Electoral Studies 32 (2013) 305–320

Contents lists available at SciVerse ScienceDirect

Electoral Studies

journal homepage: www.elsevier.com/locate/electstud

The meaning and use of subjective perceptions in studies of economic voting

Randolph T. Stevenson [a,*], Raymond Duch [b]

[a] Department of Political Science, Rice University, Houston, TX, United States
[b] Nuffield College, University of Oxford, United Kingdom

ARTICLE INFO

Article history:
Received 18 May 2011
Received in revised form 29 January 2013
Accepted 7 February 2013

Keywords:
Economic voting
Subjective perceptions
Economic perceptions

ABSTRACT

In this essay, we discuss the usefulness and meaning of empirical models of economic voting that rely on measures of individual economic perceptions. The effort is motivated by the recent reappearance of a long-standing critique of the use of economic perceptions data in individual level economic voting studies, with a consequent call for the use of aggregate data, which suggests that variation in perceptions must reflect noise or error because there can be only one "real" state of the national economy applicable to all respondents in any national survey. We show, however, that this critique (and its corresponding prescriptions for how to specify empirical models of economic voting) is based on a misunderstanding about (1) the theoretical concepts called for by the leading theories of economic voting (and that we should be trying to measure), (2) the nature of the economy that individuals can actually observe (it is a distribution of possible states, not a point) and, consequently, (3) the interpretation of correlations between individual economic perceptions and electoral support.

© 2013 Elsevier Ltd. All rights reserved.

1. Introduction

In this essay, we discuss the usefulness and meaning of empirical models of economic voting that use either aggregate economic statistics or individual economic perceptions on the "right-hand side." The effort is motivated by the recent reappearance of a long-standing critique of the use of economic perceptions data in individual level economic voting studies, with a consequent call for the use of aggregate data instead. In their recent book, for example, van der Brug et al. (2007) question the meaning (and usefulness) of correlations between economic perceptions and political support based on two related critiques: First, they argue that "an adequate research design… avoids using subjective indicators of economic conditions, since these are strongly contaminated and subject to severe endogeneity problems." (p.26) Second, they offer an even more fundamental critique: even if perceptions of the economy were exogenous (or could be made so), survey measures of these perceptions vary over individuals even though the "state of the national economy is the same for all respondents in a national survey."[1] Thus, the authors ask, "what is reflected by different responses?" Their answer: random error, different interpretations of survey questions, or individuals "incorrectly accessing economic conditions." None of these answers, in their view, allows one to interpret correlations between economic perceptions and political support as evidence for "economic voting".

While we will be principally concerned with the second critique in this paper, it is worth noting that the first has been the subject of a long-standing debate in the literature

[1] Throughout this essay we will use the term "correlation" as a substitute for the many different statistical techniques (e.g., regression coefficients or maximum likelihood estimates of coefficients from logistic models) that are used to produce estimates of economic voting. These techniques do not concern us; rather, we are focused on how one measures the variables used in these statistical procedures.

* Corresponding author.
E-mail address: stevenso@ruf.rice.edu (R.T. Stevenson).

0261-3794/$ – see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.electstud.2013.02.002

on economic voting, including a number of quite recent contributions (e.g, Evans and Anderson, 2006; Lewis-Beck et al., 2008; Evans and Pickup, 2010; Nadeau et al., 2012; Hansford and Gomez, 2013). On one hand, this literature establishes conclusively that economic perceptions depend on factors that also strongly impact vote choice (most notably on partisan loyalties and ideological identifications). On the other hand, a large number of studies using a wide variety of methods have shown that this apparent endogeneity problem may be muted in the kind of empirical applications usually found in this literature (i.e., when appropriate research designs and careful specifications of vote choice models are used). Indeed, our reading of the current work on the subject supports the idea that the potential endogeneity problem *on its own* should not lead scholars to prefer aggregate objective measures of the economy to individual level subjective measures.[2] That leaves, however, the second, and in many ways more fundamental, critique raised by van der Brug, van der Eijk, and Franklin.

To understand this depth of this critique, consider a research design in which we might safely assume economic perceptions were exogenous to support. Say, for example, we had pristine panel data in which we measured (for a set of N respondents) changes in economic perceptions as well as changes in support (with appropriate temporal lags) over an extended period of time (say *T* time periods). Thus, our data would vary in two ways: change in a given individual's views would vary over time and, at any point in time, the amount and direction of change in the views of different individuals would also vary. Further suppose that we used this data to show a strong relationship between changes in economic perceptions and changes in support for incumbents. Even in this pristine case (where there can be little question of endogeneity), however, van der Brug, van der Eijk, and Franklin would still question the meaning of the correlation between changes in perceptions and changes in support. On one hand, any variation in changes in perceptions across individuals at the same time can not, in their view, be meaningful since the "state [and ostensibly the change in state] of the national economy is the same for all respondents in a national survey." Any correlation based on such variation is thus relating "noise" (i.e., random error, different interpretations of survey questions, or incorrect assessments of economic conditions) to signal (support for incumbents) and so cannot produce a meaningful relationship. Even if one ignores variation across individuals at the same time and focuses inference only on change in the same individual over time, the same critique applies unless one can show that all the respondents' changes in economic perceptions (on which this within-subjects inference is being made) correspond precisely to objective changes in the economy (which is clearly false if there is any variation across individual changes in perceptions at the same time).

Thus, while the endogeneity critique of individual level models of economic voting has received more attention in the literature, it is important for scholars using individual subjective perceptions of the economy in models of economic voting to also address this second critique in a straightforward way. If there is one "true" economic condition, how can correlations based on variation in perceptions of that condition and political support tell us anything about the role the economy plays in facilitating (or not) democratic accountability? In this essay, we try to answer this question by first "going back to basics," and asking how our theories of economic voting conceptualize "the economy". This should always be the first step if we are trying to operationalize the concept in a way that lets us capture the theories that motivate our empirical work. Since there are two leading theories of economic voting that motivate almost all existing empirical work, we discuss how "the economy" is conceptualized in both.[3] This exercise reveals that both theories require a conceptual definition of the "economy" that focuses exclusively on the economic outcomes that are *observed* by citizens – while ignoring more abstract notions that invoke a "true" or "real" level of economic activity. While such concepts may be important for other theories – like theories of economic growth or dependency – we show that they should not concern political scientists interested in studying economic voting from a theoretical perspective that invokes either the logic of rational accountability or of competency/selection (as the vast majority of existing studies do).[4]

Having discovered that it is the economic outcomes observed by voters (or the "observed economy" for short) that we must try to measure to capture the logic of these theories in our empirical models, the next obvious question is what economic outcomes do voters observe? In answering this question we will again look to the theory. Doing so reveals that the concept of the "observed economy" that is invoked in each theory is (1) retrospective – so we want to operationalize observed past economic outcomes and (2) sociotropic – so we need to operationalize collective rather than personal outcomes. These are, of course, well known features of these theories and over the years researchers have attempted to capture them in a variety of different measures. However, another implication of these theories for the definition of the observed economy

[2] We do not have a great deal to add to the statistical debate on this question and that is not the purpose of this essay. However, we will return to this question in the penultimate section of the paper because in addressing the other critique of using individual subjective perceptions in models of economic voting, we reframe the issue in a way that we hope will be helpful to those studying the issue of endogeneity. Specifically, our discussion makes it clear that the non-random assignment problem usually studied (i.e., economic perceptions are a non-randomly assigned treatment since they may depend on the same measured (and ostensibly unmeasured) variables that drive support) can be thought of as a set of nested non-random selection problems, each of which can be evaluated for relevance – both logically and empirically – on its own. We defer further discussion of this until the end of the paper since to get to that discussion we first need to clarify the meaning of correlations between economic perceptions and support in the absence of endogeneity.

[3] These are the rational "accountability" and rational "competency" or "selection" theories.

[4] One obvious implication of this is that measurement critiques that begin from the assumption that we should be trying to measure the "real" economy must either be working from a non-mainstream theoretical perspective or have strayed from the conceptual demands of the theory.

has not been so universally recognized – specifically, that the theories are cast at the individual level and so the observed economic outcomes we want to measure are those that each individual voter observes. Under a set of (somewhat draconian) assumptions, we could assert that the economic outcomes observed by each citizen are identical – and so use a single set of measures to capture the economic outcomes observed by all the individuals represented in an empirical study.[5] We argue, however, for a more realistic view, in which the economic outcomes "observed" by different individuals are unlikely to be the same, because they are made up of small, idiosyncratic, samples of mediated economic messages.[6] The distribution of all such mediated messages about the economy, in a certain jurisdiction for some interval of time (and from which these samples are drawn), make up the potentially "observable economy." Consequently variation in opinions about the economy represent real or "natural" variation in the distribution of messages that make up the observable economy and it is exactly this kind of variation we should use to build theoretically driven estimates of economic voting.

The rest of this essay fills in the details of the above sketch in four steps. First, we describe the definitions of economic voting and of "the economy" that are appropriate to the two leading theories of economic voting. Second, we examine the nature of the most important concept to come out of these definitions: the "observable economy". Specifically, we use a variety of data to show that the observable economy at any point in time is *inherently variable* – contrary to the explicit assumptions of the critique discussed above. Third, we describe how two widely used theories of public opinion formation and change provide mechanisms by which we can sensibly connect our notion of the "observable economy" to the actual economic messages each individual observes (i.e., our "observed economy") and the summary opinions about these observations that make up economic perceptions. Finally, we ask what all this means for how we should interpret empirical correlations between, on one hand, economic perceptions and support and, on the other, economic aggregates and support.

2. The concept of "economic voting" and "the economy" called for by economic voting theory: the misunderstood centrality of the "observed economy"

Conceptual definitions should come from the theory in which they are used and the concept of economic voting is no exception. Further, since "the economy" is a component of the concept of economic voting, our theories of economic voting should guide the conceptual definition of the economy that is appropriate to those theories. There are two broad theories of economic voting that account for the vast majority of work on the subject (see Duch and Stevenson, 2008 for a review). By far the most prominent is the *accountability model*, in which rational voters punish incumbents for bad economic outcomes in order to induce future politicians to work to deliver good economic outcomes. The important element of this theory for our definition of economic voting and "the economy" is that the voter acts as a principal who does not get to observe the effort level of his agent (the politician). Consequently, he uses a punishment schedule that is tied to economic outcomes to induce effort. The punishment schedule is simply a probability of supporting the incumbent at each observed level of the economy. Economic voting occurs, in this model, if the punishment schedule voters use is not flat (so their votes are actually tied to observed economic outcomes). Importantly, the whole point of this model is that the economy is observed while effort is not – thus, voters (principals) use observed economic outcomes to build a punishment schedule instead of unobservable levels of effort. What this means is that the relevant "economy" in this theoretical model is *the economy that voters can and do observe*. Below we make a strong case that this observable economy will not be constant across all principals – even in theory – and so each principal (voter) will have a different observed economy and, according to this theory, a different level of punishment (i.e., the probability of voting for the incumbent). Further, an observed correlation between some individual level measure of the observed economy and support for incumbents is readily interpretable under this theory and the conceptual definition of "the economy" that stems from it. Indeed, under this theory such correlations essentially map out the slope of the average voter's punishment schedule and so are directly interpretable as measures of economic voting.

The other, much less frequently invoked, theory of economic voting that is used in the literature is the rational selection or competency model. In contrast to the accountability argument, rational voters in this model do not punish or reward incumbents in order to induce future effort, but rather try to use information from their observations of the previous economy to select competent politicians and parties. In this theory, the voter cannot observe competence directly but uses observations of previous economic outcomes as a noisy indicator of it. Given this, rational voters can solve a signal extraction problem that allows them to infer incumbent competence from these observed outcomes (and vote accordingly).

As with the accountability model, the whole point of this model of economic voting is that the individual *observes* an economy and makes a judgment based on those observations. So for example, if the observed economy were to differ from the "true economy," the model makes it clear that it is the observed economy that would (or would not) induce a particular inference about competence (and a resulting electoral strategy), not the actual level of economic activity. Of course, nothing requires that theories of economic voting depend on the observed economy rather than the (almost certainly unobserved) level of economic activity – it is simply that the theories that have been most influential in the literature (and that have had the most empirical support) do. One example of a theory of economic voting that does not rely on the observed economy

[5] As is done – separately for each time point and jurisdiction – in any study that uses some selection of aggregate economic statistics on the RHS of an aggregate or individual level model of electoral support.

[6] This view follows directly from two of the most influential theories of public opinion formation and change – by Zaller (1992) and Lodge and his colleagues (e.g., 1995).

(as we are using the term here) is the "pocketbook voting" theory in which individuals vote based on changes in their personal economic circumstances. In such theories, which have not fared well empirically, a truly worsening economy will result in larger numbers of individuals who experience real economic problems in their own lives. Thus, even if we assumed no one ever looked at a newspaper or observed anything about the general state economy, we would still predict worsening economic conditions to decrease support for incumbents.[7]

In contrast, the whole logic of both the accountability and selection arguments depend on voters observing and forming opinions about the general state of the economy in order to rationally allocate their support. This point cannot be overemphasized. Previous critiques have assumed at the outset that economic voting is defined by a connection between movements in the "true economy" (perhaps nosily measured in some way) and support; however, a closer examination of the relevant theoretical arguments make it plain that our theories of economic voting (and the normative implications that flow from them) only require a connection between the observed economy and support. Thus, in both theories we see that the relevant concept of the economy that we should be trying to measure is the set of (sociotropic) economic outcomes the voter observes. But what economic outcomes do voters in modern economies actually observe? We turn to this question next.

3. The nature of the observable economy?

In this section we argue that the "observable economy" in modern democracies is essentially equivalent to the "mediated economy" – that is, personal experience plays little role in generating relevant observations of economic outcomes. Further, this "mediated economy" responds to what we can call the "measured economy" – the set of aggregate economic statistics that are intended to measure different aspects of economic outcomes. Below, we review the features of the mediated and measured economy and argue that neither should be viewed as having a fixed state at any single time point (or interval of time) for a particular jurisdiction. Instead, each should be understood as defining a frequency distribution of messages or statistics, respectively, about possible states of the economy. This is not how political economists have traditionally thought of the economy when justifying models of economic voting (and their measurement decisions); however, making this conceptual adjustment is critical for properly understanding the meaning of correlations between economic perceptions and political support, as well as correlations between aggregate economic statistics and support. Thus, we spend some time in this section presenting evidence that these various manifestations of the economy are in fact distributions, not points.

3.1. The real economy

While the "real economy" is not really relevant to the most important theories of economic voting and so is not our concern here, it is the implicit assumption of most students of economic voting that there is some real – though almost certainly unobservable – level of economic activity that gets reflected in the measured and mediated economies discussed below. Thus, it is worth spending a moment clarifying our understanding of this concept. Specifically, unlike the other concepts discussed below, it is probably reasonable to assume that some "true" state of the economy actually exists and is fixed for a given point in time (i.e., a true level of economic activity, employment, etc.).[8] Consequently, we can also think of their being a "true" average economy for some jurisdiction over any interval of time. For example, it is probably meaningful to think of their being a true average economy over the month of June in the United States. Likewise, it is meaningful to talk about a "true" level of economic change between one time and another and "true" levels of change in the average economy from one interval of time to another (i.e., how the average economy in July is different from the average economy in June). What is important to understand, however, is that this true economy is (1) unobserved (and almost certainly unobservable), (2) only nosily (and perhaps wrongly) reflected in the distributions of the measured, mediated, and observed economies, and (3) is not directly relevant for our theories of economic voting, which do not ask us to measure the true state of the economy.

3.2. The measured economy

Regardless of whether it is useful to think of there being a single "true" state of the economy within some jurisdiction at a given time, we (and voters) certainly do not have direct knowledge of this level. Instead, we rely on aggregate economic statistics to characterize the state of the economy for some jurisdiction over a given interval of time. Such statistics do not provide a complete picture of the economy, are noisy measures built from samples, often rely on reported economic activity rather than actual activity, are often contradictory, are politically contested, and are not even particularly accurate at the time of their initial release (as judged by the size and frequency of later revisions). While this may seem obvious, these basic facts have not been well reflected in the theoretical and empirical literature on economic voting and so it is worth exploring why, even for a single interval of time in a single jurisdiction, there is a great deal of variation in the measured economy.

[7] The existence of theories of "pocketbook" voting that do not invoke the concept of the observed economy as a core feature of the explanation clearly suggest that aggregate measures of the "real economy" are useful in models of aggregate support (assuming one can identify appropriate aggregate measures – see below). However, they are cold comfort to scholars who argue one should use aggregate economic statistics in models of individual vote choice; since, in this case, one would obviously prefer a direct measure of the individual's particular economic circumstance.

[8] The existence of this true economy is, in our view, independent of the particular concepts like employment and economic activity used to define it (i.e., the economy, like gravity, exists in nature even if we have never labeled it). However, this philosophical issue is irrelevant to any practical issues addressed in this paper.

3.2.1. Many economic concepts to measure and many different measures of the same economic concept

There are many different aspects of the economy that are regularly measured by government statistical agencies, private enterprises, and international organizations. Each of these measures attempts to capture some underlying economic concept and each of these concepts reveals some aspect of the general state of the economy. Political Economists often focus on inflation and unemployment, but the measured economy also includes trade statistics, the stock market, leading indicators, and measures of many other economic concepts. Any principled selection of specific measures of the economy to use in an economic voting study must be made for one of two reasons: (1) the researcher has a theory about which aspects of the economy voters include (and do not include) in their support calculus – assuming they can observe them; or (2) the researcher believes that voters (again, if they could actually observe these statistics) do some sort of integration of different aspects of the measured economy into an overall assessment. In the later case, the idea is that while the particular measures selected do not reflect the complete set of economic measures the voter may integrate into an assessment, they are included in it.[9]

Of course, even if we concentrate on a particular dimension of the economy, like unemployment, there may be a variety of different estimates of the value of the dimension available at any given time. For example, the U.S. Bureau of Labor Statistics regularly publishes seven different estimates of unemployment, each of which is calculated using a different definition and which can vary dramatically (and, as we show later, different media outlets pick and choose among them). For example, the monthly unemployment rate most commonly reported in the United States comes from the Current Population survey, which estimates unemployment each month from questions asked to a sample of U.S. households. This survey however is also used to produce five other unemployment rates, as detailed in Fig. 1. In addition, the Bureau of Labor Statistics also fields a different survey – of establishments rather than households – that is used to produce an estimate of the change in payroll employees in a given month.

Fig. 1 also provides the estimated unemployment rates for July 2009 (initial release on August 7, 2009). The "official unemployment rate" (U-3) is defined as the "total unemployed, as a percent of the civilian labor force" as calculated by the household survey (and depending on a particular definition of what constitutes the civilian labor force – which includes whether a person has been looking for a job recently). Clearly, there is significant variation in these rates – they range from 5.1 to 16.3. Further, although we will take up discussion of the mediated economy in the next section, it is clear that all of these rates get reported. While there is certainly coordination on the official rate, almost a quarter of the stories that invoked the household survey reported an unemployment rate other than the official one (calculated by ignoring the last row of the table). In addition, if we also include the 1547 mentions of the payroll survey, only 62% of all mentions of these six unemployment measures were of the official rate.

In addition to the simple availability of different unemployment rates, it is also important to understand that the choice between them is politically *contested* by parties and policymakers. One example of this is the continual sparring among U.S. politicians over whether the establishment or household survey should be used to characterize the U.S. employment picture. This debate flares up whenever the household survey diverges from the establishment survey, with parties switching sides depending on which measure favors them. For example, by the end of 2003, the Bush administration put its considerable media operation behind an attack on the establishment survey, which had been providing a worse unemployment picture than the household survey. Further, this political effort seems to have resulted in a marked decrease in the frequency with which the household survey was reported, relative to the establishment survey. Daniel Gross, a contributor at Slate Magazine, summarized the situation in January 2004:

> "Last October, I dubbed the debate over the two surveys, and the emerging campaign to ignore the payroll numbers and focus on the household numbers, "anti-disestablishmentarianism." Last week I described how it has become central to the Republican defense of President Bush's economic stewardship. The comparatively strong Household Survey figures also bolster the Republican case for refusing to extend the federal Temporary Extended Unemployment Compensation program." (Daniel Gross, Slate Magazine, January 2004)

The use of, and political contestation over, different measures of unemployment is not unique to the United States. In Britain, a recent, widely reported, controversy involved the difference in two commonly used measures of unemployment. One measure is based on the number of people enrolling for unemployment benefits and the other is the International Labour Organization's estimate, which uses the Labour Force Survey to identify those looking for work. By August 2009, the two measures were giving very different answers, and popular concern that some political manipulation might be at work forced the government to launch an inquiry into the differences. Fig. 2, summarizes the difference in the three month moving average of the changes in the number of unemployed between the measures (note that the use of the moving average tends to suppress the size of the differences for any given time point – but we still see substantial differences).[10] It is clear that while there are substantial difference in 2009 (as reflected by the media coverage), other periods (e.g., late 2005) evidence differences that are as large (and more sustained in one direction). Overall, however, the message is clear, there are substantial differences in the measures – leaving policy makers and the

[9] Clearly if researchers were to think explicitly about this second point, they would recognize that in selecting one or a small number of economic aggregates to put into a model of political support, they are leaving out others. Thus, in building an econometric model, they have a particular kind of omitted variable problem (or equivalently a measurement error problem).

[10] To calibrate the sizes of these differences, the average change in the claimant figures from quarter to quarter was 53,000, so differences in this number between measures like those depicted in the chart are substantial.

Definition of Unemployment Rate as measured by Household Survey	Reported Unemployment Rate	Number of Mentions in U.S. News Sources from Aug 7-Aug25 (% of all mentions)
U-1 Persons unemployed 15 weeks or longer, as a percent of the civilian labor force.	5.1	365 (3%)
U-2 Job losers and persons who completed temporary jobs, as a percent of the civilian labor force.	6.2	782 (7%)
U-3 Total unemployed, as a percent of the civilian labor force (official unemployment rate).	9.4	7161 (62%)
U-4 Total unemployed plus discouraged workers, as a percent of the civilian labor force plus discouraged workers.	9.8	552 (5%)
U-5 Total unemployed, plus discouraged workers, plus all other marginally attached workers, as a percent of the civilian labor force plus all marginally attached workers.	10.7	470 (4%)
U-6 Total unemployed, plus all marginally attached workers, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all marginally attached workers.	16.3	102 (1%)
Change in payroll employment as calculated from the establishment survey	-247,000	2071 (18%)

Fig. 1. July 2009 Department of Labor Statistics Measures of Unemployment from the household survey. Mentions are from sources covered by Google News, which includes over 4500 English language news sources. The results above are limited to U.S. sources. See Jarboe (2007).

media with considerable room to choose the picture of the unemployment situation that they like best.

Examples such as these can be repeated for inflation, GDP, and just about any other economic statistic we could choose. The point is simply that policymakers, the media, voters, and researchers have a *choice* about which measures of the economy to use – and, more importantly, that various perfectly legitimate sets of measures can produce a substantively different view of what is happening in the economy, with no obvious way to adjudicate between the views.[11] Thus, regardless of whether one thinks there is some fixed real economy, the *measured economy* can only reasonably be characterized as a distribution over the possible states of the economy.[12]

3.2.2. They are sample statistics not population statistics!

Though it is a somewhat obvious point (at least for social scientists) and so we do not dwell on it here, it is worth reminding ourselves that besides the fact that there are many different (and legitimate) sets of measures characterizing the state of the economy at any time, the measures themselves are all *estimates* – and so these estimates are properly thought of as drawn from a probability distribution over possible values. In many cases these estimates are derived from surveys (e.g., this includes most measures of inflation and many of the official unemployment statistics in the United States and Europe) and so come with explicit measures of uncertainly (though these are often buried rather deeply in the reports). In other cases, data is collected in other ways – but still rely on a noisy process of reporting that, we can be sure, would not produce the same number in hypothetical repeated measures. Thus, again, we have to conclude that the measured economy (even if we focus narrowly on a single aggregate statistic) is properly viewed as a probability distribution over possible states, not a single state.

3.2.3. The measures are wrong (or at least unstable)

An underappreciated fact about aggregate economic statistics is that they are almost always revised after their initial release. Further, these revisions are substantial, occur multiple times, and can continue for years or even decades after the initial publication of the statistic. Studies of economic voting have almost universally ignored this important point.[13] Economists, however, have become increasingly sensitive to the issue of revision, and many statistical agencies now track and publish "vintage" economic series that retain the originally reported results. Using these vintage series, Croushore and Stark have, in a series of papers (1999, 2000, 2003), examined exactly how consequential these revisions in the

[11] One is tempted to wonder if the much discussed "contamination" of economic perceptions with partisanship might not be, in part, a function of partisan press making different selections from, for example, the menu of unemployment rates available to report. Thus, if a Republican in the United States thinks unemployment is closer to 13% while a Democrat thinks it is closer to 8%, can we say that either is "wrong" when each opinion may simply reflect legitimate interpretations of the unemployment picture?

[12] To be more precise, we think of each actual measure as a "draw" from some underlying distribution of possible values of the measure. The "measured economy" is this distribution.

[13] We are aware of only one – Duch and Stevenson (2008) – that relied on contemporaneously reported economic information, though they use this only to explore economic context and not to estimate economic voting itself – for which they use subjective perceptions.

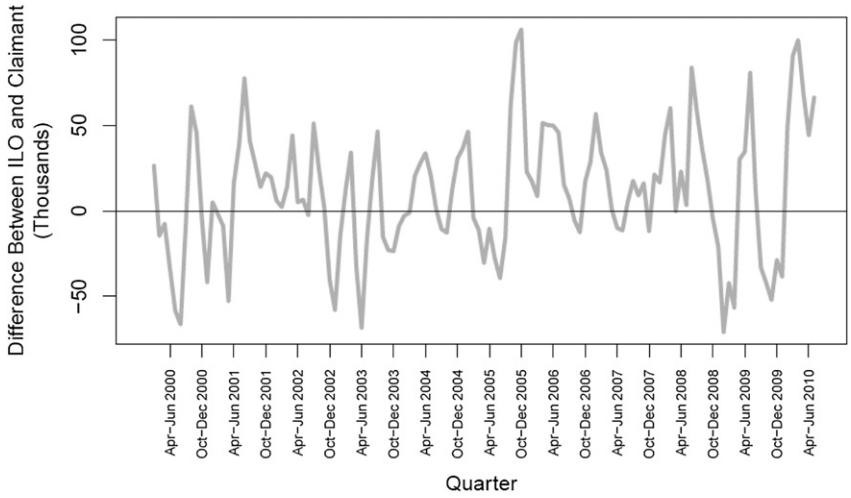


Fig. 2. Differences in ILO survey based vs. unemployment claims figures for British Unemployment. Source: Office for National Statistics, UK. http://www.statistics.gov.uk/statbase/tsdtables1.asp?vlnk=lms.

United States are. Figs. 3 and 4, adapted from their 2000 paper but updated with new data, provide the answer. Fig. 3 gives an example of all the revisions made over a 32 year period to the official estimate of U.S. GDP growth for the first quarter of 1977. The original number was revised nine times over this period with the resulting estimates ranging almost five points!

Of course, this is only one example. Thus, Fig. 4 provides a more general picture of the extent of revision to U.S. GDP figures by showing the difference between the GDP growth figure published in a given year and the figure for that same year as it appears in the 1999. Clearly the 1977 case reported above is not an isolated case. Over this period, the differences between the originally reported figure and the figure as it had been revised by 1999 were as much as 4 points and commonly 2 points (which is a huge range when we are considering quarterly GDP growth). Further, note that as one moves from left to right in the graph one has had less time between the original report and 1999, so fewer chances for revision. Thus, the generally increasing size of revisions (from left to right) suggest that as time goes by the numbers get further from the original figure rather than fluctuating up and down around it. Finally, notice that the mean of the revisions is not zero – there is a systematic tendency (at least for this statistic) to revise upward – that is, the revised figures for output are generally better than they were at the time they were reported.

Is any of this important to economic voting? Certainly it matters in the real world of elections. Consider, for example, the relatively well known revisions of U.S. economic statistics that occurred following the first election of Bill Clinton to the U.S. Presidency. George Bush, Sr. complained bitterly at the time that the economy was better than was being reported (or that was indicated by economic statistics) and, it turns out, he was right. By all accounts, the economy was a very important factor the decision of Americans in that election and the prevailing view that the economy was poor helped to defeat the incumbent president. After the election, however,

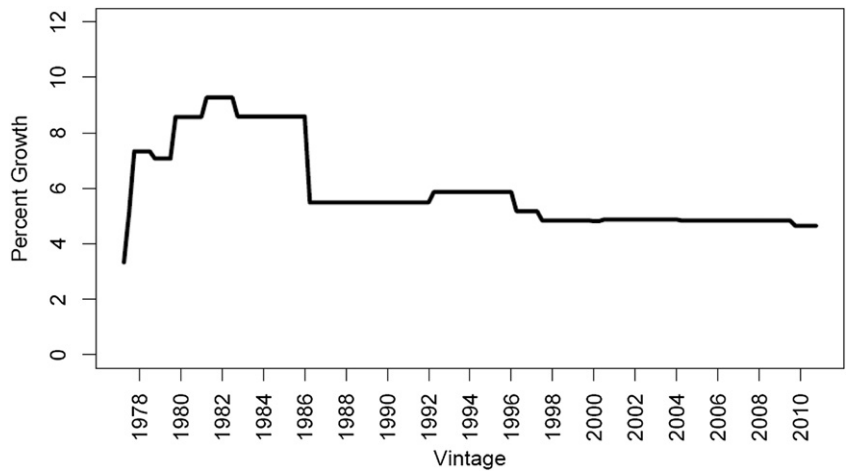


Fig. 3. Real output growth in the United States 1977Q1 as viewed from the perspective of 128 different vintages. Source: Real-Time Data Set for Macroeconomists, Federal Reserve Bank of Philadelphia. http://www.phil.frb.org/research-and-data/real-time-center/real-time-data/.

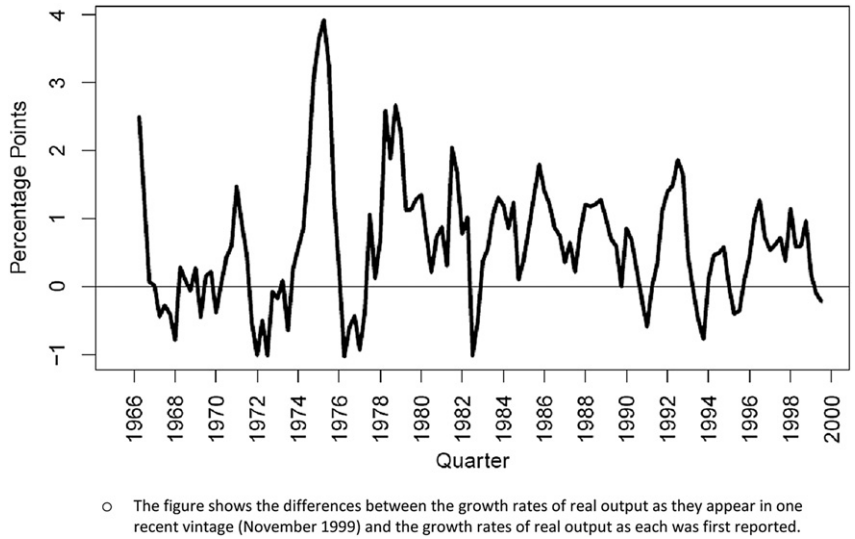


Fig. 4. Revisions of real output growth in the United States: difference between originally reported data and the figure revised as of November 1999. The figure shows the differences between the growth rates of real output as they appear in one recent vintage (November 1999) and the growth rates of real output as each was first reported. Source: Real-Time Data Set for Macroeconomists, Federal Reserve Bank of Philadelphia. http://www.phil.frb.org/research-and-data/real-time-center/real-time-data/.

the economy turns out to have been substantially better than measures at the time suggested. In terms of research, it also matters. If one is trying to measure the observed economy using aggregate economic statistics (despite the various objections to this raised throughout this paper), then the theory would seem to call for use of the original series rather than the revised series. After all, these figures were at least potentially observable at the time voters formed their perceptions, while the revised figures clearly were not (and so cannot be good measures of the observable economy). As we indicated earlier, however, no estimates of economic (of which we are aware) have used such information.

Taking the various points in this section together, there can be no doubt that the measured economy provides only a noisy, stochastic picture of the economy. It is simply not tenable to regard a point estimate of a given economic statistic as the "truth" – even about the narrow concept it is intended to measure – and to proceed to speculate about the meaning of individual perceptions from that starting point. There are many truths about each economic aggregate and it is hard to decide that one is legitimate and others not. At best, we should think of the measured economy as providing a menu of descriptions of economic outcomes from which media outlets are able to pick and choose.

3.3. The mediated economy

Even if one rejects the idea that there are many different legitimate measured economies, theories of economic voting that ultimately invoke an individual's ability to observe economic outcomes cannot avoid the fact that these individuals must obtain information about the economy in some way. There are essentially two sources of economic information in modern economies: personal experience and the media. Mutz (1998), however, has argued (and shown) that as economies modernize, mediated information comes to completely dominate personal experience in the economic perceptions of citizens.[14] Thus, our task in this section is to understand what the media actually reports about the economy and so what kinds of messages about the economy are actually available to voters.

3.3.1. Many subjects

We saw above that there are many different economic statistics one can use to try to measure the economy, but this would hardly matter to individual perceptions if the media concentrated on one or a few of these to the exclusion of all others. Certainly, if one were to use the economic voting literature as a guide, one would think that the only relevant aspects of the economy were unemployment and inflation (and perhaps growth). Further, we would not bet against the hypothesis that most political scientists think that inflation and unemployment news is by far the most reported economic news. Surprisingly, however, a systematic analysis of economic reporting shows that this is not the case. Fig. 5 gives a histogram of the distribution of economic topics that were discussed in a sample of almost 2000 headlines and articles about economic subjects reported on the front pages of 12 newspapers from 6 countries between 1980 and 2000.[15] Clearly, there is broad variation in the kinds of economic subjects discussed. The

[14] Ultimately, information is mediated even if it is passed along in conversations with individuals.

[15] These data were collected by Raymond Duch and Randy Stevenson. The sample of front pages was drawn from the two or three leading papers in Canada, Belgium, France, Norway, Spain and the U.S. The sampled dates were the day of and day (accounting for weekends and holidays) after the release of official aggregate economic statistics (inflation, unemployment, GDP) in each month of the sample period. In our experience editors hold economic stories about a wide variety of subjects and use the occasion of the release of economic statistics to print them.

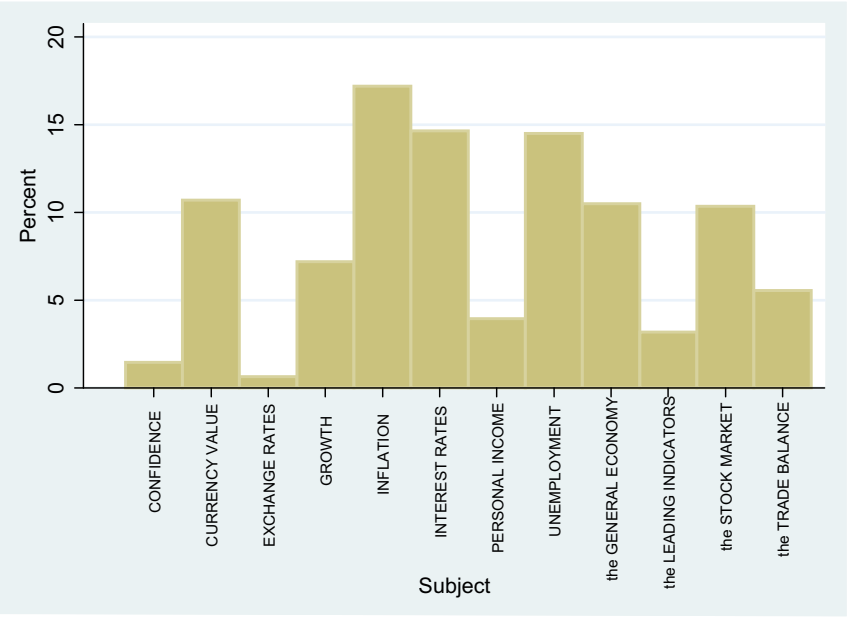


Fig. 5. Distribution of economic subjects mentioned in newspaper headlines and front pages.

figure also reflects the importance of discussions of the "general economy" in media accounts. These kinds of stories do not focus on any one indicator but characterize the economy in general.

3.3.2. A menu of measures to report

Above we saw that there are often many different measures of a concept like unemployment that are made available in official statistics. Thus, news agencies and editors have a menu of different numbers they can choose to report. Further, as Fig. 1 made plain for the example of U.S. unemployment, the media clearly does pick and choose what to report, even in the relatively straightforward case of unemployment figures. We suspect, but do not yet have more systematic evidence, that there is a similar "menu of choice" for other economic statistics and that these also get reported more widely than perhaps most political scientists appreciate.

3.3.3. Framing the economic news

Even in the seemingly clear case of a story reporting the announcement of particular economic statistic, there can be considerable variation in how that story is framed. One illustration of this is the reporting surrounding the release of the data reported in Fig. 1 (i.e., the U.S. Department of Labor's July unemployment report). The official unemployment rate (U-3) had fallen from 9.5 to 9.4 but this was interpreted very differently by different news sources. Fig. 6 provides some representative headlines from major U.S. news organizations that illustrate the wide range of frames that were used to report this ostensibly "objective" piece of economic news.

A somewhat more systemic survey of framing comes from the data on economic news stories and headlines described above. One of the things we asked coders to do was to make a subjective judgment (on a five point scale) about the meaning of the economic information provided in the article. Likewise, we asked them to describe how the story was framed by the reporter. Though this information is not ideal for judging the extent to which framing varies across news sources,[16] it does at least reveal that coders were, after training, able to identify a wide range of frames used by reporters and that often these frames went counter to the coder's subjective judgment of the content of the information (though, as we would expect, in the majority of the cases the frame is either neutral or matches the direction of the coders subjective assessment) (Fig. 7).

3.3.4. Much reporting of the economy is qualitative

Many economic stories are not principally concerned with reporting aggregate economic statistics, but rather provide a more qualitative assessment of an economic topic. For example, a story about unemployment might highlight the closing of a plant and make qualitative statements like unemployment is "worsening" or the "economic outlook is bleak." We can use our data on reporting of economic news stories to examine this question more systematically. Fig. 8 gives a histogram of the proportion of news stories in our sample (by topic) that mentioned a specific value of an economic statistic and the proportion of those that did not. While the use of quantitative information varies by topic in the way we would expect, for the majority of topics the reporting of numbers is less common than not. The numbers for unemployment, inflation, and growth are particularly important because

[16] That would require that we had stories from the different newspapers about the same economic events. Our data, however, does not allow us to identify the necessary events precisely enough to make this comparison.

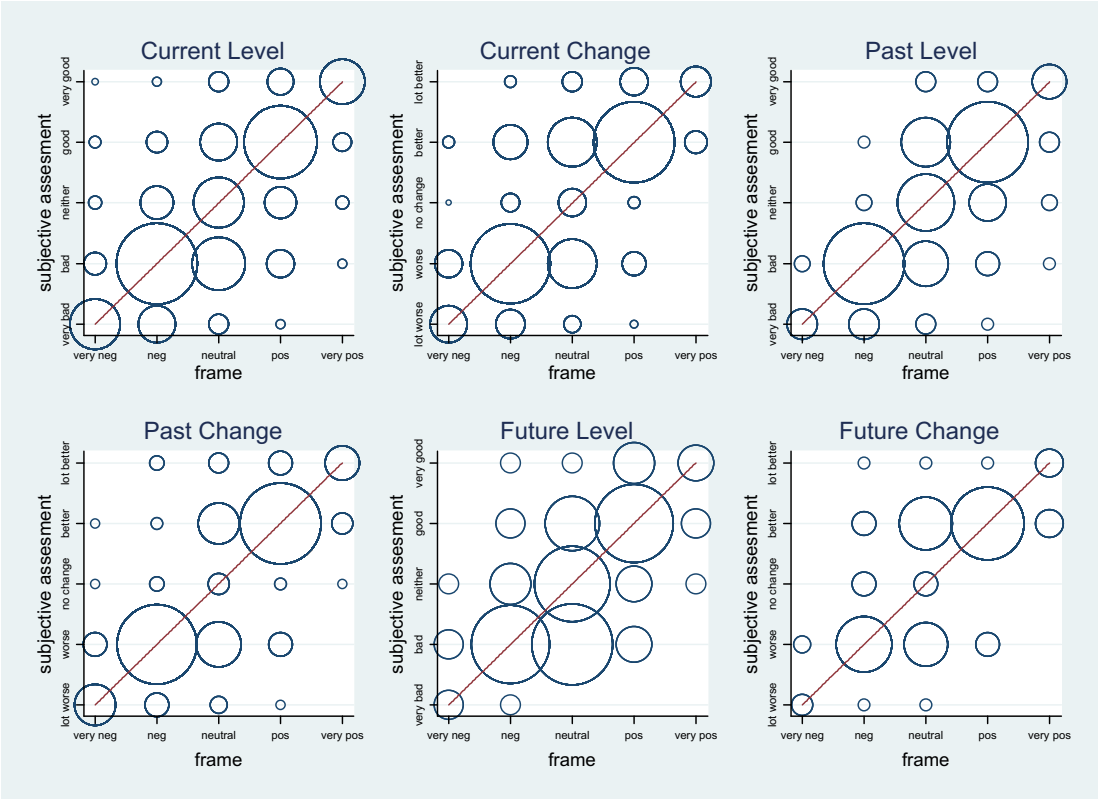
Positive Spin
"Turn in US jobs data boosts recovery hopes" - AFP
"Surprisingly strong jobs data signal turning point" - AP
"In good sign, job losses slow as unemployment dips" - AP
"White House buoyed as rate of unemployment declines" - Financial Times
"Jobs Report an Upside Surprise" - Business Week

The facts and only the facts…
"U.S. unemployment rate declines for first time in a year" - Kansas City Business Journal
"U.S. Cuts Fewer Jobs than Forecast" – REUTERS
"Unemployment rate eases to 9.4 percent" – Christian Science Monitor

Mixed
"In Jobless Rate Dip, a Partial Picture" - Washington Post
"Pace of job losses slows; signals remain mixed" - Tribune Newspapers
"In New Jobless Stats, Good News Hides the Bad" – FOX News

Negative Spin
"White House still warns of 10 percent jobless rate" - Houston Chronicle
"Guess What? Unemployment's Really at 16.3 Percent" - FOX News

Fig. 6. Illustration of media spin in stories (published August 7–8, 2009) about the August 7, 2009 release of the Bureau of Labor Statistics "The Employment Situation".



The size of the circle indicates the proportion of the cases falling at that point in the 5x5 grid formed by the possible combinations of the fame and subjective assessment codings. Circles in the northwest and southeast quadrants indicate cases of "counter-framing". The title of each of the six graphs indicates the time orientation (current, past, or future) of the economic information being reported, as well as whether it referred to levels or change in a statistic.

Fig. 7. Variation in the economic message and the frame of economic messages. The size of the circle indicates the proportion of the cases falling at that point in the 5×5 grid formed by the possible combinations of the fame and subjective assessment codings. Circles in the northwest and southeast quadrants indicate cases of "counter-framing". The title of each of the six graphs indicates the time orientation (current, past, or future) of the economic information being reported, as well as whether it referred to levels or change in a statistic.

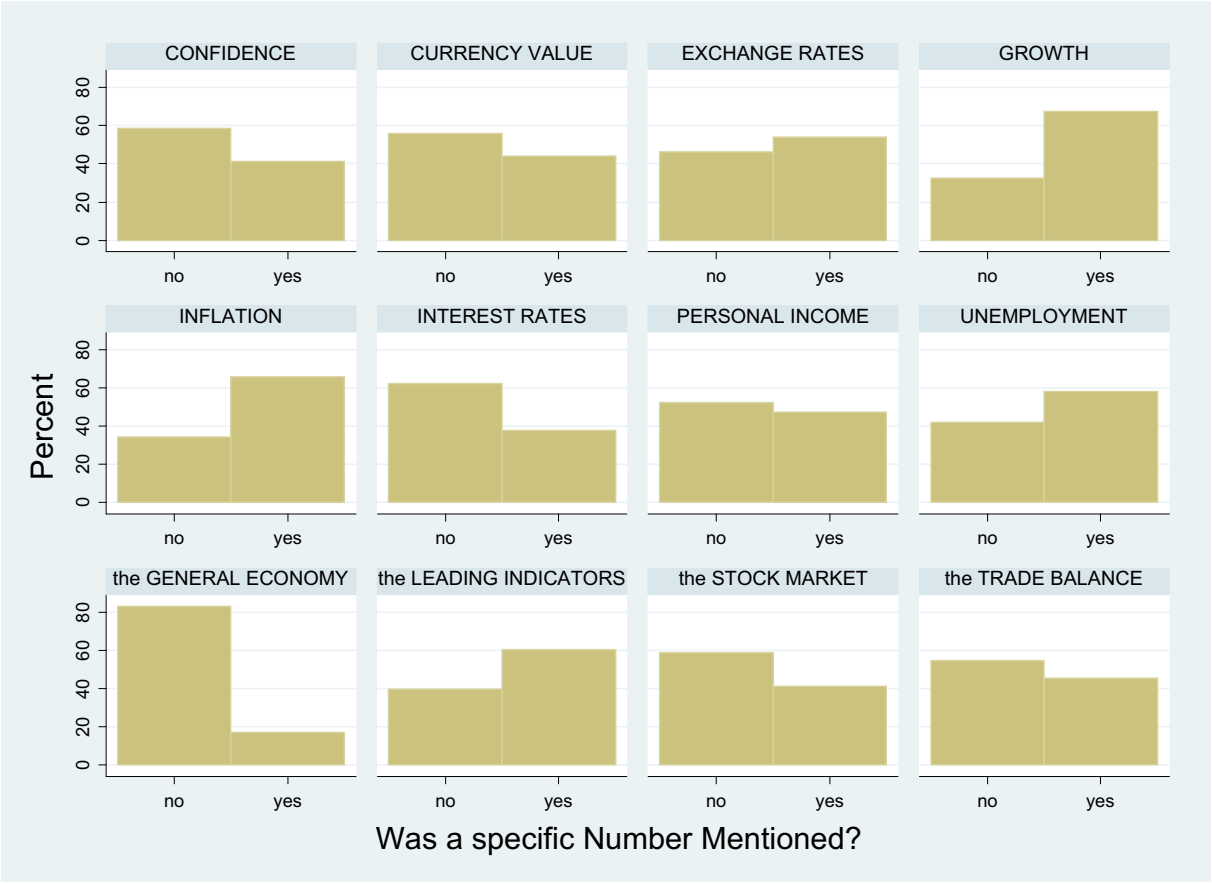


Fig. 8. How often is quantitative information provided in news stories about the economy?

our sample focused on stories released on or directly following the release dates of official statistics for these measures. Thus, there were "fresh" numbers to be reported in any story. Still, the split between providing a number and providing none is about 60/40 in each case.

3.3.5. Much of economic reporting refers to local and regional economies

While political economists tend to focus on the national economy, individual perceptions of the economy may be impacted by local conditions. Numerous studies in the economic voting literature have shown that changes in support respond not only to national economic conditions but also regional and/or local conditions. The evidence from our sample of economic news stories indicates that regional and local reporting is common, though is clearly dominated by stories with a national focus (Fig. 9).

3.4. A summary view of the observable economy

The point of Section 3 has been to convince students of economic voting that the "observable economy" should properly be thought of as a frequency distribution of messages about economic outcomes that are available to citizens. With this conception, we can now use modern theories of public opinion to help us to understand how this distribution of messages is translated into a more idiosyncratic "observed economy" for each voter; how this is summarized in an overall view of the economy (an economic perception); and how the distribution of these economic perceptions relate to the distribution of the observable economy.

4. The "Observed economy": from a distribution of messages to economic perceptions

If we understand that the observable economy should be thought of a frequency distribution describing all the available economic messages, we need to ask how an individual voter interacts with this distribution to form his or her economic perceptions. In this section, we propose that economic perceptions are generated in the same way as any other opinion that a citizen may form or change. Thus, economic perceptions should be explainable using the same theories of attitude formation and change that animate most of the literature on public opinion and that – not inconsequentially – start from the idea that the most important information available to citizens in forming their opinions about any political or economic topic is the distribution of relevant media messages. More specifically, most modern theories of public opinion reject the traditional idea of innate, fixed attitudes in favor of attitudes that are created and changed continuously over time and

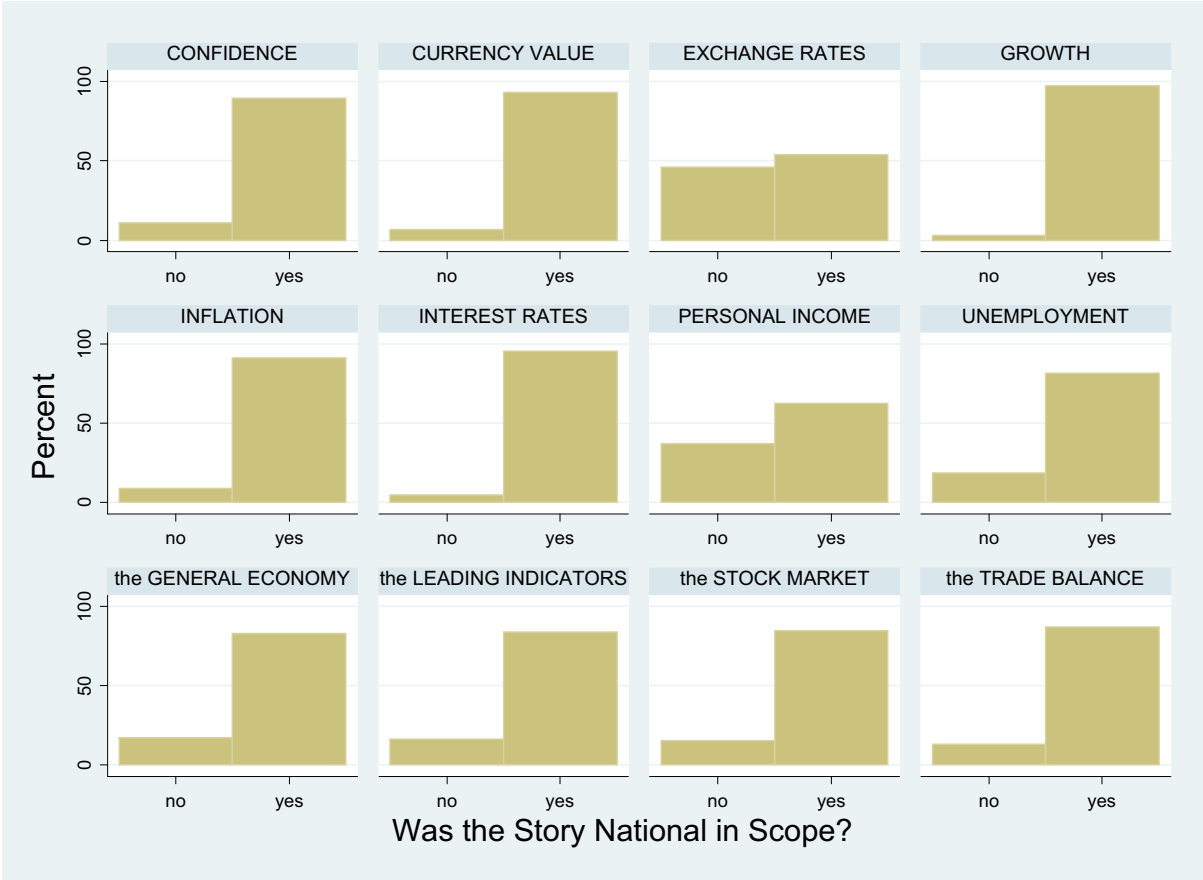


Fig. 9. Frequency of reporting about the national economy vs. other jurisdictions.

that are deeply impacted by the flow of media messages available to individuals over time. Below we review two leading theories that adopt this perspective and apply them to the case of economic perceptions.

4.1. Zaller's model of opinion formation and change

Zaller's (1992) "memory-based" models assume that a person's expressed opinions, which might include opinions about the current, past, or future state of the economy, are based on a sample of the media messages that the person has recently received and accepted. These messages are available in memory (though they deteriorate relatively rapidly – on the scale of days) and, when called upon to express an opinion on a topic (or to otherwise use an opinion in formulating a decision), individuals aggregate these messages in some way to formulate an opinion. In Zaller's original work, he suggested that individuals randomly sample out of the available messages they have both received and accepted; however, this assumption is not crucial to his theory. Individuals could average over messages or aggregate in some other way. The main point is simply that the expressed opinion is a function of a relatively small set of recently received media messages. Zaller (and Milton Lodge's alternative theory described below) give primacy to the media message as the most important – indeed, almost the exclusive – means by which individuals obtain information. This focus on the media message, in contrast to personal experience, is a common feature of modern theories of public opinion and, as mentioned above, Mutz (1998) has demonstrated convincingly that in modern electorates most political information is ultimately mediated.[17] Given this, an individual's probability of receiving any particular message is strongly related to his level of "habitual news reception," which is itself a function of education, income and other demographics (though not a perfect function of these, see Price and Zaller, 1993). Finally, Zaller suggests that sometimes voters reject messages that they receive. There are, however, two functionally equivalent versions of this piece of Zaller's model. In one, voters identify messages that are inconsistent with their political predispositions and then reject those messages, so they do not become part of the sample of messages from which their opinions are formed. Of course, this ability to identify inconsistent messages requires a certain level of political knowledge and Zaller shows that people with high levels of habitual news reception will tend to have the knowledge to

[17] "Ultimately" is important here. Many people hear political information form their friends, neighbors, and colleagues. However, most political information disseminated in this way comes originally from a mediated source.

reject the most messages. In addition, these individuals also tend to be the most partisan (which in Zaller's scheme means they have the strongest predispositions) and so will tend to reject the most messages.

In a second version of this part of Zaller's theory (see his 1996 article), individuals do not reject individual messages per se, but rather limit their exposure to messages that are inconsistent with their predispositions by limiting their media sources to those that they expect to provide consistent information. In this version, the informational requirements for limiting exposure to a broad selection of inconsistent messages should be weaker than in the other version – since selective exposure does not require the individual to recognize specific issues and positions and compare them to their predispositions, but only to identify "reliable" sources.

4.2. Lodge's model

Another model of public opinion formation and change that has animated work in recent years is due to Milton Lodge and his colleagues (e.g., 1995, 2005). Unlike Zaller's model, this theory does not rely on an individual's memory for media messages. Instead, Lodge's theory assumes that for concepts on which an individual expects to have to express and opinion (or for which he or she thinks she may need an opinion to make some decision), he or she establishes and maintains a "running tally" – the value of which is simply "read" to discover their opinion when it is needed. Upon hearing a new message with information relevant to the content of the tally, the individual strips the message of any valenced information and updates the tally in a positive or negative direction – then forgetting the substance of the message. Non-valenced information has little impact on opinion and, since the idea of valence is closely tied to emotional responses, the more affect-laden the message the bigger its impact on the tally. Importantly, of course, establishment and maintenance of these tallies is not conscious – but an unconscious process triggered by the individual's expectations about the judgments they will have to make (and opinions they will have to express) in the future.[18] The paradigmatic example of this kind of running tally is opinion about a political candidate during an election campaign. Voters expect to have to make a judgment at the end of the campaign and receive many different messages relevant to an assessment of a candidate. In Lodge's view, each of these messages has some impact on the eventual judgment – though the voter will not be able to recall the substance of each message. Instead, each message – at the time it is received – moves the voter toward or away from the candidate (depending on its valance) and then its content is discarded (so it cannot be recalled later). Clearly, as the tally trends farther in one direction, it takes much more information in the opposite direction to move it back to neutral, so this theory also captures a notion of "predispositions," not unlike those in Zaller's theory. Further, Lodge is silent on the issue of selection of media outlets, but there is nothing in his theory that rules out the idea that some voters may select their sources of information so that they seldom receive some kinds of messages.

Applied to opinion about the economy, Lodge's theory suggests that voters have online tallies that keep track of how the economy is doing in general and perhaps specific aspects of the economy like unemployment and inflation. Whether they maintain such tallies should be predictable from whether they should expect to have to use such information to make decisions or express opinions. If a person is likely to need such tallies to make decisions in their daily life, they will likely establish and maintain them. Thus, likely home or car buyers may have a tally for interest rates, those with an eye toward changing jobs (or college seniors) may well track unemployment, a homemaker may – even unconsciously – follow price levels and a person with retirement investments the stock market. More generally, it is probably safe to assume that most people regularly make decisions that require an assessment of the general state of the economy and so have reason to maintain a tally or set of tallies about the economy. Further, at certain times – like periods of economic distress or during the political campaign season – the economy tends to be an important topic of social conversation. Consequently, people can expect, during these times, to be called upon to offer an opinion about the economy in the normal course of social interaction – and so may (unconsciously) establish and maintain such tallies. Since, in this theory, individuals tend to forget the substance of messages they receive, while retaining only the directional and affective impact of the message, we would not expect most voters to be able to recall what they had heard about (for example, the exact rate of unemployment); however, we should expect them to have an opinion about how unemployment is going that reflects the influence of this information.

While there is obviously much that is different between Lodge's and Zaller's models, the implications of both models for the interpretation of correlations between economic perceptions and political support are the same. Specifically, given one accepts that the mediated economy presents a distribution of different messages to the voter at any given time, one can think of the stream of economic messages that impact a voter's online tally about the state of the economy as a sample out of the available messages. Thus, any two voters will almost certainly have a different opinion about the economy at any given time. Both such opinions are legitimate and cannot be said to be "wrong" without some analysis of the connections between the distribution of media messages, the distribution of the measured economy, and the distribution of the real economy.

5. The interpretation of empirical correlations between different measures of the "observed economy" and political support

In this section, we summarize what we have learned so far in order to address how one should interpret two kinds of correlations often reported in the economic voting literature. The first are correlations between measures of individual level economic perceptions and political support and the second are correlations between aggregate economic measures and aggregate levels of political support.

[18] The elimination of such tallies happens in the same way – a tally that is not used, or expected to be used, will (again unconsciously) disappear.

5.1. Correlations between measures of economic perceptions and support

Case 1: random sampling from the distribution of media messages.

In either Zaller's or Lodge's model of attitude formation, an individual's opinion about the current or past state of the economy is a function of the mediated economic messages he or she has received and accepted. If we combine this insight with the demonstrated fact that the media message about both the general state of the economy and specific aspects of it, like the level of unemployment, are properly thought of as a frequency distribution over the range of possible messages (i.e., the "mediated economy", or even the more narrow "mediated unemployment rate", is not a point but a distribution), the implications of this for the substantive meaning of subjective economic perceptions become clear. In the simplest case, in which we ignore (for the moment) the "rejection" part of Zaller's model (which is also implicit in Lodge's model), each individual receives a random sample of economic messages from the distribution of such messages and so differences in opinion over individuals *will reflect the natural variation contained in the distribution of media messages*. Fig. 10 illustrates this for the simplification in which we have collapsed the distribution of economic messages to a single dimension. Persons A and B have both sampled five messages randomly (A's are identified and the rest are B's). Simply averaging the messages each received, we see they come to different conclusions about the state of the economy, with B significantly more optimistic than A.

This simple example makes it clear that if we invoke modern theories of public opinion formation and change and combine this with the understanding that the observable economy is a frequency distribution of messages, it simply does not follow that variation in observed opinion about the economy means some individuals must hold "wrong" opinions. Instead, all of these different opinions can be "right" in the same way that different estimates of an unknown parameter that are based on different random samples from the same population are all "right". Thus when we base estimates of economic voting on correlations between these opinions and support, our estimates can be meaningful expressions of the connection between the mediated economy and support. Whether this connection then maps into meaningful connections between the measured economy and support depends, of course, on how well the distribution of the mediated economy matches the distribution of the measured economy. If these distributions are all approximately the same, we can take the voters' samples out of the mediated economy as equivalent to samples out of the distribution of the measured economy and thus interpret correlations based on that variation as indicative of a relationship between variation in the measured economy and variation in the support.

Case 2: Non-random sampling from the distribution of media messages.

If the messages are non-randomly sampled from the distribution of media messages, what does it mean for estimates of economic voting that depend on opinions formed from these samples? Suppose, for example, that voter B's sample of messages was not a random selection but resulted from his rejection of messages that portrayed the economy too negatively. If this pattern of rejection was due to him being an incumbent partisan, then we have a standard non-random selection problem (in messages) that results in his aggregated perceptions of the economy being non-randomly assigned (i.e., they are caused by some of the same measured (e.g., partisanship) and unmeasured factors that drive support – see Achen, 1986).

As we pointed out in the introduction, this is exactly the endogeneity problem that forms the second pillar of van der Brug, van der Eijk, and Franklin's (2007) critique of individual level models of economic voting. And, again, this critique has been addressed in an active literature that, in our view, has established that a causal impact of economic perceptions on support remains even after one has handled the endogeneity issue through either study design or through statistical fixes. These remedies have included two-step methods that "purge" perceptions of their contaminants (e.g., Duch et al., 2000; Duch and Palmer, 2002; Duch and Stevenson, 2008), multiple equation models of perception formation and support that use various kinds of instruments for perceptions (e.g., Nadeau et al., 2012; Hansford and Gomez, 2013), research designs mapping changes in perceptions and support over time in panel data (e.g., Lewis-Beck et al., 2008), and designs which focus only on samples of "independent" voters (Stevenson, 1997). Indeed, despite a vocal minority that questions these efforts (e.g., Evans and Pickup, 2010), our reading of developments in this literature is that as better and better evidence has been brought to bear (especially large panel data sets) it has become increasingly clear that exogenous changes in economic perceptions at the individual level do cause changes in political support.[19] Thus, the question of how to interpret that causal relationship (which has been the subject of this paper) becomes even more pressing. But, given a design that can establish a causal connection between perceptions and support, the discussion in the previous section about the meaning of variation in perceptions applies directly. We can interpret differences in perceptions across individuals as meaningful differences in the observed economy that different Individuals see.[20]

A final comment on the issue of endogeneity is appropriate, given the rancor that this issue has caused in the literature. It is reasonable, in our view, to ask if students of economic voting should really even care about establishing

[19] What does this conclusion mean for our motivating example (in which voter B accepted only optimistic messages)? It means that conditional on B's partisanship (where the conditioning is done in a properly specified model that accounts for endogeneity though design, an instrument, or in some other way) if B's sample of messages happened to have been less optimistic than the one he actually received and accepted (so we are implicitly assuming that the process of receiving and accepting messages has some stochastic component) he would have been less supportive of the incumbent. The point is, that conditional on making his perceptions exogenous through design or modeling, we still have to ask what a positive correlation between them means.

[20] Keeping in mind that in establishing the causal connection, the model very likely had to condition on variables like partisanship, so that it may be more accurate to say that differences in perceptions among individuals with the same partisanship (and whatever other conditioning variables) are meaningful differences in the observed economy.

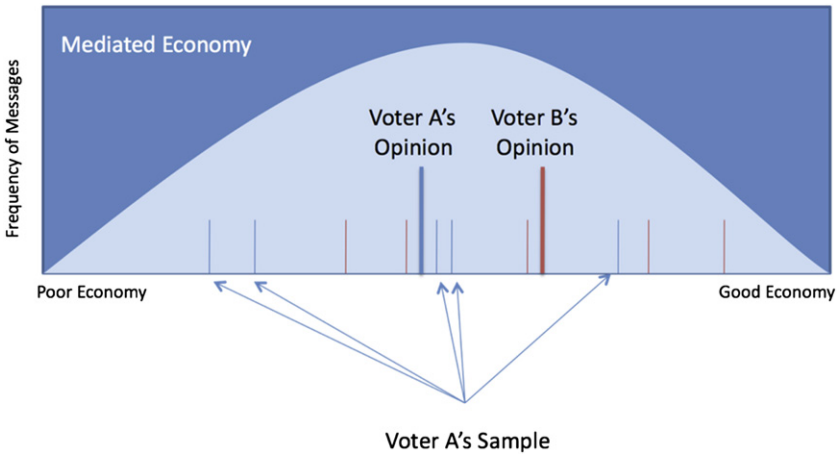


Fig. 10. Illustration of opinion formation via sampling from the distributions of mediated messages about the economy.

the causal impact of economic perceptions on support independent of variables like partisanship. In real world elections, the two variables move together and our theories (at least the ones about perception formation reviewed here) say they should. Given a partisan media (in the sense that some will systematically select messages that favor the incumbent – including economic messages) and individuals who selectively pay attention to media on the basis of their partisanship, different voters will "see" a different political and economic world if they selectively attend to different partisan messages. This selective attention will drive their opinions about all aspects of the political world including issue position, economic perceptions, and support for candidates. The idea of picking out one of the elements of this system and trying to purge it of the context in which it was formed is, perhaps, and odd thing to do. Instead, one may want to accept that economic voting is one path by which partisan debates are expressed in the electorate.

5.2. Correlations between measures of aggregate economic outcomes and aggregate levels of political support

We can also ask what the perspective in this paper says about the interpretation of correlations between aggregate economic statistics and electoral support.[21] The clearest message about such measures (which are constant across individuals but vary across different electoral contexts) is that these aggregate statistics are only good measures of the observed economy in a given context if we assume that all individuals in the context observe the same economic outcomes. However, given the variability in both the measured and mediated economies that we illustrated above, this is unlikely to be true. Thus, while our theories of economic voting clearly require us to measure the economy that individuals actually observe, aggregate economic voting models can only provide such a measure under very strong assumptions about the homogeneity of individual experience. Further, even if one recasts the theory to require only that we measure the economy that the average voter observes, there is no guarantee that the average voter observes any particular aggregate economic statistic. Even if this voter bases her perceptions on an unbiased sample from the distribution of economic messages, we have shown that there is no guarantee that the average media message about even a single economic concept (e.g., unemployment) will equal the economic statistic for that measure used in an aggregate economic voting analysis. Not only will this measure have likely been revised repeatedly, but alternative measures of the same concept were likely available (and widely reported) and the researcher likely selected the specific measure used without really considering its connection to the concept it is supposed to proxy. Thus, scholars using aggregate statistics on unemployment or GDP or some other aspect of the economy as proxies for the concept of the "economy the average voter observes" must still rely on strong assumptions about the connections between their measures and voter perceptions of those measures.

We do not point this out to suggest that the use of aggregate data in studies of economic voting is not helpful, but rather to re-establish an appropriate balance in the consideration of individual perceptions vs. aggregate economic statistics. There are challenges to using both kinds of measures that need to be appreciated and blanket statements like we quoted in the introduction (i.e., "an adequate research design… avoids using subjective

[21] These kinds of studies come in two flavors that are superficially different but fundamentally the same. The first type are studies that correlate measures of the aggregate economy over time (and/or across contexts) with aggregated electoral or popularity data. The second type correlates measures of the aggregate economy over time (and/or across contexts) with individual level data on political support. It should be obvious that (despite whatever multilevel modeling one may do) stacking 20 samples of 1000 voters from 20 different years next to 20 employment rates (one for each of those years) is still essentially a correlation between 20 observations – one has simply obscured the fact that the individual data is aggregated to produce the correlation (though the precise form of this aggregation will depend on the kind of model employed). For example, the evidence about economic voting in van der Brug et al.'s (2007) approximately 50 elections comes from those aggregate observations (with their models implicitly aggregating voters) not from independent information on the thousands of individuals they stacked together in estimating their models.

indicators of economic conditions") are as unwarranted as is advice to avoid aggregate measures. Instead, a more productive line of inquiry is to ask when estimates of economic voting from aggregate data (which rely only on cross-contextual variation) will give us answers that are similar to those produced with better measures of the observed economy (i.e., appropriately exogenous measures of economic perceptions)? The understanding of how economic perceptions are formed that we have advanced here helps us answer this question. Specifically, when individual economic perceptions are closely tied to aggregate economic statistics (across all contexts), the whole distribution of economic perceptions (including its average) will move in tandem with economic statistics and so we would expect the two kinds of correlations to give similar substantive results (e.g., the same pattern of variation in the strength of economic voting across contexts). And, of course, this is what the huge literature on economic expectations shows: While the relationship is not perfect, average perceptions of economic aggregates, are closely connected to actual economic aggregates (e.g., see Duch and Stevenson, 2010 for a review of the connection between inflation and perceptions of inflation in a large sample of Western European countries). Indeed, this kind of connection is likely responsible for the broadly similar maps of economic voting obtained in Duch and Stevenson (2008), which used perceptions data to study economic voting across electoral contexts, and van der Brug et al. (2007), which used economic aggregates.

6. Conclusion

In this essay, we address a long-standing critique of individual level models of economic voting that correlate survey measures of economic perceptions and support for parties or candidates. We show that this critique is based on a misunderstanding of the conceptual requirements of most theories of economic voting, which depend on the concept of the "observed economy" rather than any notion of a real level of economic activity. Having changed one's focus to the correct theoretical concept, we argue that the "observed economy" for any individual is best thought of as some aggregation of an idiosyncratic sample of economic messages from the distribution of all such economic messages that are available in some interval of time in some jurisdiction (we call this the "the observable" economy). Consequently, correlations between economic perceptions formed from this sample and measures of individual level support for candidates or parties are fully interpretable substantively. They are not simply noise or error around some "true economy," but reflect the frequency with which different economic messages are available to voters. Whether this frequency distribution in turn reflects the distribution of economic statistics (i.e., the "measured" economy) or even some unobservable "true economy" should be more thoroughly investigated by students of both economic voting and the media. However, if there is a close connection between the two distributions, we should expect a correspondingly close connection between the results of studies of economic voting that rely on perceptions and similar studies that rely on aggregate economic statistics.

References

Achen, C., 1986. The Statistical Analysis of Quasi-experiments. University of California Press.

Croushore, D., Stark, T., 1999. Does Data Vintage Matter for Forecasting? Working Paper No. 99-15 Federal Reserve Bank of Philadelphia.

Croushore, D., Stark, T., 2003. A real time data set for macroeconomists: does the data vintage matter? Review of Economics and Statistics 85 (3), 605–617.

Croushore, D., Stark, T., 2000. A funny thing happened on the way to the data bank: a real-time data set for macroeconomists. Business Review. Federal Reserve Bank of Philadelphia, issue September/October.

Duch, R., Palmer, H., 2002. Heterogeneous Perceptions of Economic Conditions in Cross-national Perspective. In: Dorussen, H., Taylor, M. (Eds.), Economic Voting. Routledge.

Duch, R., Palmer, H., Anderson, C., 2000. Heterogeneity in perceptions of national economic conditions. American Journal of Political Science 44, 635–649.

Duch, R., Stevenson, R.T., 2008. The Economic Vote: How Political and Economic Institutions Condition Election Results. Cambridge University Press, Cambridge.

Duch, R., Stevenson, R.T., 2010. Context and economic expectations: when do voters get it right? British Journal of Political Science.

Evans, G., Anderson, R., 2006. The political conditioning of economic perceptions. Journal of Politics 68 (February), 194–207.

Evans, G., Pickup, M., 2010. Reversing the causal arrow: the political conditioning of economic perceptions in the 2000–2004 U.S. Presidential Election Cycle. Journal of Politics 72 (October), 1236–1251.

Gross, D., January 2004. Odd jobs: why the unemployment rate is really higher than it looks. Slate Magazine.

Hansford, T., Gomez, B., 2013. Reevaluating the Sociotropic Economic Voting Hypothesis. Mimeograph. University of California, Merced.

Jarboe, G., 2007. Revealing the sources of Google news. Search Engine Land (Online Journal). http://searchengineland.com/revealing-the-sources-of-google-news-11353.

Lewis-Beck, M.S., Nadeau, R., Elias, A., 2008. Economics, party, and the vote: causality issues and panel data. American Journal of Political Science 52 (January), 84–95.

Lodge, M., Steenbergen, M., Brau, S., 1995. The responsive voter: campaign information and the dynamics of candidate evaluation. American Political Science Review 89, 309–326.

Lodge, M., Taber, C., 2005. The automaticity of affect for political candidates, parties, and issues: experimental tests of the hot cognition hypothesis. Political Psychology 26, 455–482.

Mutz, D., 1998. Impersonal Influence: How Perceptions of Mass Collectives Affect Political Attitudes. Cambridge University Press, Cambridge.

Nadeau, R., Lewis-Beck, M.S., Bélanger, É., 2012. Economics and elections revisited. Comparative Political Studies.

Price, V., Zaller, J., 1993. Who gets the news: measuring individual differences in likelihood of news reception. Public Opinion Quarterly 57, 133–164.

Stevenson, R.T., 1997. How Parties Compete: Electoral Performance and Government Participation in Parliamentary Democracies. Ph.D. dissertation, University of Rochester.

van der Brug, W., van der Eijk, C., Franklin, M., 2007. The Economy and the Vote: Economic Conditions and Elections in Fifteen Countries. Cambridge University Press, Cambridge.

Zaller, J., 1992. The Nature and Origins of Mass Opinion. Cambridge University Press, Cambridge.

Zaller, J., 1996. The myth of massive media impact revived: new support for a discredited idea. In: Mutz, D., Brody, R., Sniderman, P. (Eds.), Political Persuasion and Attitude Change. University of Michigan Press, Ann Arbor, pp. 17–79.