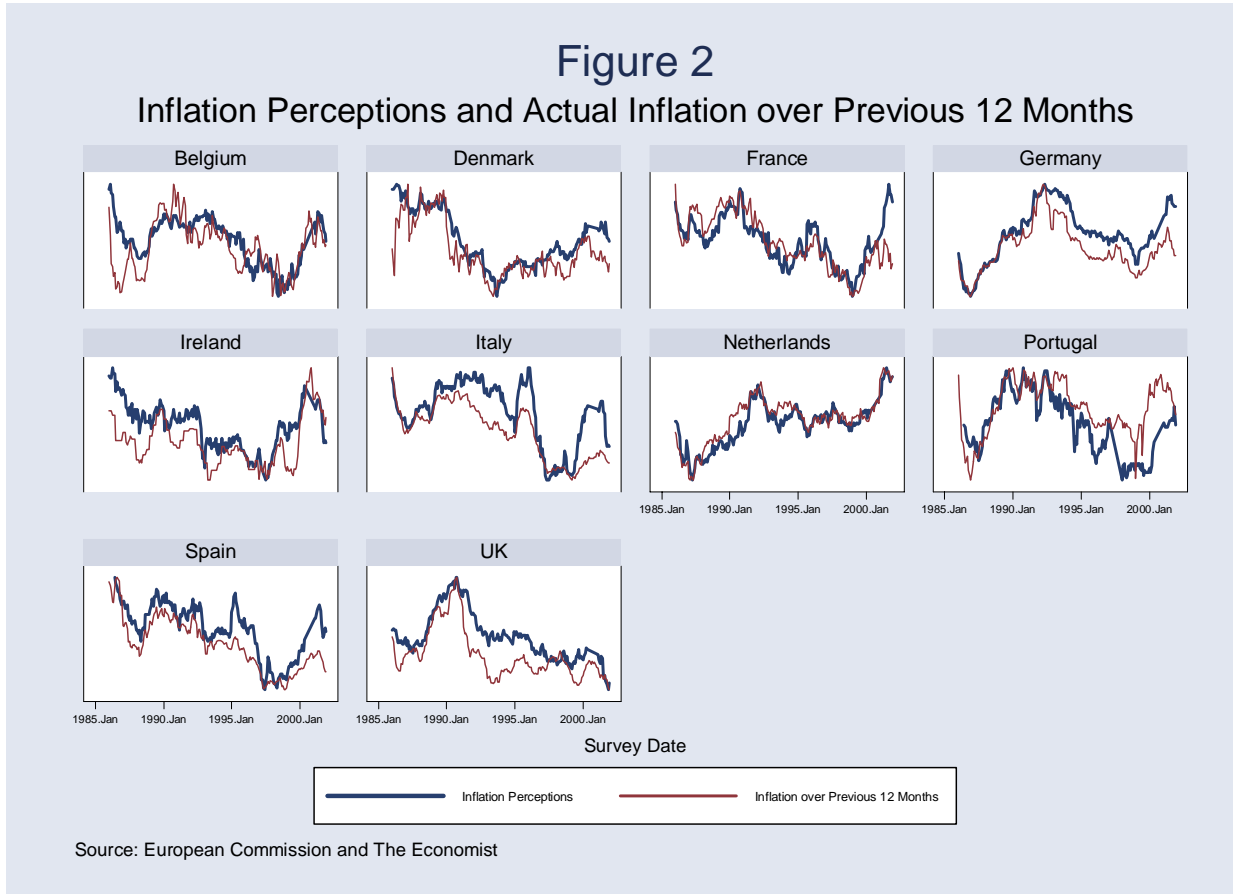
In contrast to this long-term relationship, the estimate of β on the contemporaneous change in x is a direct estimate of the immediate or short-term adjustment of expectations to movements of the real economy. In what follows, then, we will be especially concerned with the estimates of β and δ . The former is our chief measure of the short-term relationship between x and y and the latter of the long-term relationship.

Results

In this section we report the results of our analysis of the economic perceptions and expectations data described in the last section. We divide the task into two parts: first, we examine the extent to which each perception or expectations series tracks both the short and long-term changes in the corresponding series from the real economy; second, we take up the question of whether there is any significant asymmetry in the ability of voters to track negative versus positive changes in the economy.

Retrospective Price Perceptions and Changes in Prices

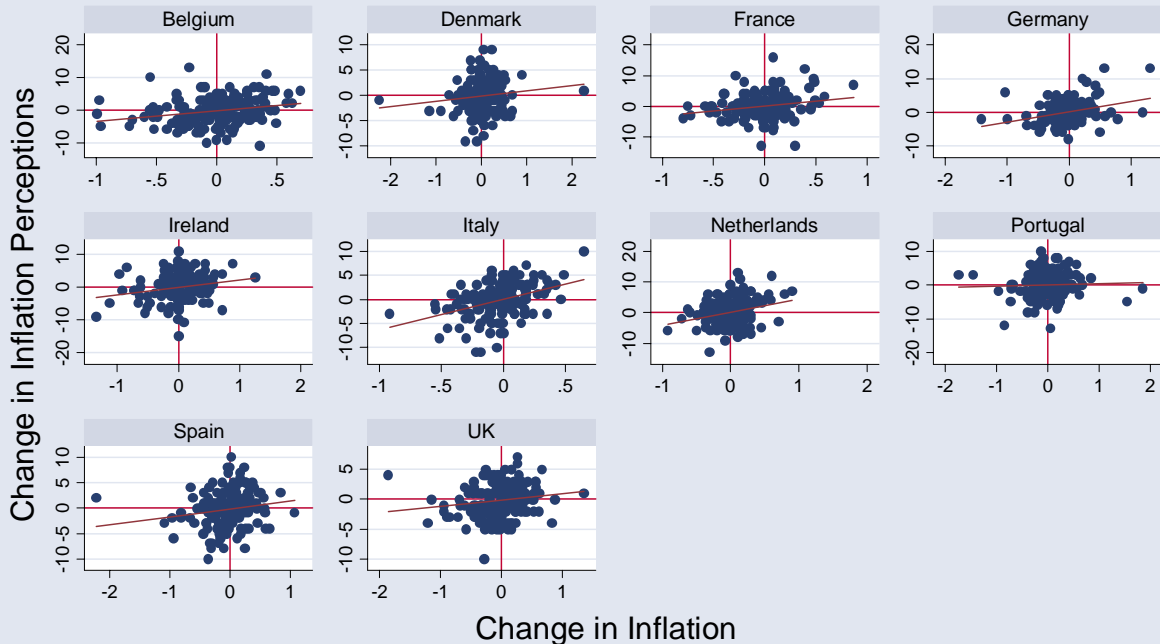
Figure 2 presents perceptions of price change over the previous year graphed against the percentage change in prices over the same period. In all of the countries the evidence is strong that public perceptions of inflation over the past year track actual price performance closely. This appears to be true both in the long-term and in the short-term. To see the long-term correspondence in the series, one only needs only to observe the extent to which the series move in tandem over long periods (or, alternatively to imagine how the smoothed series would move together). It is more difficult, in these graphs, to see the correspondence in short-term fluctuations between the series, but close inspection suggests that in fact short-term fluctuations in prices are quickly registered in price perceptions.



One way to see the extent of short-term correspondence more clearly is with another graph that removes the long-term relationship between the series and simply graphs the monthly changes in one series against the monthly changes in the other. This is provided in Figure 3. With the exception of Portugal, short-term changes in perceptions and real price movements are positively correlated. The graphs also make it clear that for Denmark, there are two outliers that are likely to impact our inferences about the relationship between the series. These are the percent change in inflation over past 12 months for the periods April, 1986 and April, 1987. The spike in Danish inflation for the month of April, 1986 resulted from the “potato-diet” initiatives designed to stabilize the Kroner – this of course gets reflected 12 months later with a large negative value. Taking both graphs together, this visual analysis suggests the two series seem to be highly correlated in both the short and long-term, with the exception of Portugal and perhaps Denmark, at least for the short-term.

Figure 3

Short-Term Relationship Between Perceptions of Inflation over the Previous 12 Months and Actual Inflation over the Previous 12 Months



Source: European Commission and The Economist

To quantify the intuition from these graphs, we can estimate ECM models as discussed above. The results of this exercise are provided in Table 5. They clearly confirm the conclusions from our visual inspection and also add tests of statistical significance. With the exception of Portugal, the coefficient summarizing the immediate impact of change in prices on perceptions of price change is positive and statistically different from zero for each country. Similarly, the coefficient on the error correction term is statistically significant in all cases, including Portugal. This magnitude of this coefficient averages about .15 and is always between .08 and .20. The interpretation of a δ of this magnitude is that it takes on average of just over six months for the full effect of a change in prices to be felt in price perceptions.¹¹ This ensures a long-term continuity between the series, while allowing for short-term deviations. The strength of the

¹¹ 0.15% of the total effect of a disequilibrating change in x will be made up in each subsequent month. The size of the total effect of a given change in x , call it Δx , over all subsequent periods is calculated in our notation as $\tau \cdot \Delta x$, where τ is estimated directly and consistently as the coefficient on x in the first stage regression of x on y in the two-step ECM model. For example, the total effect on perceptions of a one standard deviation (.014) change in x for Germany is $(10.77) \cdot .014 = 0.15$. This is approximately a one standard deviation change in y . Consequently, the estimates suggest that in the long-term a one standard deviation change in x leads to one standard deviation change in y (results are similar for other countries).

short-term effect, however, means that more often than not, even short-term changes in the economy are registered in perceptions.

Table 5
Long-Term and Short-Term Relationship between Perceptions of Price Change over Previous Year and Actual Change in Prices over Previous Year

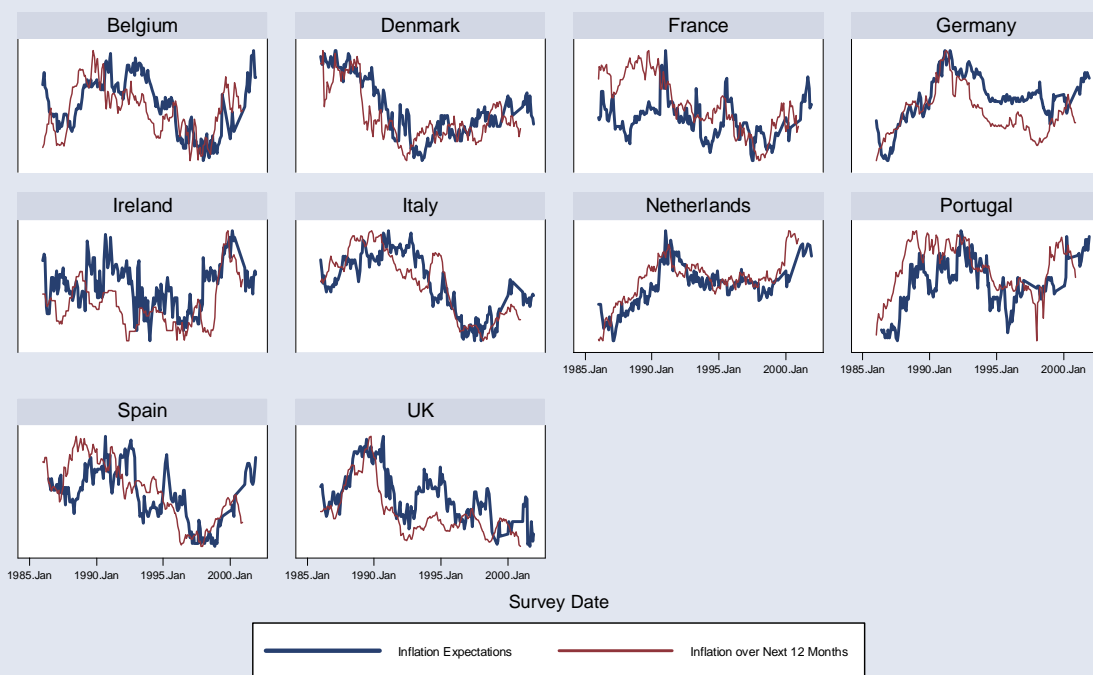
	France	Belgium	Neth.	Germany	Italy	Denmark	Ireland	Britain	Spain	Portugal
δ	-0.10 (-2.70)	-0.13 (-4.00)	-0.19 (-4.80)	-0.12 (-4.73)	-0.08 (-2.63)	-0.15 (-4.54)	-0.13 (-3.36)	-0.08 (-2.91)	-0.20 (-4.49)	-0.10 (-2.84)
β	2.68 (2.08)	4.19 (4.12)	4.32 (4.06)	2.46 (3.56)	6.77 (5.48)	1.95 (2.96)	2.17 (2.36)	1.03 (1.95)	2.59 (3.20)	0.81 (1.03)
Constant	0.00 (0.09)	0.00 (-0.55)	0.00 (0.67)	0.00 (1.14)	0.00 (0.14)	0.00 (-0.69)	0.00 (-0.32)	0.00 (-0.56)	0.00 (-0.47)	0.00 (0.52)
N	170	169	169	170	170	170	170	170	170	158
R ²	0.06	0.15	0.18	0.19	0.20	0.13	0.08	0.07	0.15	0.05

Estimation equation is specified as in Equation (1) and the interpretation of the coefficients is as discussed in the text. Estimation is by the “Two-Step” method for estimating Error Correction Models with OLS regression. Numbers in parenthesis are simulated t-ratios. “x” in Equation (1) is Annual Percentage change in the Consumer Price Index over the previous year. Breusch-Godfrey tests for autocorrelation indicated no serial correlation of the errors. “N” is the number of observations. “R²” is the adjusted R² statistic.

Prospective Price Expectations and Changes in Prices

As we discussed above, Ericson, McKuen, and Stimson (2002), among others, make the case that citizens possess the necessary information to make rational (and correct) assessments of the future economy. This information includes economic forecasts, reports of leading indicators, and the like. Other scholars, however, are more skeptical of the information available to, or used by, consumers and so suggest that voters instead base expectations on what the economy has done in the recent past. In this section we address these questions by examining the relationship between price expectations and different lags (and leads) of the annual change in prices in the real economy. We begin, in Figure 4, by looking at the fit between price expectations and actual price change in the next year. Clearly, the series trend together in the long-term, though perhaps not as closely as in the case of retrospective price perceptions and past price change. Looking closely at the graphs, however, one finds that the correspondence of the series over the short-term is not close in many cases.

Figure 4
Inflation Expectations and Actual Inflation over Next 12 Months



Source: European Commission and The Economist

This impression of discontinuity between the short-term fluctuations in the series is confirmed in Figure 5 and in the ECM estimates in Table 6. Although the long-term parameters are all statistically different from zero and in several cases larger than those in the previous table, the short-term relationship between changes in the series is in the wrong direction in every case, though the wrongly signed coefficients are often statistically insignificant. What does this mean? One interpretation is simply that while price expectations do track future price change in the long-term, this is only a long-term phenomenon and there is no sensible relationship between price expectations and price change in the immediate future.¹² This suggests that Stimson, Erickson and McKuen’s conclusions must be clarified: people do “get it right” prospectively, but (looking at the δ s) only in terms of trends over about six months.

¹² This conclusion is not the result of choosing to examine the real economy as change over the next year. Any shorter period of forward change (whether it be three months in the future or six months in the future) shows similar results.

Figure 5

Short-Term Relationship Between Inflation Expectations for the Next 12 Months and Actual Inflation over the Next 12 Months



Source: European Commission and The Economist

Table 6
Long-Term and Short-Term Relationship between Expectations of Price Change over Next Year and Actual Change in Prices over Next Year

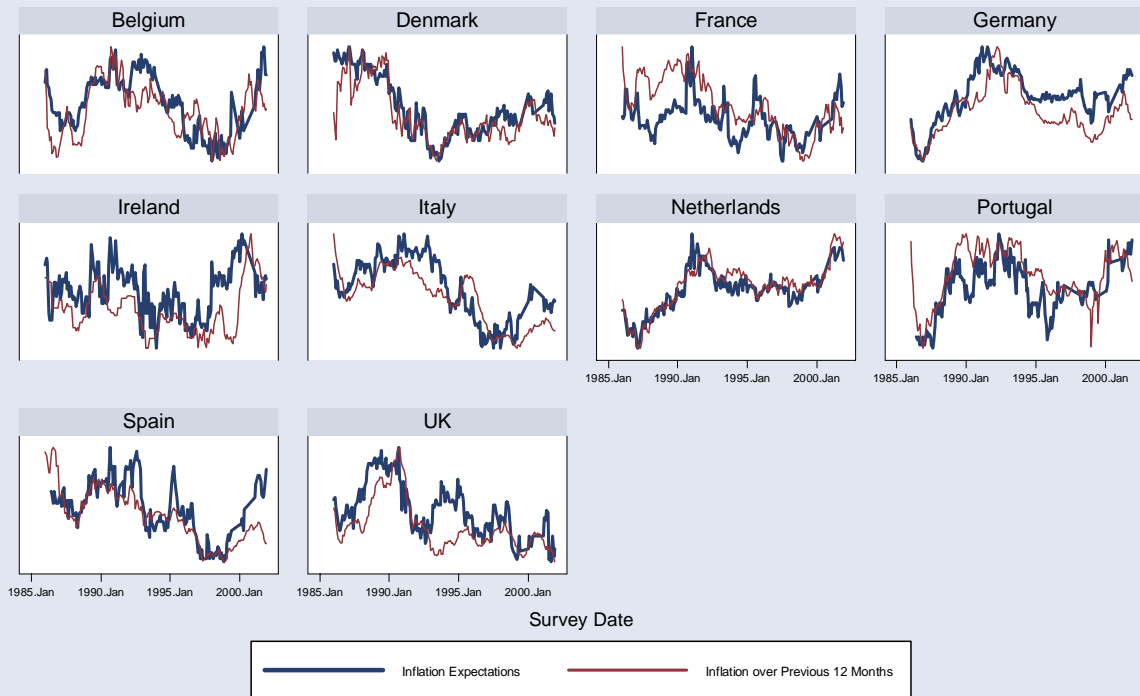
	France	Belgium	Neth.	Germany	Italy	Denmark	Ireland	Britain	Spain	Portugal
δ	-0.21	-0.12	-0.26	-0.09	-0.11	-0.09	-0.29	-0.21	-0.13	-0.20
	-4.89	-3.77	-4.33	-3.84	-2.80	-2.82	-5.52	-4.71	-3.73	-4.24
β	-6.94	-2.94	-2.88	-1.09	-1.25	-1.00	-1.03	-0.53	-2.26	-0.44
	-3.48	-2.94	-1.58	-1.45	-0.54	-1.46	-1.02	-0.65	-2.58	-0.48
Constant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-0.23	0.17	0.03	0.29	-0.50	-0.88	0.12	-0.23	-0.23	0.59
N	165	164	116	165	117	165	172	165	160	148
R ²	0.18	0.13	0.16	0.09	0.07	0.07	0.16	0.12	0.12	0.12

Estimation equation is specified as in Equation (1) and the interpretation of the coefficients is as discussed in the text. Estimation is by the “Two-Step” method for estimating Error Correction Models with OLS regression. Numbers in parenthesis are simulated t-ratios. “x” in Equation (1) is Annual Percentage change in the Consumer Price Index over the next year. Breusch-Godfrey tests for autocorrelation indicated no serial correlation of the errors. “N” is the number of observations. “R²” is the adjusted R² statistic.

As we pointed out earlier, an alternative model is that individuals have “rational retrospective expectations” regarding the economy – their expectations rely largely on past economic outcomes rather than some “model” of future economic performance. Hence, we now explore how past price performance is related to expectations of future performance. In Figure 6, we graph expectations about price changes in the next year with actual changes in prices over the *previous* year. Table 7 is the corresponding ECM model.

Figure 6

Inflation Expectations and Actual Inflation over Previous 12 Months



Source: European Commission and The Economist

Table 7

Long-Term and Short-Term Relationship between Expectations of Price Change over Next Year and Actual Change in Prices over the Previous Year

	France	Belgium	Neth.	Germany	Italy	Denmark	Ireland	Britain	Spain	Portugal
δ	-0.18	-0.11	-0.31	-0.10	-0.08	-0.24	-0.26	-0.16	-0.17	-0.20
	-3.89	-2.75	-4.61	-2.91	-2.00	-5.08	-4.73	-3.29	-3.56	-3.82
β	5.17	4.20	2.36	1.98	5.57	1.46	1.01	1.91	1.84	-0.39
	2.53	3.84	1.27	2.61	2.46	2.17	0.93	2.01	2.16	-0.40
Constant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-0.10	0.42	-0.18	0.73	0.09	-0.86	0.10	-0.15	0.15	0.62
N	163	162	126	163	127	163	170	163	163	151
R ²	0.11	0.11	0.15	0.08	0.06	0.15	0.12	0.07	0.10	0.09

Estimation equation is specified as in Equation (1) and the interpretation of the coefficients is as discussed in the text. Estimation is by the “Two-Step” method for estimating Error Correction Models with OLS regression. Numbers in parenthesis are simulated t-ratios. “x” in Equation (1) is Annual Percentage change in the Consumer Price Index over the previous year. Breusch-Godfrey tests for autocorrelation indicated no serial correlation of the errors. “N” is the number of observations. “R²” is the adjusted R² statistic.

Comparing these results to the Figure 4 and Table 6, respectively, we see that the overall fit of the model and the impact of short-term price movements on perceptions are much better when retrospective

economic information is used to predict changes in price expectations rather than prospective economic information. However, the long-term co-variation in the price and expectations series is essentially the same in the two models. In the long-term, then, there is little to choose between models in which expectations depend on the previous price change or on changes in the future. In contrast, people’s short-term expectations about price changes seem to be driven by what has happened in the immediate past rather than by prospective economic information.

Clearly, such a correspondence between the economic past and expectations about the future should work through perceptions about the previous economy. If this is the case, then the best predictor of future expectations ought to be perceptions of past performance. To examine this, Table 8 shows the ECM model in which changes in expectations about future price change are a function of short and long-term movements in perceptions of price changes in the past year. This model gives the best fit by far.

Table 8
Long-Term and Short-Term Relationship between Expectations of Price Change over Next Year and Perceptions of Price Change in Prices over the Previous Year

	France	Belgium	Neth.	Germany	Italy	Denmark	Ireland	Britain	Spain	Portugal
δ	-0.27	-0.19	-0.21	-0.09	-0.07	-0.39	-0.29	-0.18	-0.19	-0.11
	-5.04	-3.86	-3.55	-2.86	-1.78	-6.10	-5.81	-4.51	-3.98	-3.07
β	0.38	0.57	0.34	0.63	0.52	0.53	0.60	0.90	0.60	0.62
	3.26	8.62	2.90	10.35	4.39	8.50	8.30	8.12	10.09	8.51
Constant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.02	0.75	-0.28	0.15	0.03	-0.38	0.29	0.18	0.73	0.45
N	175	174	126	175	127	175	182	175	170	158
R ²	0.15	0.32	0.12	0.38	0.14	0.37	0.34	0.29	0.41	0.34

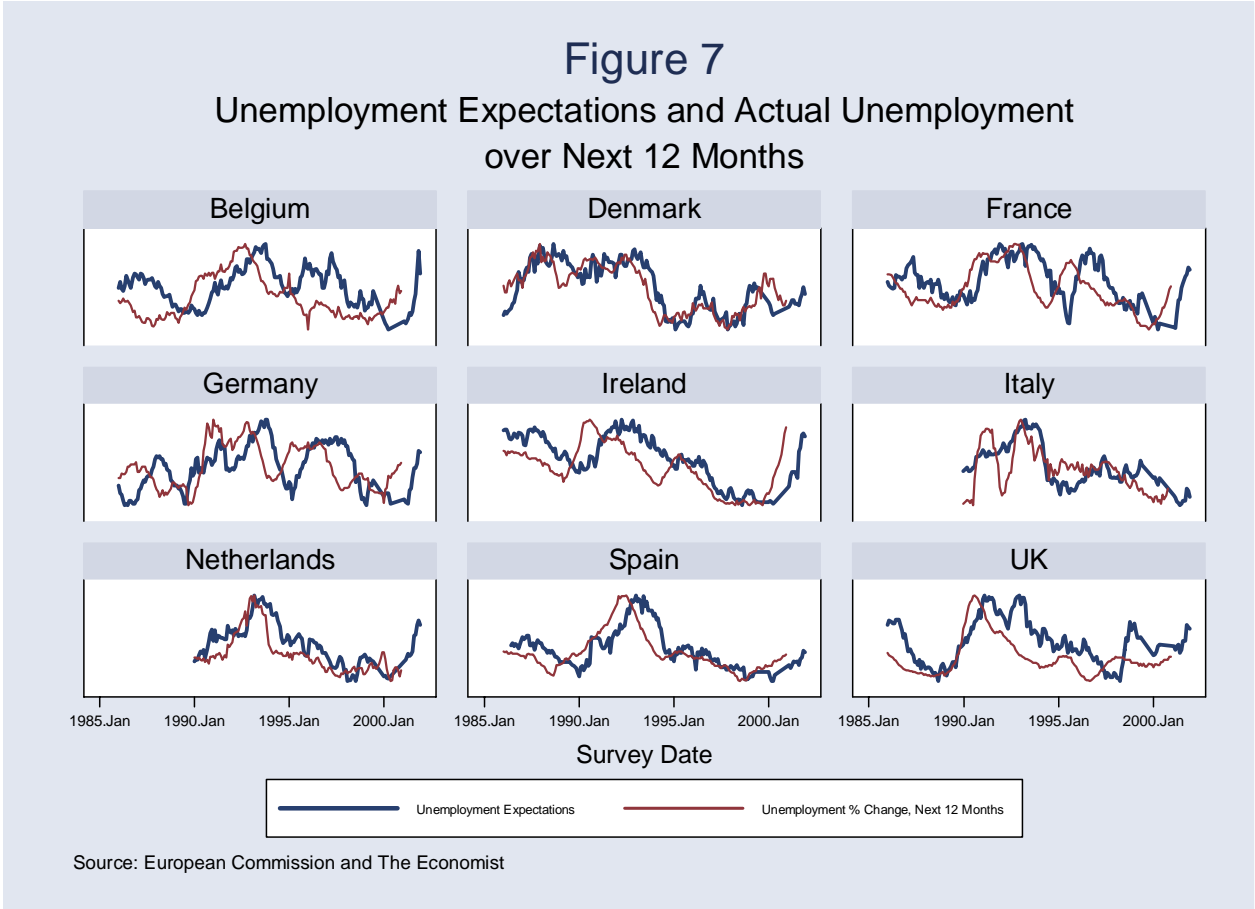
Estimation equation is specified as in Equation (1) and the interpretation of the coefficients is as discussed in the text. Estimation is by the “Two-Step” method for estimating Error Correction Models with OLS regression. Numbers in parentheses are simulated t-ratios. “x” in Equation (1) is Annual Percentage change in the Consumer Price Index over the previous year. Breusch-Godfrey tests for autocorrelation indicated no serial correlation of the errors. “N” is the number of observations. “R²” is the adjusted R² statistic.

These results support the conclusions of previous studies (based on much less data) of inflation expectations. Inflation expectations do not seem to anticipate short-term fluctuations in inflation. However, over the relative long term—which we estimate to be about six months – expectations do adjust to inflation trends.

Prospective Unemployment Expectations and Changes in Unemployment

If research comparing inflation evaluations to outcomes has been limited, work on unemployment is almost non-existent. Fortunately, however, the EU surveys provide data on expectations of future movements in unemployment, so we have the opportunity to extend the analysis of expectations to this variable. Figure 7 and Table 9 below are equivalent to Figure 3 and Table 6 above and their results are

essentially the same: economic expectations are not closely connected to the *future* economy in the short term, while they are in the long-term (average periods of about six months). To some extent, the long-term effects are weaker than was the case with price changes. Indeed, the average δ parameter is about .10 suggesting a slower adjustment process, so a looser long-term fit between the two series. This weaker long-term tracking is readily apparent in the graphs for countries with the smallest δ estimates. For example, looking at the graph of Belgium ($\delta=-.05$) the series are only quite loosely related over time.



As in the previous Table 6, most of the signs on the short-term effects of future unemployment movements on unemployment expectations are insignificant while some are significant but the wrong sign.

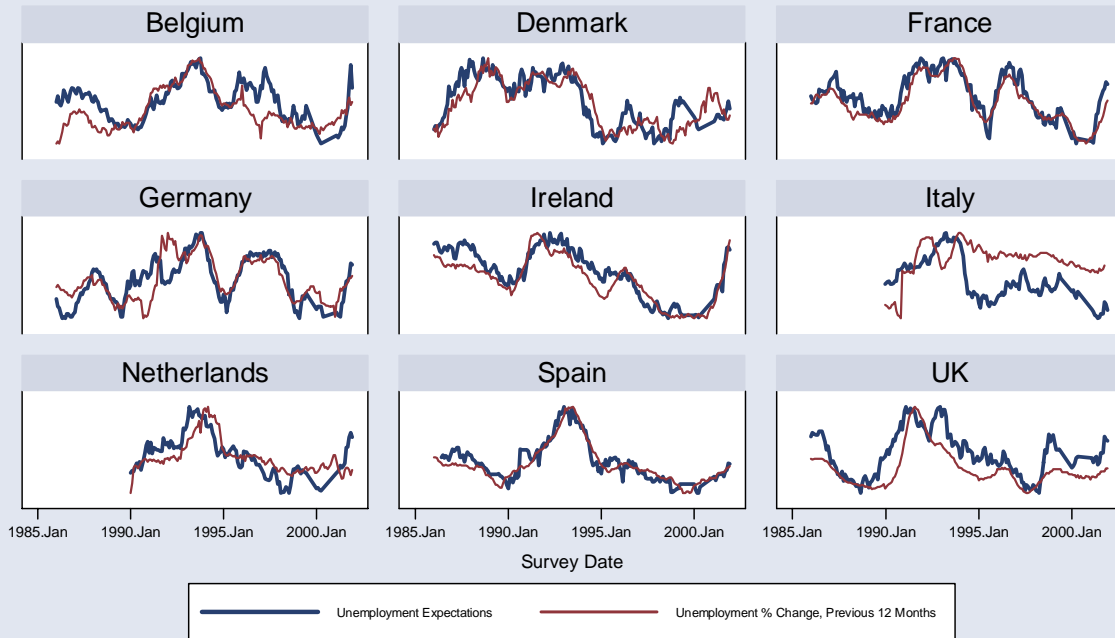
Table 9
Long-Term and Short-Term Relationship between Perceptions of Unemployment Change over Next Year and Actual Change in Unemployment over Next Year

	France	Belgium	Neth	Germany	Italy	Denmark	Ireland	Britain	Spain	Portugal
δ	-0.11 -3.62	-0.05 -2.16	-0.13 -3.61	-0.06 -2.83	-0.04 -1.34	-0.17 -4.80	-0.08 -3.61	-0.10 -3.71	-0.16 -4.86	-0.21 -1.34
β	-0.58 -1.25	0.01 0.06	0.22 1.80	-0.28 -2.16	0.26 1.56	0.14 0.79	-0.63 -2.42	-0.09 -0.53	-0.79 -2.16	0.19 1.54
Constant	0.00 -0.20	0.00 -0.16	0.00 0.12	0.00 0.04	0.00 0.07	0.00 0.25	0.00 -1.29	0.00 -0.08	0.00 -0.45	-0.01 -0.67
N	165	164	116	165	117	165	165	165	160	21
R ²	0.08	0.03	0.12	0.06	0.03	0.13	0.09	0.09	0.13	0.23

Estimation equation is specified as in Equation (1) and the interpretation of the coefficients is as discussed in the text. Estimation is by the “Two-Step” method for estimating Error Correction Models with OLS regression. Numbers in parenthesis are simulated t-ratios. “x” in Equation (1) is Annual Percentage change in unemployment over the next year. Breusch-Godfrey tests for autocorrelation indicated no serial correlation of the errors. “N” is the number of observations. “R²” is the adjusted R² statistic.

Given the lack of correspondence between unemployment expectations and future changes in unemployment (at least in the short-term), we can examine the alternative notion that unemployment expectations are closely related to past movements in unemployment. Figure 8 and Table 10 provide the relevant results.

Figure 8
Unemployment Expectations and Actual Unemployment
over Previous 12 Months



Source: European Commission and The Economist

As was the case with prices, the fit between unemployment expectations and past changes in unemployment is better than its fit with future unemployment change. Whereas many of the graphs in Figure 7 were out of sync, the graphs in Figure 8 are clearly much more in sync. People appear to be using the past economy to predict the general trend in the future. Again, however, short-term expectations are not well predicted even by retrospective information. Finally, comparing Table 10 with Table 7, the overall fit of the unemployment model is worse than was the price model. This suggests the general conclusion that voters have a harder time forecasting changes in unemployment than they do changes in prices.

Table 10
Long-Term and Short-Term Relationship between Perceptions of Unemployment Change over Next Year and Actual Change in Unemployment over Previous Year

	France	Belgium	Neth.	Germany	Italy	Denmark	Ireland	Britain	Spain	Portugal
δ	-0.31	-0.12	-0.01	-0.09	-0.02	-0.07	-0.13	-0.09	-0.23	-0.25
	-5.11	-3.63	-0.27	-2.85	-1.19	-1.60	-3.43	-2.36	-4.41	-1.91
β	1.98	0.15	0.06	0.21	0.02	0.15	1.09	0.54	1.04	-0.10
	4.58	0.60	0.51	1.48	0.17	0.71	4.47	3.25	3.19	-0.66
Constant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.35	0.33	0.52	0.74	0.25	-0.04	-0.32	0.36	-0.25	0.19
N	163	162	126	163	125	163	163	163	163	31
R ²	0.19	0.08	0.00	0.06	0.01	0.02	0.17	0.07	0.13	0.14

Estimation equation is specified as in Equation (1) and the interpretation of the coefficients is as discussed in the text. Estimation is by the “Two-Step” method for estimating Error Correction Models with OLS regression. Numbers in parentheses are simulated t-ratios. “x” in Equation (1) is Annual Percentage change in unemployment over the previous year. Breusch-Godfrey tests for autocorrelation indicated no serial correlation of the errors. “N” is the number of observations. “R²” is the adjusted R-square statistic.

A possible explanation for this result is suggested by the potentially differential ability of citizens to use non-mediated information in evaluating inflation versus unemployment. We would argue that the average voter has significant sources of noisy but unbiased information about changes in price that are unmediated (e.g., collected in the normal course of buying and selling in the modern economy). In contrast, the voter’s only non-mediated source of information about unemployment rates comes from the “sample” of unemployed individuals about whom she has personal knowledge. We argue that an estimate of the unemployment rate based on this kind of personal sample is unlikely to even noisily reflect the true level of unemployment in the economy (unlike the voter’s personal sample of prices). Consequently, individuals must rely solely on mediated representations of unemployment performance in order to be informed about this indicator. As we pointed out earlier, however, there is considerable evidence that the media does not provide an accurate representation of economic outcomes – which would imply a poorer fit between actual unemployment outcomes and unemployment expectations.

Estimating Systematic Biases in Perceptions Due to the Use of Mediated Economic Information

In the last section we saw that the fit between perceptions of inflation and actual inflation was strong in both the short and long-term. However, the fit of the models was far from perfect and they included no way to explicitly look for the kinds of media biases that have been suggested in the literature. More specifically, various scholars have suggested that economic perceptions will be distorted because of the tendency for the media to emphasize negative over positive economic outcomes. Specifically, if the

media overemphasizes negative inflation news, public perceptions of inflation should be more responsive to negative economic changes as opposed to positive changes in economic outcomes.

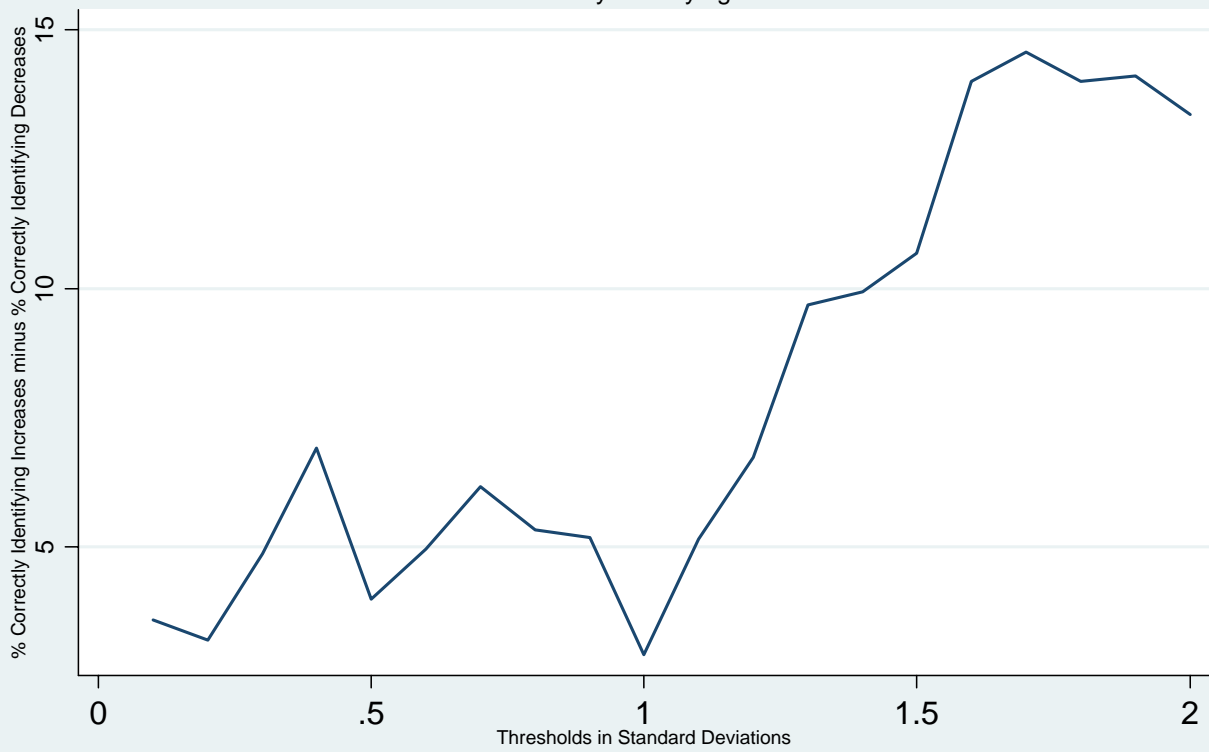
We can get an initial sense of whether this kind of bias is apparent in inflation expectations simply by comparing the fit between perceptions and the real economy during periods in which inflation experiences a significant improvement to those in which it experiences a significant decline. If the expected asymmetry really occurs, then public perceptions of inflation should be more responsive to changes in real opinion (in a negative direction) when there is a significant deterioration in the series compared to their responsiveness to significant improvements in the series.

As an initial test we simply asked how often each monthly inflation perception correctly trended in the direction of actual inflation outcomes. We counted a monthly observation of the price perceptions series as directionally “correct” if it registered a significant change in the same direction as a significant change in the price series (or registered an insignificant change in response to a similar insignificant change in prices). We need to focus on “significant” changes because these series are seldom actually constant even when their month-to-month changes are relatively small. But what constitutes a “significant” high or low change in inflation perceptions and actual inflation? Rather than answer this question arbitrarily and choose a specific threshold for designating significant changes, we instead allowed the threshold at which we counted changes as significant to range between ± 0.1 standard deviations (for both of the series) and ± 2.0 standard deviations. When a given change in one of the series falls below the chosen threshold, that series is considered stable in that instance.

To calculate the extent of asymmetry in the ability of voters to track positive versus negative short-term changes in inflation, we simply subtracted the percent of the cases in which perceptions correctly tracked falling prices from the percent of the cases in which perceptions correctly tracked rising prices. The results for threshold levels varying between 0.1 and 2.0 standard deviations are presented in Figure 9. If there were no asymmetry, the reported values would be constant at zero across all of the thresholds, suggesting that inflation perceptions track positive and negative changes in inflation equally well. This is clearly not the case in Figure 9. Indeed, for all threshold levels, the asymmetry is positive – which is consistent with the hypothesis that increases in inflation generate a greater movement in perceptions than do decreases in inflation. Note that even when we allow relatively small changes in inflation to count as significant, there is asymmetry of approximately 5 percent, but once the threshold exceeds 1 standard deviation the asymmetry becomes quite pronounced. For a threshold value of ± 1.5 standard deviations, there is a 10 percent difference in the percentages of positive and negative changes in inflation that are correctly tracked by perceptions. Figure 10 presents the country-by-country differences that result when we define the threshold for significant changes at ± 1.5 standard deviations. Note that with the exception of Great Britain, Italy and Ireland, there are significant amounts of asymmetry (in the hypothesized direction)

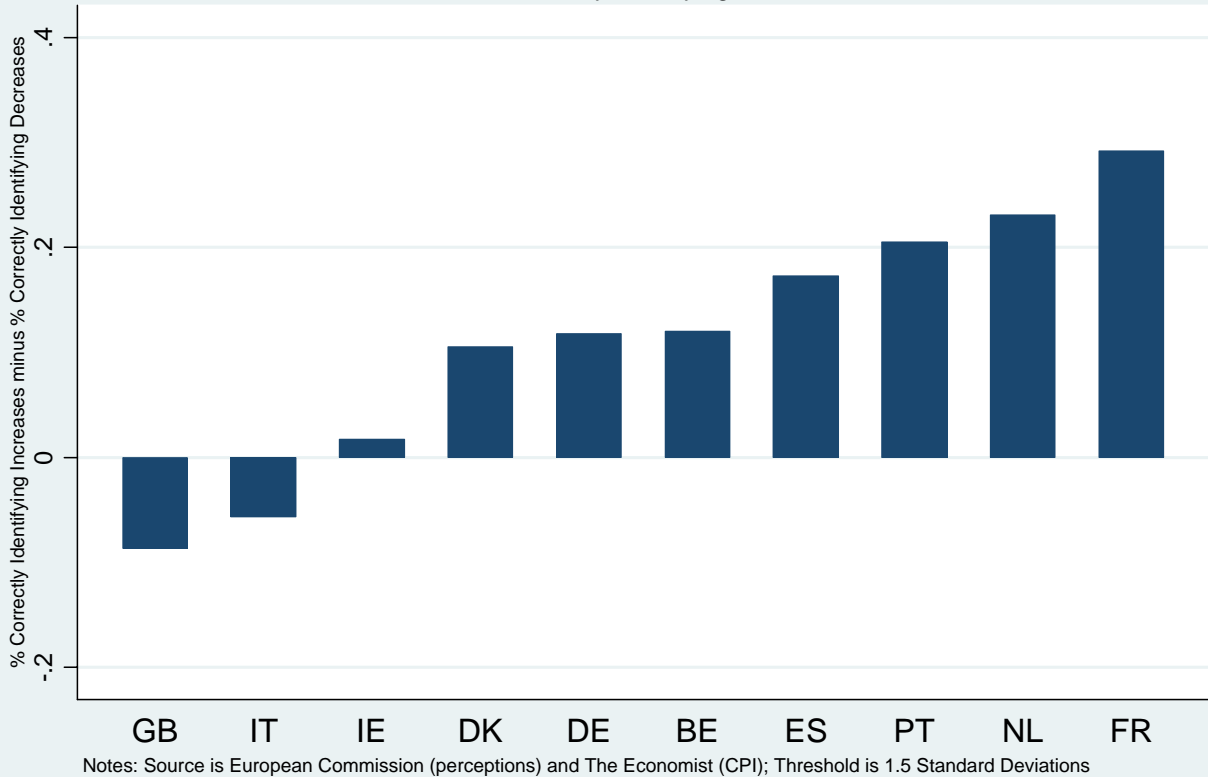
in each country. These data certainly suggest that asymmetry in media reporting might be contributing to short-term incongruities between perceptions and economic outcomes.

Figure 9. Price Change and Mass Retrospective Perceptions of Price Change
Difference in Percent Correctly Identifying Increases and Decreases



Notes: Source is European Commission (perceptions) and The Economist (CPI)

Figure 10. Price Change and Mass Retrospective Perceptions of Price Change
 Difference in Percent Correctly Identifying Increases and Decreases



There does appear to be asymmetry in how inflation perceptions respond to actual inflation. However, the test above is somewhat crude in that we only classify cases based on the direction of response rather than accounting for the size of the response of perceptions to outcomes. A more complete picture can be painted by modifying the error correction models used above to explicitly allow for an asymmetric response of inflation perceptions to changes in inflation. First, we expect asymmetry to impact the short-term and long-term dynamic relationships very differently. In the short-term we expect that mediated representations of economic performance will likely have a significant impact on how individuals respond to economic outcomes. Thus estimates of β on the contemporaneous change in inflation should be significantly higher for those cases in which inflation is increasing, relative to stable or declining inflation. In contrast, as we argued above, over the long-term individuals should “figure things out” even if biased information influences short-term reactions to the economy. Accordingly there should be no evidence that the long-term coefficient (δ) varies according to whether the inflation is increasing or decreasing.

The empirical test of these propositions consists of defining a “deteriorating economy” dummy variable that assumes a value of 1 if the economic indicator has deteriorated over the past two months and 0

otherwise. In addition, we defined the “improving economy” dummy variable as having a value of 1 if the economic indicator improved over the past two months and 0 otherwise. The omitted category from the two dummy variables captures cases where there is ambiguous or stable economic performance over the previous two months. These dummy variables were interacted with the short-term and long-term coefficients in separate estimations in order to test for negative (or positive) asymmetry in the responses of perceptions. The two modified ECMs have the following form:

$$(2) \quad \Delta y_t = \alpha + \delta \{y_{t-1} - \pi x_{t-1}\} + \beta_{better} \Delta x_t d_{t,better} + \beta_{worse} \Delta x_t d_{t,worse} + \beta \Delta x_t + \varepsilon_t$$

$$(3) \quad \Delta y_t = \alpha + \delta \{y_{t-1} - \pi x_{t-1}\} + \delta_{better} \{y_{t-1} - \pi x_{t-1}\} d_{t,better} + \delta_{worse} \{y_{t-1} - \pi x_{t-1}\} d_{t,worse} + \beta \Delta x_t + \varepsilon_t$$

The coding of the two dummy variable $d_{t,better}$ and $d_{t,worse}$ are as mentioned above. Equation (2) allows for a different short-term relationship for economic periods in which the economy is improving, staying the same or being ambiguous, or worsening. However, it enforces the same pace of adjustment in the long-term for each of these kinds of economies. In contrast, equation (3) allows the long-term adjustment process to differ in better, worse, and neutral economies but not the short-term impact of changes in x .¹⁴

Table 11 presents the error correction model estimates including the asymmetric interaction terms. The top half of the table presents the results with the inclusion of interaction terms for the short-term effect (Δx_t). The short-term results confirm the asymmetry hypothesis and the earlier results: With the exception of Denmark, the short-term response of inflation perceptions is significantly higher when prices are rising (with the comparison category here being stable or ambiguous trends in the price series over the past two months). Note that in three countries – Germany, Italy and Spain – price perceptions are also significantly higher when prices are falling. On balance, the evidence supports the hypothesis – it clearly suggests that negative economic news is much more likely to capture the attention of the average citizen.

The lower half of Table 11 presents the results for the long-term asymmetric interaction terms. Recall that our expectation is that these interaction terms should not be statistically significant. Again, this hypothesis is confirmed: Only in Spain does the negative asymmetry interaction have a significant coefficient; in three countries the positive asymmetric interaction terms are significant although contradictory with two cases positive and one case negative. As we expected, individuals over the long-

¹⁴ It is not possible to include both long and short-term asymmetries in the model without creating complicated and unrealistic restrictions in the way that the impact of a change in x can be felt over time. Specifically, including both sets of interactions in one model creates restrictions on the dynamics that require the influence of x be zero in non-consecutive periods.

term compensate for any asymmetries in the reporting of economic news and therefore exhibit no significant asymmetries in their responses to economic outcomes.

The findings from this section concerning the short and long-term difference in the evidence of media bias – i.e., that it is apparent in the short-term but not in the long-term, supports the very recent findings of De Boef and Kellstedt (2004), who find in a somewhat different, but more direct, test of media bias (in which they code coverage of the U.S. economy in the media) that media coverage of *political* sources of economic information has only a short-term impact on the economic approval rating of the president, while media coverage of non-political sources has a long-term impact.

Table 11. Perceptions of Price Change and Actual Change in Prices over Previous Year, Asymmetric Impact Model

	France	Belgium	Neth	Germany	Italy	Denmark	Ireland	Britain	Spain	Portugal
<i>Short-Term Asymmetric Interactions</i>										
δ	-0.09	-0.13	-0.20	-0.08	-0.08	-0.14	-0.14	-0.07	-0.18	-0.09
	-2.65	-3.88	-4.78	-3.17	-2.49	-4.19	-3.50	-2.72	-4.29	-2.67
β	0.33	3.38	3.91	-2.07	2.26	1.57	0.99	-0.42	-0.63	-0.58
	0.20	1.98	2.61	-1.93	1.11	1.96	0.92	-0.45	-0.52	-0.50
β_{better}	-2.03	-0.90	-3.97	5.20	8.45	1.72	4.49	1.37	5.60	1.89
	-0.70	-0.35	-1.29	3.22	2.66	0.81	1.48	1.05	2.86	1.04
β_{worse}	15.64	4.23	3.91	9.80	5.94	0.49	3.70	3.30	5.41	3.52
	4.36	1.55	1.58	5.94	1.92	0.26	1.51	2.26	2.59	1.64
Constant	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-2.07	-1.42	-0.50	-0.08	0.75	-0.35	-0.29	-1.16	-0.21	0.16
N	170	169	169	170	170	170	170	170	170	158
R ²	0.17	0.17	0.21	0.29	0.23	0.13	0.11	0.09	0.21	0.07
<i>Long-Term Asymmetric Interactions</i>										
δ	-0.09	-0.12	-0.17	-0.14	0.01	-0.13	-0.15	-0.06	-0.24	-0.09
	-2.13	-2.53	-3.23	-3.43	0.29	-2.96	-3.37	-1.36	-3.70	-1.85
δ_{better}	0.01	-0.15	0.04	0.11	-0.19	-0.12	0.06	-0.02	-0.05	-0.11
	0.07	-1.72	0.33	1.68	-2.77	-1.39	0.53	-0.37	-0.48	-1.36
δ_{worse}	-0.05	0.04	-0.13	0.07	-0.08	0.02	0.04	0.00	0.21	0.08
	-0.37	0.48	-1.25	1.03	-0.91	0.28	0.27	0.03	1.96	1.09
β	2.65	4.64	4.21	2.66	7.02	1.69	2.17	1.08	2.59	0.89
	2.04	4.53	3.94	3.72	5.76	2.51	2.35	2.02	3.22	1.15
Constant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.05	-0.63	0.62	0.93	0.14	-0.66	-0.28	-0.60	-0.51	0.28
N	170	169	169	170	170	170	170	170	170	158
R ²	0.06	0.18	0.19	0.15	0.23	0.14	0.09	0.06	0.18	0.08

Estimation is by the “Two-Step” method for estimating Error Correction Models with OLS regression. Numbers in parenthesis are simulated t-ratios. The specification for the short-term model is equation (2) and for the long-term model is equation (3). “x” in these equations is the Annual Percentage change in the Consumer Price Index over the previous year. The omitted category for the set of dummy variables is the case of ambiguous performance over two months. Breusch-Godfrey tests for autocorrelation indicated no serial correlation of the errors. “N” is the number of observations. “R²” is the adjusted R² statistic.

Discussion and Conclusions

There are two broad schools of thought regarding aggregate economic evaluations. One school argues that there is considerable error in individual-level perceptions of the real economy and this gets translated into aggregate series of economic evaluations. A second school of thought suggests that aggregate evaluations of the economy and the actual economy are strongly related. This could result from individual-level evaluations of the economy being accurate or result from averaging which tends to cancel out the individual-level error. The notion that aggregate-level evaluations of the economy poorly track the real economy raises serious questions about the appropriateness of employing this measure in economic voting models. In this essay we explore the extent to which this might be the case. And we bring three novel additions to the existing empirical literature: we assess accuracy by examining the fit between mass evaluations of *specific* economic outcomes (inflation and unemployment) and fluctuations in these indicators; we examine these empirical relationships in a large number of diverse European economies; and we inform our analysis of economic evaluations with two important theoretical traditions (theories of attitude formation and theories of rational expectations).

Most theories of attitude formation and rational expectations suggest that the mass public should do a good job of tracking long term fluctuations in economic outcomes. And the empirical evidence we present in this essay confirms that this is the case – over the long-term (which we estimate to be about six months), both expectations and perceptions closely track, respectively, future and past economic outcomes. In the short term, however, the evidence is more mixed. Our evidence on economic perceptions indicates that individuals seem to do quite well in perceiving even short-term fluctuations in prices. However, their expectations about short-term changes in either prices or unemployment are generally inaccurate (in that they are not well predicted by actual future outcomes). Instead, the evidence suggests that short-term changes in price expectations are better predicted by the past changes in inflation or, even better, by changes in past perceptions of inflation. Our analysis uncovered a general difference between the accuracy of inflation and unemployment expectations, with expectation of inflation being generally more accurate. Finally, our analyses provide support for the contention that short-term evaluations track negative fluctuations in the economy more accurately than positive ones.

Overall these findings lend support to the view that aggregate economic evaluations track the objective economy fairly well on timescales that are probably adequately tight (i.e., six months) to justify the assumptions of models of economic voting. This is not necessarily at odds with previous findings that have highlighted a disconnect between evaluations and outcomes in the American case. First, it is quite possible that in the U.S. case political variables, and presidential popularity in particular, have a more pervasive influence in distorting economic evaluations than in the countries studied here (all parliamentary

democracies). More likely, however, the difference in our conclusions and these other studies is really one of emphasis. Like these studies, we do find significant deviations in expectations as well as evidence consistent with a persistent media bias. But these distortions seem to be limited to a fairly short-term, so that eventually (and indeed relatively quickly) voters do in fact “get it right”.

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