

# Do Voters Respond to the Economy or to News Reporting on the Economy? \*

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## Abstract

That the economy influences support for the government is a cornerstone of electoral research, but how this comes about is less understood. Until now, research has not been able to estimate how much of the economy's effect on the vote is direct and how much is driven by media coverage of the economy. We attempt to determine whether voters punish incumbent governments when the economy performs poorly or when the media report that the economy is performing poorly. Text analysis of economic news has been mostly restricted to a small set of English-speaking countries, which limits the number of observations of the economy available for analysis. Using automated analysis of 3 million news articles from 15 developed countries, we demonstrate that the effect of economic growth on vote choice is partially mediated by news coverage (that does not always accurately reflect economic growth), with about 30% of the effect of growth mediated through news coverage. In contrast, voters experience unemployment directly and rely on the media less. When economic reporting deviates from the economy prior to an election it can influence campaigns and voting, though not as much as is sometimes presumed, as we detail in two examples.

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# 1 Introduction

Unfair media coverage is a common complaint among politicians. After his party’s embarrassing defeat in the 2019 U.K. parliamentary elections, Labour leader Jeremy Corbyn said after reading coverage of himself in the press—“This Corbyn guy, God he’s evil. I wouldn’t want to live in the same street as him” (Oborne, 2020). Indeed recent scholarship has emphasized the media’s role in elections. DellaVigna and Kaplan (2007), Enikolopov, Petrova and Zhuravskaya (2011), and Martin and Yurukoglu (2017) examined the general tendency of slanted news to persuade voters in elections. Ladd and Lenz (2009) and Chiang and Knight (2011) studied the ability of the media to persuade voters through explicit endorsements.

While Corbyn’s complaint posits and these studies demonstrate that valenced reporting may persuade voters, an alternative pathway for media influence is through coverage that touches on objective events and indicators. Examples include a country’s loss in a military conflict, an increase in the crime rate, and a decrease in the unemployment rate. In each case, media coverage will be grounded in an objective truth (e.g., the unemployment rate really did decrease), but the coverage will generally go beyond the objective facts due to the desire of the media to influence or the constraints of the medium. The need to write complete newspaper articles or to build complete television segments provides a potential way in which the media may affect election outcomes—by coloring objective facts or indicators. The news media may alter voters’ perceptions of the event or indicator, which may ultimately alter the same voters’ views of the candidates for office.

With the economy among the most important factors in elections, media coverage of the economy has received widespread attention. Indeed, critiques of media coverage often suggest that the media color their economic coverage. Italian prime minister Silvio Berlusconi frequently complained of a media that exaggerated economic strife (Ruetters Staff, 2009). Former President George H.W. Bush similarly attributed his re-election loss to inaccurate media coverage of the economy, with scholars such as Lipset (1993) and Hetherington (1996) arguing that his perception was correct. Moreover, the media’s role in influencing perceptions on the economy has been well established. Sanders and Gavin (2004) and Boomgaarden et al. (2011) argue that economic perceptions are driven by media coverage, with the former arguing that the actual economy has little effect once media coverage is accounted for. De Boef and Kellstedt (2004) and Hollanders and Vliegenthart (2011) argue that the media influences consumer confidence and Goidel et al. (2010) argue that the media influence an individual’s perception of their own financial situation.

To what degree then can the media harm a candidate politically through inaccurate or misleading reporting of objective facts? This depends on how voters learn about those facts. If voters learn about the economy primarily through direct experience, inaccurate media coverage may not ultimately harm these politicians. Conversely, if media coverage is the main way voters learn about the economy, they may be persuaded by inaccurate or unfair media coverage. Missing from existing work is an estimate of the size of the media’s role, if any, in the economic vote. This lack of attention can be understood by considering the difficulty of collecting measures of media content—each of the studies we cited coded media coverage in a single country over a period of time ranging from one year to twenty years. Detecting whether it is the economy (directly) or the economy (indirectly, through the news media) which drive the economic vote likely requires observing a long time series in multiple countries.

To study the media’s role in the economic vote, we rely on a data set of 3 million newspaper articles related to the economy from 30 newspapers in 15 developed countries. From our sample, we generate a measure of the media’s tone in covering three aspects of the economy—growth, unemployment, and inflation. We then estimate models that include both measures of economic performance and measures of the media’s coverage of economic performance as explanatory variables, and apply mediation analysis to quantify the direct effect of the economy (which we argue later mostly represents voters’ direct experience with the economy) and the indirect effect (which quantifies the media’s role in forming the economic vote).

Our analysis with respect to the media’s role in the economic vote is relevant for a number of reasons—first, it speaks to the level of sophistication of voters. If voters rely on the media to form their perceptions, they may be less subject to psychological biases (Achen and Bartels, 2016; Healy and Lenz, 2014), but more subject to inaccurate or biased reporting (Ansolabehere, Lessem and James M. Snyder, 2006; Larcinese, Puglisi and Snyder, 2011; Puglisi, 2011; Lott and Hassett, 2014; Kayser and Peress, 2021). Second, to the extent that the economic vote is mediated by newspaper coverage, it must be sociotropic, and if the economic vote is not mediated by news coverage, it is more likely to reflect pocketbook concerns. Finally, the possibility that media coverage of the economy might deviate from actual economic performance raises the prospect that naive models of the economic vote could be mis-specified and that deviations of news coverage from actual economic performance prior to elections could affect the vote. The role of the media in the economic vote is a key mechanism of one of the most fundamental determinants of election outcomes and retrospective accountability, one that, to this point, has not been estimated.

Our results indicate that economic growth is partially mediated by news coverage—

approximately 30% of the total effect of growth in elections. In contrast, we find that the effect of unemployment is entirely direct—we find no evidence that unemployment sentiment has a mediating effect and the ratio of the direct effect to the total effect is close to 1 and precisely estimated. Inflation has an indeterminate effect on elections—we find some marginal evidence that inflation sentiment affects the vote, though the total effect of inflation is itself insignificant and the proportion of the total effect due to media coverage is very imprecisely estimated. Ultimately, our results suggest that the media exert a detectable, but limited, effect on the economic vote, large enough to change election outcomes in rare cases when deviations between reporting and economic performance are large and vote margins very small but unlikely to change outcomes in most elections. To illustrate this, we discuss two elections with large gaps between economic news and economic performance.

## 2 Economic Vote Mechanisms

What mechanism underlies the economic vote? First, voters may learn about the economy through direct experience. A voter may lose their job, receive a large raise, or see a local business close. Alternatively, voters may respond to the national economy rather than their direct experience. Economic statistics are one source of information about the national economy, but most voters will not consume economic statistics, uncontextualized by the media. Instead, to the extent that voters learn about economic statistics, most will do so through media coverage of the economy, which provides a second plausible mechanism behind the economic vote. Media coverage will not simply report raw economic statistics, but will “contextualize” these statistics. The media may contextualize the economy in various ways—they may pair raw economic numbers with adjectives or adverbs—“the economy grew a *measly* 2.8% this quarter”. The media may color the interpretation of facts by comparing the performance of the economy to expectations, comparing to other countries (Kayser and Peress, 2012; Hansen, Olsen and Bech, 2015; Park, 2019) or previous time periods (Aytac, 2018; Park, 2019)—as in “the unemployment rate fell to 12.3%”. The media may selectively report economic statistics choosing the particular time period or the particular aggregate.<sup>1</sup>

The mechanism underlying the economic vote influences how we theorize about the economic vote. Voters’ perceptions of the economy may be subject to various biases. Healy and Lenz (2014) argue that when voters are presented with multiple years of

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<sup>1</sup>Discussion with other individuals may provide a way that voters learn about the economy, but this can best be thought of as an intermediate pathway—most of the information transmitted through social networks can be characterized as the direct experiences of others or the information gleaned from the news media by others.

economic performance, they will evaluate the incumbent primarily based on the final year. Media coverage, however, may itself be subject to various biases. [Soroka \(2006\)](#) and [Soroka \(2012\)](#) establish that media coverage of the economy is subject to negativity bias in that economic aggregates that suggest poor government performance receive greater attention. Similarly, [Kayser and Peress \(2021\)](#) demonstrate that media coverage exhibits negativity bias in the tone of coverage, though they also argued that the tone of media coverage is overall relatively accurate and subject to little partisan bias. Voters may never receive the information contained in media coverage, or may not retain it—[Carpini and Keeter \(1997\)](#) and [Achen and Bartels \(2016\)](#) argue that voters are relatively uninformed, though other research suggested that voters may rely on cues and heuristics to overcome cognitive and informational limitations ([Lupia, 1994](#); [Lupia and McCubbins, 1998](#)). Some biases may operate on both pathways. [Wlezien, Franklin and Twiggs \(1997\)](#) and [Evans and Anderson \(2006\)](#) argue that vote intentions condition perceptions of the economy, though [Duch and Stevenson \(2008\)](#) and [Lewis-Beck, Martini and Kiewiet \(2013\)](#) hold otherwise. Voter intentions may condition how voters perceive their direct experience, but vote intentions may also condition the media that voters consume.

The direct experience vs. media coverage dichotomy maps closely but imperfectly to a dichotomy that has received more attention in the economic vote literature—pocketbook vs. sociotropic voting. According to pocketbook voting, voters punish incumbent governments based on their personal financial situation. According to sociotropic voting, voters punish incumbents based on their perceptions of the broader economy. Along this line, research has argued that national-level economic variation often matters more than variation in individual pocketbooks for vote choice ([Kinder and Kiewiet, 1979](#); [Kramer, 1983](#); [Singer and Carlin, 2013](#)). The information voters glean from media coverage informs them about the economy more broadly, so to the extent that the economic vote is mediated by news coverage, it is not pocketbook voting. The reverse correspondence does not hold however. Direct experience can comprise losing one jobs or getting a raise—which represent a voter’s personal financial situation—but it can also involve hearing about a friend losing a job or seeing a business close which may inform the voter’s sense of the broad economy.

## 3 The Data

### 3.1 Newspaper Articles

Motivated by studies of the economic vote, we sought to collect newspaper articles from various OECD countries. A chief limiting factor was the variety of languages spoken

across these countries. We identified three languages that are spoken in many of the OECD countries—English, French, and German. In addition, we included Italian, Portuguese, and Spanish language papers because our research assistant happened to speak these languages as well. Using these languages, we were able to include 15 countries in our sample—Australia, Austria, Canada, France, Germany, Ireland, Israel, Italy, Japan, Luxembourg, New Zealand, Portugal, Spain, the United Kingdom, and the United States. For Japan and Israel, we used English-language versions of newspapers. For each country, we collected two newspapers, each relatively to the right or left of the other. We focused on papers that were mainstream rather than ideologically extreme or tabloid and which had a long time series of articles available. The list of papers and coverage dates are given in Table 7 in the appendix.

Our data include 3 million articles from 30 newspapers retrieved from LexisNexis and ProQuest. From these articles, we constructed monthly measures of economic sentiment, growth sentiment, unemployment sentiment, and inflation sentiment, for each of the 30 newspapers. These measures are meant to reflect the tone that each newspaper uses to cover the economy in general, growth, the labor market, and inflation. We used dictionary-based coding to construct these measures, with initial dictionaries from WordStat (Péladeau, 1998) that we extended.

Consider a simplified example of the measure. A set of words is used to indicate positive sentiment and a set of words is used to indicate negative sentiment. Another set of words is used to indicate economic growth. Positive growth sentiment is calculated as the proportion of positive words near growth words, as a fraction of the proportion of positive and negative words near growth words. We used a slightly more sophisticated measure than this that took into account words that indicate increases (which were coded as positive) and decreases (which were coded as negative). We also accounted for negations, which would alter the meaning of nearby positive, negative, increasing, and decreasing words. We also accounted for words that indicated a recession, which we coded as negative growth sentiment. Similar rules were used to construct unemployment sentiment and inflation sentiment. Economic sentiment was coded based on the proximity of positive and negative sentiment to words indicating either growth, unemployment or inflation.

A small literature has arisen about the relative merits of dictionary and supervised learning methods with a consensus that both can be effective under given circumstances (Barberá et al., 2021; Dun, Soroka and Wlezien, Forthcoming). Our application, however, required a large sample of newspapers which itself required dealing with multiple languages. Dictionary-based methods were easier to extend to six languages, mostly due to difficulty of collecting a separate training set in each language. In previous work, we

validated our measures in a number of ways (Kayser and Peress, 2021) including comparisons to human-coded data in three of the six languages, finding that the amount of measurement error in our monthly time series was relatively small for most newspapers. In addition, we demonstrated that the sentiment measure correlated with measures of the actual economy in expected ways. We report the full time series for growth sentiment in Figure 1.

## 3.2 Economic Data

Our two sources of economic data were the Organization for Economic Cooperation and Development (OECD) and the International Monetary Fund (IMF). We used the highest frequency data that were available. If monthly data were available (as was sometimes the case for unemployment and inflation) we used monthly data. If only quarterly data were available, we converted the quarterly data to monthly data as follows. For growth, unemployment, and inflation we assumed a constant rate throughout the time period.

When quarterly data were not available, we imputed the quarterly data based on yearly data and we then imputed the monthly data based on the quarterly data. We used the highest level available preferentially, we used harmonized data (for unemployment and inflation) preferentially over unharmonized data, and we used the OECD data preferentially over the IMF data. We deleted a few clearly implausible values of the economic data that would greatly distort our results (i.e., a growth rate of a million percent one quarter followed by a growth rate of negative a million percent in the next quarter).

Once the data were converted to monthly values, we could then aggregate them to various other time periods. For example, consider an election held in March of 2003. In the election voters may respond to unemployment in the current month, the current quarter, the current year, etc. Quarterly unemployment would be computed as the average unemployment in the last 3 months. Yearly unemployment would be computed as the average unemployment in the last 12 months. However, suppose that only yearly unemployment was available. While it may seem redundant to impute the monthly data based on yearly data only to convert the monthly data back to yearly data, the yearly data for March would be based on both the 2012 and 2013 unemployment rates, with the 2012 rate receiving a weight of 9/12 and the 2013 data receiving a weight of 3/12, so that the converting we do allows us to interpolate appropriate economic aggregates for elections that did not coincide with the reporting of economic aggregates.

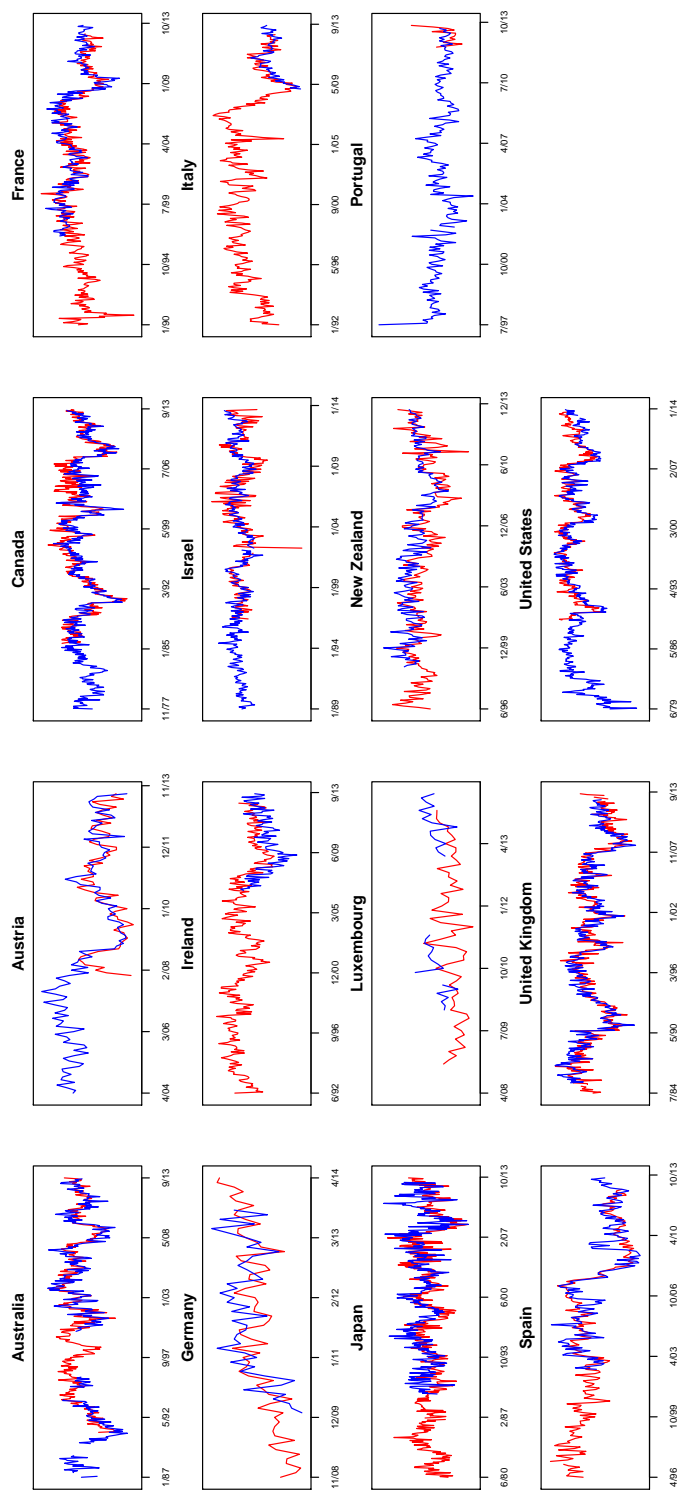


Figure 1: Comparing Left-wing and Right-wing Sentiment — The figure reports the proportion of positive reports on the economy in left-wing (red) and right-wing (blue) newspapers over time.



### 3.3 Election Results and Vote Intention

We assembled a dataset on democratic election results for the 15 OCED countries in our sample from a variety of sources. Our main sources were “The International Almanac of Electoral History” by Thomas T. Mackie and Richard Rose, “Elections in Europe: A Data Handbook”, by Dieter Nohlen and Phillip Staver, “Elections in the Americas: A Data Handbook: Volume 1: North America, Central America, and the Caribbean” by Dieter Nohlen, “Elections in Asia and the Pacific: A Data Handbook: Volume 1: Middle East, Central Asia, and South Asia”, by Dieter Nohlen, Florian Grotz, and Christof Hartmann, “Elections in Asia and the Pacific: A Data Handbook: Volume 2: South East Asia, East Asia, and the Pacific” by Dieter Nohlen, Florian Grotz, and Christof Hartmann, ParlGov (<http://www.parlgov.org/>), the Constituency-level Election Archive (<http://www.electiondataarchive.org/>), Adam Carr’s Election Archive (<http://psephos.adam-carr.net/>), and various countries’ Wikipedia websites. We used the election results dataset to create one of our main dependent variables—the vote share of the incumbent prime minister’s party.

Because of the limited number of elections that intersect with the coverage of our media time series, we also collected survey estimates of voter intent. We used survey data from the Canadian Opinion Research Archive (for Canada), Elections Ireland (Ireland), the Eurobarometer (Austria, France, Germany, Ireland, Italy, Luxembourg, Portugal, Spain, and the U.K.), Gallup (the U.S.), ICM Research (the U.K.), Newspoll (Australia), Roy Morgan (Australia and New Zealand), and polls compiled by Wikipedia (Canada, Germany, Israel, Italy, Luxembourg, Portugal, and Spain). It was not possible to collect reliable vote intention data from Japan.<sup>2</sup> In Figure 2, we compare actual incumbent vote share to the poll based estimate, in months where we observed both a poll and an election outcome. The results indicate a close correspondence. The r-squared is 0.89 and the standard error of regression is 3.47. The latter is close to what we would expect due to sampling error.

## 4 Mediation Analysis

Do voters vote based on the economy, or based on media reports of the economy? To the extent we observe a correlation between media reports of the economy and the vote share of the incumbent prime minister’s party, is this because voters are affected by the newspaper coverage, or because the newspaper coverage simply provides a proxy for the

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<sup>2</sup>In Japan, public opinion polls are extremely inaccurate because many respondents refuse to respond when they do not support the incumbent government. We do not know whether this is because of the wording of the question that most pollsters use or is a cultural aspect of the Japanese public.

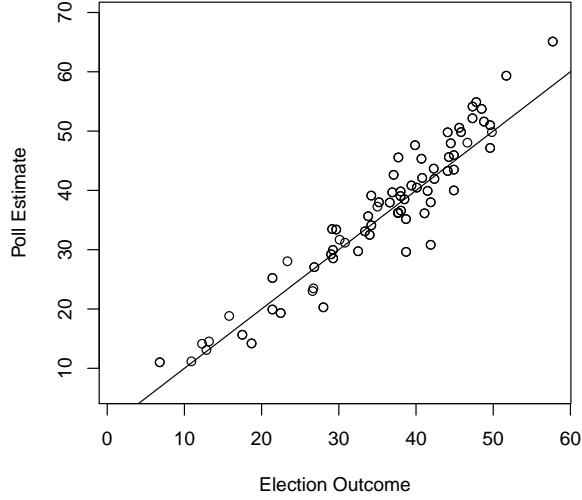


Figure 2: *Incumbent Vote Share vs. Incumbent Vote Intent* — The figure compares poll estimates to actual election outcomes to measure the accuracy of the vote intent measure.

actual state of the economy. To investigate this, we perform a mediation analysis (Baron and Kenny, 1986; Acharya, Blackwell and Sen, 2016).

For the mediation analysis, we estimated the following structural equations:

$$V_n = \beta_0 + \beta_1 G_n + \beta_2 U_n + \beta_3 I_n + \beta_4 GS_n + \beta_5 US_n + \beta_6 IS_n + \epsilon_n \quad (1)$$

$$GS_n = \gamma_0^G + \gamma_1^G G_n + \eta_n^G \quad (2)$$

$$US_n = \gamma_0^U + \gamma_1^U U_n + \eta_n^U \quad (3)$$

$$IS_n = \gamma_0^I + \gamma_1^I I_n + \eta_n^I \quad (4)$$

where  $V_n$  indicates incumbent vote share,  $G_n$  indicates growth,  $U_n$  indicates unemployment,  $I_n$  indicates inflation,  $GS_n$  indicates growth sentiment,  $US_n$  indicates unemployment sentiment, and  $IS_n$  indicates inflation sentiment. We can plug (2), (3), and (4) into (1) to obtain,

$$V_n = \beta_0 + (\beta_1 + \beta_4 \gamma_1^G) G_n + (\beta_2 + \beta_5 \gamma_1^U) U_n + (\beta_3 + \beta_6 \gamma_1^I) I_n + \epsilon_n + \beta_4 \eta_n^G + \beta_5 \eta_n^U + \beta_6 \eta_n^I \quad (5)$$

Here, we have that  $\beta_1 + \beta_4 \gamma_1^G$ ,  $\beta_2 + \beta_5 \gamma_1^U$ , and  $\beta_3 + \beta_6 \gamma_1^I$  represent the total effects of

<b>Dependent Variable:</b>	(1) Vote Share	(2) Vote Intent	(3) Vote Share	(4) Vote Intent	(5) Vote Intent
<b>Independent Variables:</b>					
Constant	42.255*** (1.723)	38.215*** (0.483)	60.842*** (10.484)	32.251*** (1.348)	27.259*** (3.423)
Growth (yearly)	0.647** (0.204)	1.065*** (0.079)	0.823 (0.517)	0.561*** (0.120)	0.552*** (0.117)
Unem. (yearly)	-0.868*** (0.196)	-0.116** (0.040)	-1.047*** (0.314)	-0.162** (0.054)	-0.195** (0.065)
Inf. (yearly)	-0.021 (0.136)	-0.077 (0.066)	0.078 (0.415)	0.080 (0.124)	-0.159 (0.123)
Growth Sentiment			-13.397 (10.743)	8.355*** (1.674)	7.539* (3.161)
Unem. Sentiment			-5.003 (8.106)	1.506 (2.056)	6.566 (6.515)
Inf. Sentiment			-20.271+ (12.173)	3.498* (1.715)	11.575** (4.351)
<b>Estimator</b>	OLS	OLS	OLS	OLS	IV
<b>Number of Months</b>	202	2445	95	1708	2452
<b>Number of Countries</b>	15	15	15	15	15
<b>R-Squared</b>	0.203	0.095	0.191	0.078	

Table 1: Elections Outcomes, the Economy, and Sentiment — Heteroskedasticity robust standard errors in parentheses. Column (5) corrects the results of column (4) for measurement error using instrumental variables. <sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Growth, Unemployment, and Inflation;  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  represent the direct effects;  $\beta_4\gamma_1^G$ ,  $\beta_5\gamma_1^U$ , and  $\beta_6\gamma_1^I$  represent the indirect effects; and  $\epsilon_n + \beta_4\eta_n^G + \beta_5\eta_n^U + \beta_6\eta_n^I$  is an error term.

We report results for the regressions described above in Table 1. In column (1), we consider vote share as the dependent variable. We see that growth and unemployment are statistically significant and have the expected signs. The sample here is restricted to the 15 OECD countries in our newspaper sample. When we further restrict this to elections for which we observe newspaper data, the sample would shrink even more. To overcome this problem, we collected survey data on vote intention which, as we show in Figure 2, is highly correlated with the vote and available at greater frequency, increasing our sample size. Column (2) presents the same specification, but with vote intention as the dependent variable. The results in column (2) are similar, but the standard errors shrink considerably.<sup>3</sup>

Column (3) employs vote share as the dependent variable and adds growth sentiment, unemployment sentiment, and inflation sentiment to the specification. In each case, the sentiment variables are calculated as the average of the sentiment in the left-wing and

<sup>3</sup>The effect of growth appears to increase somewhat and the effect of unemployment appears to decrease.

right wing paper in each country in each time period. The coefficient on growth is positive, but not statistically significant. Unemployment has a negative and statistically significant effect, but unemployment sentiment has a large standard error and a statistically insignificant effect.

We augment the analyses in the final three models of Table 1 in Table 2 by calculating the direct, indirect, and total effects, along with their associated standard errors. These quantities can be computed in a number of ways, based on the structural model or sequential g-estimation. In the context of our linear model, the structural model and g-estimation approaches yield equivalent estimates, however.<sup>4</sup> Column (1) in Table 2 presents the relevant mediation results for column (3) in Table 1. We find that unemployment has a negative total and direct effect, while all other effects fail to achieve statistical significance. The ratio of the indirect effect to the total effect for unemployment is precisely estimated, very close to zero, and statistically indistinguishable from zero, suggesting that the effect of unemployment on the vote is not mediated through news coverage. The effect of growth is indeterminant.

To address this indeterminacy, we repeated the analysis using vote intention in column (4) of Table 1 and column (2) of Table 2. Here we find that growth has both a direct and indirect effect of vote intention, unemployment has a direct effect, and inflation appears to have no effect.<sup>5</sup> Moreover, the point estimates suggest that the direct effect of growth is larger than the indirect effect. There is, however, a reason to believe that our analysis may depress the size of the indirect effect of growth. Voters presumably respond to media coverage broadly, but we only have measures of sentiment from two media outlets in each country. Below, we show that this problem can be categorized as measurement error and we correct for this problem.

## 4.1 Measurement Error

Theoretically, we are interested in the effect of sentiment in the *overall* media environment on the economic vote. Our measure departs from this because we measure the average sentiment in a sample of two media outlets, which introduces measurement error. The amount of measurement error will be determined by how strongly sentiment is correlated across media outlets. In one extreme—if sentiment is perfectly correlated across media outlets—using a single outlet as a measure of overall sentiment will not result in measurement error. On the other hand, if sentiment in media outlets is weakly correlated,

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<sup>4</sup>Acharya, Blackwell and Sen (2016) develop approaches that allow for certain additional interactions in the case of a single treatment and single mediator, which can be used if these interactions are theoretically indicated.

<sup>5</sup>The indirect effect of inflation is marginally significant.

there will be substantial measurement error which will lead to attenuated estimates of the effect of media sentiment.

It is possible to quantify the degree of measurement error since we observe multiple measures of sentiment in each country and time period. Let  $s_{cjt}$  denote the sentiment for paper  $j$  in country  $c$  in time period  $t$  and let  $\mu_{ct}$  denote the true sentiment in the media environment. Assume that for each paper,  $s_{cjt} = \mu_{ct} + \epsilon_{cjt}$ , where  $\epsilon_{cjt}$  are independent errors. Our measure of overall sentiment is  $\bar{s}_{cj} = \frac{1}{2}(s_{c1t} + s_{c2t})$ . We can measure the reliability of  $\bar{s}_{cj}$  as a measure of  $\mu_{ct}$  by calculating the ratio of variances. It can be demonstrated that,<sup>6</sup>

$$R = \frac{2Cov(\hat{s}_{c1t}, \hat{s}_{c2t})}{Var(\hat{s}_{cjt}) + Cov(\hat{s}_{c1t}, \hat{s}_{c2t})} \quad (6)$$

Using estimates for the variance of sentiment,  $Var(\hat{s}_{cjt})$ , and the covariance between media outcomes,  $Cov(\hat{s}_{c1t}, \hat{s}_{c2t})$ , we can calculate that the reliability is 86.7% for economic sentiment, 89.6% for growth sentiment, 56.6% for unemployment sentiment, and 51.5% for inflation sentiment.

As can be seen, the estimate for growth sentiment is quite reliable. Unemployment and inflation sentiment are less reliable. It is possible to correct our estimates for measurement error, which we do in column (5) of Table 1 and column (3) of Table 2. The correction for measurement error is based on instrumental variables (Greene, 2000).<sup>7</sup>

The results, correcting for measurement error, continue to suggest that growth has both a direct and indirect effect, and the indirect effect is approximately the same size. Unemployment continues to have only a direct effect. Overall the results suggest that, to the extent that voters punish incumbent governments for high unemployment, they learn about unemployment directly, not through media coverage. In contrast, voters punish incumbent governments for both low growth and for media coverage that suggests poor growth. We observe a statistically significant indirect effect for inflation. The evidence for an effect of inflation is weaker since the total effect is not statistically significant.

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<sup>6</sup>Note that,  $Var(\bar{s}_{cj}) = \frac{1}{4}(2Var(\epsilon_{cjt}) + 4Var(\mu_{ct}))$ ,  $Cov(\hat{s}_{c1t}, \hat{s}_{c2t}) = Cov(\mu_{ct} + \epsilon_{c1t}, \mu_{ct} + \epsilon_{c2t}) = Var(\mu_{ct})$ , and  $Var(\hat{s}_{cjt}) = Var(\mu_{ct}) + Var(\epsilon_{cjt})$ . This means that  $Var(\epsilon_{cjt}) = Var(\hat{s}_{cjt}) - Cov(\hat{s}_{c1t}, \hat{s}_{c2t})$  and that  $Var(\bar{s}_{cj}) = \frac{1}{2}(Var(\hat{s}_{cjt}) + Cov(\hat{s}_{c1t}, \hat{s}_{c2t}))$  which leads to the formula for the reliability.

<sup>7</sup>In the IV-based correction, we instrument for one measure of sentiment using the other measure.

<b>Dependent Variable:</b>	(1) Vote Share	(2) Vote Intent	(3) Vote Intent
<b>Growth:</b>			
Total Effect	0.470 (0.389)	0.781*** (0.108)	0.751*** (0.137)
Direct Effect	0.823 (0.517)	0.561*** (0.120)	0.552*** (0.117)
Indirect Effect	-0.353 (0.283)	0.220*** (0.044)	0.199* (0.083)
Indirect / Total Ratio	-0.751 (0.794)	0.282 (0.071)	0.265 (0.095)
<b>Unemployment:</b>			
Total Effect	-1.060*** (0.312)	-0.159** (0.053)	-0.179** (0.057)
Direct Effect	-1.047*** (0.314)	-0.162** (0.054)	-0.195** (0.065)
Indirect Effect	-0.012 (0.020)	0.004 (0.005)	0.016 (0.016)
Indirect / Total Ratio	0.012 (0.020)	-0.024 (0.033)	-0.091 (0.085)
<b>Inflation:</b>			
Total Effect	0.131 (0.410)	0.071 (0.124)	-0.189 (0.122)
Direct Effect	0.078 (0.415)	0.080 (0.124)	-0.159 (0.123)
Indirect Effect	0.053 (0.033)	-0.009+ (0.005)	-0.030* (0.012)
Indirect / Total Ratio	0.406 (1.322)	-0.130 (0.237)	0.161 (0.126)
<b>Estimator</b>	OLS	OLS	IV

Table 2: Mediation Analysis — Standard errors calculated using the delta method in parentheses. Results in columns (1), (2), and (3) are calculated based on columns (3), (4), and (5) of Table 1, respectively. The first column reports mediation analysis for vote share, the second reports mediation analysis for vote intent, and the third corrects the results in column (2) for measurement error using instrumental variables. In each case, the direct effect measures the effect of the economic variable controlling for sentiment and the indirect effect measures the effect of the economic variable as mediated by sentiment. <sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<b>Dependent Variable:</b>	(1)		(2)		(3)		(4)		(5)	
	Growth Sentiment		Unemployment Sentiment		Unemployment Sentiment		Inflation Sentiment		Inflation Sentiment	
<b>Independent Variables:</b>										
Constant	0.443*** (0.002)		0.498*** (0.004)		0.519*** (0.001)		0.475*** (0.002)		0.466*** (0.001)	
Growth (yearly)	0.026*** (0.001)									
Unemployment (yearly)			0.002*** (0.000)							
Unemployment Changes (yearly)					-0.029*** (0.001)					
Inflation (yearly)							-0.003*** (0.000)			
Inflation Changes (yearly)									-0.010*** (0.001)	
<b>Vuong Test of Levels vs. Changes:</b>										
	p-Value for null that parameter is in the overlapping region									
	p-Value for null that models fit equally well									
<b>Number of Months</b>	6252		6251		6251		6237		6237	
<b>Number of Countries</b>	15		15		15		15		15	
<b>R-Squared</b>	0.275		0.005		0.072		0.004		0.036	

Table 3: Sentiment vs. the Economy — Heteroskedasticity robust standard errors in parentheses. <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

## 4.2 The Effect of Inflation

The results for inflation may initially seem surprising—we find no evidence of a total effect for inflation, either in the column (1) and (2) of Table 1 or columns (1) through (3) of Table 2. However, inflation sentiment appears to have an effect on vote intent in models (4) and (5). Given this, why do we observe we evidence for an indirect effect for inflation? The reason for this is that there is a weak relationship between inflation (levels) and inflation sentiment. Instead, as columns (4) and (5) in Table 3 indicate, there is a stronger relationship between inflation changes and inflation sentiment. When applying a Vuong test (Vuong, 1989) to discriminate between models (4) and (5) in Table 3, we are able to reject model (4) in favor of model (5).<sup>8</sup> This perhaps suggest that we should have instead modeled the direct and indirect effects of inflation *changes*. Tables 4 and 5 replicate the results Tables 1 and 2 using inflation changes instead of levels. In column (2) of Table 4, inflation sentiment is not statistically significant, however, in column (3), inflation sentiment is statistically significant. In column (3) of Table 5, we find that inflation has a statistically significant indirect effect, an insignificant direct effect, and a statistically significant total effect. However, the confidence interval for the ratio of the indirect effect to the total effect cover both zero and one. Ultimately, the results are suggestive of an indirect effect of inflation changes on vote intent, but larger sample sizes would be needed to form as firm conclusions for inflation as we do for growth and unemployment.

## 4.3 Effect Sizes

To get a sense of the effect sizes, we use the model from column (5) of Table 1 to gauge the effect of a one standard deviation improvement of the various economic statistics and media sentiment on the intent to vote for the incumbent party. A one standard deviation improvement in growth, unemployment, and inflation, holding media sentiment constant, would lead to an increase in the incumbent’s vote share of 1.7, 0.8, and 1.0 percentage points respectively. Improving all three simultaneously would lead to an increase of 3.4 percentage points. Improving the economic variables would also have an effect that would work through media sentiment—these effect sizes would be 0.6, 0.1, and -0.2 respectively, or 0.5 if all three were simultaneously improved. We could instead consider the effect of improving media sentiment itself by one standard deviation. Improving growth sentiment,

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<sup>8</sup>The Vuong test is a test of model fit. Models (4) and (5) are considered to be overlapping because a constant term is included in both models. For overlapping models, the Vuong test has two steps. The first step tests whether the parameter is in the overlapping region between the models. Failing to reject suggests the models fit equally well. If we reject the null in the first step, the second step tests whether the models fit equally well. Rejecting the null again suggests that one model provides superior fit.



	(1)	(2)	(3)
<b>Dependent Variable:</b>	Vote Intent	Vote Intent	Vote Intent
<b>Independent Variables:</b>			
Constant	37.986*** (0.427)	32.810*** (1.305)	26.777*** (3.390)
Growth (yearly)	1.045*** (0.081)	0.596*** (0.122)	0.560*** (0.117)
Unem. (yearly)	-0.118** (0.040)	-0.163** (0.054)	-0.190** (0.065)
Inf. Changes (yearly)	0.011 (0.090)	-0.134 (0.135)	-0.108 (0.119)
Growth Sentiment		8.092*** (1.681)	7.460* (3.148)
Unem. Sentiment		1.604 (2.060)	6.851 (6.490)
Inf. Sentiment		2.762 (1.790)	11.321* (4.532)
<b>Vuong Test of Levels vs. Changes:</b>			
p-Value for null that parameter is in the overlapping region		0.338	
p-Value for null that models fit equally well		0.864	
<b>Estimator</b>	OLS	OLS	IV
<b>Number of Months</b>	2438	1708	2452
<b>Number of Countries</b>	15	15	15
<b>R-Squared</b>	0.090	0.079	

Table 4: Elections Outcomes, the Economy, and Sentiment, Changes in Inflation — Heteroskedasticity robust standard errors in parentheses. Column (5) corrects the results of column (4) for measurement error using instrumental variables. <sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

	(1)	(2)
<b>Dependent Variable:</b>	Vote Intent	Vote Intent
<b>Growth:</b>		
Total Effect	0.809*** (0.110)	0.757*** (0.137)
Direct Effect	0.596*** (0.122)	0.560*** (0.117)
Indirect Effect	0.213*** (0.045)	0.197* (0.083)
Indirect / Total Ratio	0.264 (0.068)	0.260 (0.094)
<b>Unemployment:</b>		
Total Effect	-0.159** (0.053)	-0.173** (0.057)
Direct Effect	-0.163** (0.054)	-0.190** (0.065)
Indirect Effect	0.004 (0.005)	0.017 (0.016)
Indirect / Total Ratio	-0.025 (0.033)	-0.098 (0.088)
<b>Inflation (changes):</b>		
Total Effect	-0.162 (0.132)	-0.224* (0.111)
Direct Effect	-0.134 (0.135)	-0.108 (0.119)
Indirect Effect	-0.028 (0.018)	-0.115* (0.047)
Indirect / Total Ratio	0.174 (0.192)	0.515 (0.324)
<b>Estimator</b>	OLS	IV

Table 5: Mediation Analysis, Changes in Inflation — Standard errors calculated using the delta method in parentheses. Results in columns (2) and (3) are calculated based on columns (1) and (2) of Table 4, respectively. In each case, the direct effect measures the effect of the economic variable controlling for sentiment and the indirect effect measures the effect of the economic variable as mediated by sentiment. <sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<b>Economic Variable:</b>	Growth	Unem.	Inflation	All
Direct Effect	1.696*** (0.358)	0.783** (0.261)	0.964 (0.748)	3.443*** (0.827)
Indirect Effect	0.610* (0.256)	0.065 (0.066)	-0.185* (0.075)	0.491+ (0.253)
Media Effect	0.983* (0.412)	0.701 (0.696)	1.179** (0.443)	2.863*** (0.720)
Direct + Indirect	2.306*** (0.419)	0.848** (0.304)	0.780 (0.765)	3.934*** (0.833)
Direct + Media	2.679*** (0.519)	1.484+ (0.877)	2.143** (0.793)	6.306*** (1.015)

Table 6: Effect Sizes — Effect sizes on intention to vote for the incumbent’s party are measured for a one standard deviation improvement in growth, unemployment, inflation, and all three economic statistics simultaneously. Estimates are calculated based on column (5) of Table 1 and columns (1), (2), and (4) of Table 3. Standard errors calculated using the delta method in parentheses.  $^+p < .10$ ,  $^*p < .05$ ,  $^{**}p < .01$ ,  $^{***}p < .001$ .

unemployment sentiment and inflation sentiment by one standard deviation would lead to an increase in vote intention of 1.0, 0.7 and 1.2 percentage points respectively, or 2.9 percentage points if all three were simultaneously improved. Improving all three measures of the economy and allowing these effect to carry through sentiment would lead to a 3.9 percentage point increase in vote intention. Improving all three measures of the economy and all three measures of sentiment by one standard deviation each would lead to a 6.3 percentage point increase in vote intention.

#### 4.4 Interpretation

The interpretation of the results are not entirely straightforward. A minimal interpretation is that sentiment in the two major newspapers we collected explain about 30% of the effect of growth on elections and that these papers do not explain the effect of unemployment on elections. We can view this 30% estimate as a lower bound on the degree to which media coverage mediates the growth vote. However, we believe that this interpretation is too conservative. We know that, as a measure of overall media sentiment, the media sentiment measure we collect based on two newspapers is highly reliable. We also explicitly corrected for the problem of measurement error and found similar results. We thus would argue that the effect captures, at minimum, the effect of the mainstream media. It is possible that less mainstream sources will be less correlated and thus our measure of growth sentiment may not as accurately capture this. At the same time, we find it implausible that the unemployment vote is mediated by non-mainstream sources, but not at all by mainstream sources. Assuming this requires assuming a mix of extreme sophistication and naivety of voters. To find a null effect for unemployment sentiment on

vote intention, the voters must be sophisticated enough to differentiate what they read in mainstream sources from non-mainstream sources in order to ignore information from mainstream sources. At the same time, these voters must be naive enough to ignore the (likely more accurate) information available in mainstream news in favor of the (likely less accurate) information available in less mainstream sources. We thus think it is reasonable to interpret the results as suggesting that it is likely that the effect of unemployment on the vote is entirely direct and not mediated through news coverage.

The next relevant question is, what does the direct effect indicate? In our theory, we argued that there are two plausible mechanisms behind the economic vote—the effect of media and the effect of personal experience with the economy. We thus believe the most reasonable interpretation is that the direct effect represents voters experience with the economy—the effect of losing one’s job, hearing that one’s friend has lost their, receiving a raise, etc. Our results can thus be interpreted as indicating that at least 30% of the growth vote is due to media coverage, with the remainder due to direct experience, and that all of the unemployment vote is due to direct experience.

While the above is what we believe is the most reasonable interpretation of our findings, an alternative interpretation can be considered. It is possible that while voters learn about the economy through media coverage, they are able to “de-contextualize” the media coverage, in which case the direct effect may capture both personal experience and information gleaned from the media that has been decontextualized. This alternative interpretation requires relatively sophisticated voters—voters must extract information on the numerical performance of the economy, while ignoring both the helpful context and the spin the media puts on these raw numbers. However, this alternative interpretation leads to a similar view of the role of the media in driving the economic vote. Our results place some severe limitations on the media—only growth is partially mediated through news coverage. Moreover, the media likely cannot shape impressions of the economy by covering growth, unemployment, or inflation more or less frequently, because voters only seem to be paying attention to media coverage of growth. This alternative interpretation ultimately leads to a similar conclusion for different reasons—the media cannot easily influence voters by contextualizing the economy because voters are sufficiently sophisticated to de-contextualize news coverage of the economy. Again, we find this interpretation much less plausible, but even if it is accurate, it does not dramatically alter our conclusions.

Our results also contribute to the pocketbook voting vs. sociotropic voting debate (e.g., [Healy, Persson and Snowberg, 2017](#)). The unemployment vote is consistent with the pocketbook theory and the growth vote is consistent with both the pocketbook and sociotropic theories. If the effect of unemployment on the vote was completely mediated

through media coverage, then it would not be consistent with the pocketbook theory.

## 5 Conclusion and Implications

The performance of the economy is perennially among the top determinants of electoral outcomes in developed democracies yet we know surprisingly little about its mechanism. Until now, to the best of our knowledge, no previous paper has been able to overcome the data demands necessary to investigate one of its most likely mechanisms, a mediating role for economic news in the economic vote. By automatically coding 3 million economic news articles in 30 newspaper in 15 countries—previous economic news analyses were limited to a small number of English-speaking countries—we were able to capture enough country-level economic observations to enable a mediation analysis. Our findings bear implications for both the design and interpretation of future research as well as for the effect of the media in specific campaigns.

At the most fundamental level, we find that only the effect of economic growth, but not unemployment or inflation, is mediated by newspaper reporting. This makes sense, as unemployment and inflation are both more directly experienced while growth in GDP is more of an abstraction. We find that about 30 percent of the total effect of growth on the incumbent party vote comes through newspaper reporting, though one could argue that this is a conservative estimate given our analysis' focus on one type of media (newspapers) and one part of the market (mainstream newspapers).

Although our data show that economic sentiment in most newspapers tracks that of their ideological counterparts (Figure 1) and the economy (Figures 3 and 4) fairly faithfully and that the mediating effect of economic reporting on the economic vote is limited, when media deviations from actual economic performance occur before elections, they can influence campaigns and outcomes. To show the utility of our exercise for the understanding of individual campaigns and elections, we conclude by briefly reviewing one case in which newspaper reporting on the economy may have affected an election result and one case in which, despite assertions to the contrary, it most likely did not.

### 5.1 Saved by the Media? The 2010 Australian Federal Election

In 2010, the Australian Labor Party competed for a second consecutive term in office under the leadership of Julia Gillard. Labor, during the previous government of Kevin Rudd, had presided over the economy during the global financial crisis that proved to be shorter and less severe in Australia than in many other developed countries.

Figure 3 plots out the standardized rate of GDP growth (black) and standardized

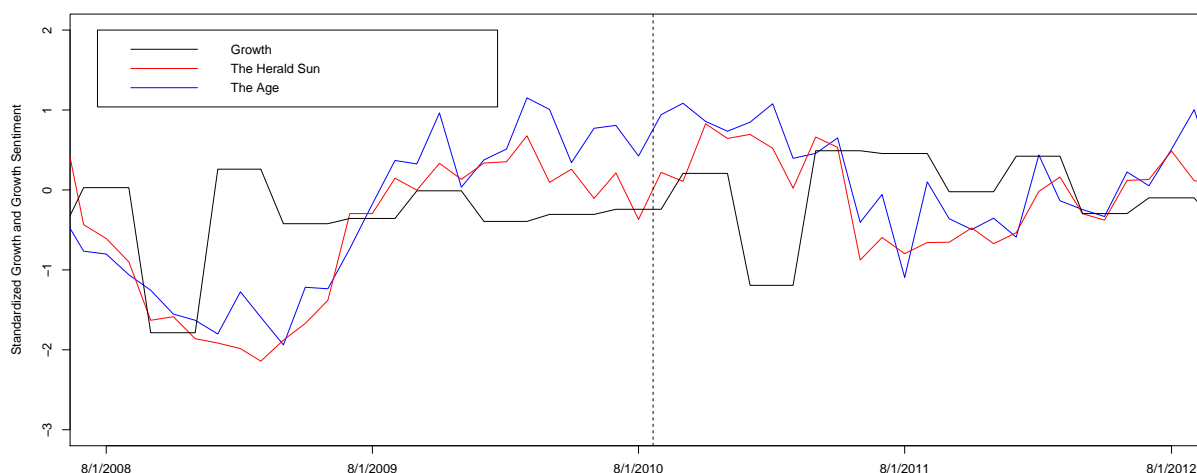


Figure 3: *Standardized monthly growth and standardized news sentiment prior to and following the 2010 Australian Federal Election.*

growth sentiment in two newspapers, *the Age* (red) and *The Herald Sun* (blue). After a steep contraction in 2008, Australian growth levels returned to near, albeit slightly below, their long-run average. The news media, however, which had been slow to respond to the economic recovery in their economic reporting, provided overly positive coverage for the full year preceding the election. The standardized media sentiment exceeded expectations, shown by the standardized rate of growth, by an average of 0.7 standard deviations in the half-year preceding the election. From the media effect estimates in Table 6, we estimate that this resulted in nearly a three-quarter point (0.73) increase in the incumbent Labor party vote share over what would have been expected if reporting on economic growth matched expectations. The election proved to be very close, with Gillard’s Labor Party, after instant run-off vote allocations, defeating Tony Abbott and the Liberal/National coalition by a margin of 50.12 to 49.88—considerably less than the 0.73 points gained from beneficial media coverage of economic growth. When an election is so close, many things can tip the outcome. In this case, exceptionally positive economic reporting may count as one of them.

## 5.2 False Positive? George Bush (Sr.)’s Re-election Campaign

Former President George H.W. Bush famously attributed his re-election loss to inaccurate media coverage of the economy. Here we consider the correctness of Bush’s assessment and whether the size of the effect of the media is large enough to explain his election loss. Figure 4 considers the four years surrounding Bush’s second 1992 election. During the

last year of President Bush's term, growth was slightly better than average. Sentiment in both the New York Times and the Wall Street Journal, however, was below average, converged to neutral during the election month, and became more positive than the actual economy after Bush lost re-election. Initially, this seems roughly consistent with Bush's claim.

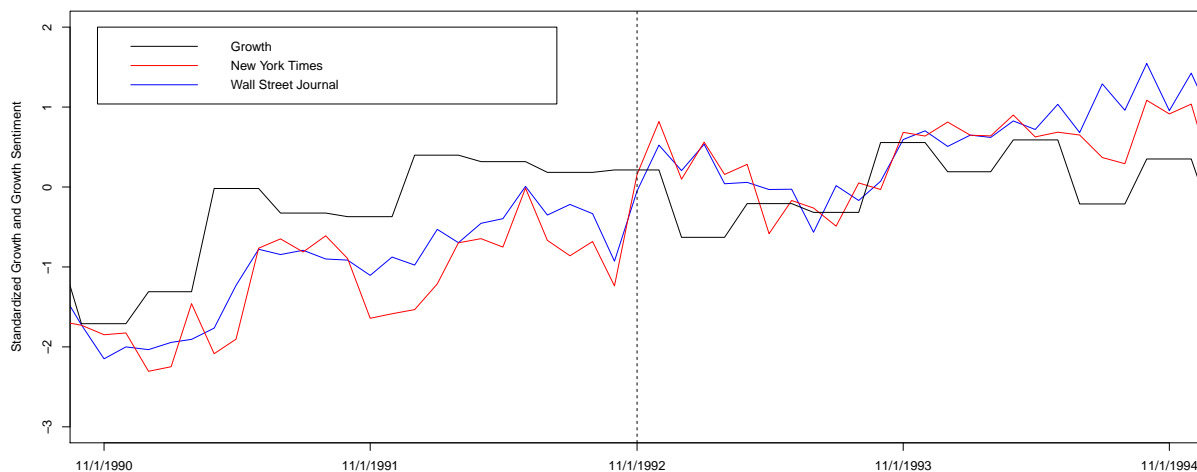


Figure 4: *Growth, Growth Sentiment, and Bush's Re-election Campaign* — Standardized monthly growth (black), New York Times growth sentiment (red), and Wall Street Journal growth sentiment (blue).

Our findings, however, yield a different conclusion—that the role of media coverage of the economy in Bush's loss was exaggerated. The actual economy makes up a large part of the economic vote. Media coverage of growth also has an effect but a smaller one than growth itself on incumbent vote share—a one standard deviation increase in growth sentiment, holding growth and the other covariates constant, would lead to an increase in incumbent vote share of about 1.04 percentage points. Late in his re-election campaign, growth sentiment had converged to only half a standard deviation below expectations. Had it fully converged to expectations, this would only have netted Bush only half of a percentage point—far too small to explain a more than 5-point loss. The level of inaccuracy of economic coverage leading up the election is among the largest inaccuracies we observed in our sample: due to the limited role of the media in shaping the economic vote, attributing the entirety of Bush's loss to media coverage is an exaggeration.

## References

- Acharya, Avidit, Matthew Blackwell and Maya Sen. 2016. "Explaining Causal Findings Without Bias: Detecting and Assessing Direct Effects." *American Political Science Review* 110:512–529.
- Achen, Christopher H. and Larry M. Bartels. 2016. *Democracy for Realists*. Princeton: Princeton University Press.
- Ansolabehere, Stephen, Rebecca Lessem and Jr. James M. Snyder. 2006. "The Orientation of Newspaper Endorsements in U.S. Elections, 1940-2002." *Quarterly Journal of Political Science* 1:393–404.
- Aytac, Selim E. 2018. "Relative Economic Performance and the Incumbent Vote: A Reference Point Theory." *Journal of Politics* 80:16–29.
- Barberá, Pablo, Amber E. Boydston, Suzanna Linn, Ryan McMahon and Jonathan Nagler. 2021. "Automated Text Classification of News Articles: A Practical Guide." *Political Analysis* 29:19–42.
- Baron, Reuben M. and David A. Kenny. 1986. "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations." *Journal of Personality and Social Psychology* 51:1173–1182.
- Boomgaarden, Hajo G., Joost Van Spanje, Rens Vliegenthart and Claes H. De Vreese. 2011. "Covering the Crisis: Media Coverage of the Economic Crisis and Citizens' Economic Expectations." *Acta Politica* 46:353–379.
- Carpini, Michael X. Delli and Scott Keeter. 1997. *What Americans Know about Politics and Why it Matters*. New Haven: Yale University Press.
- Chiang, Chun-Fang and Brian Knight. 2011. "Media Bias and Influence: Evidence from Newspaper Endorsements." *Review of Economic Studies* 78:795–820.
- De Boef, Suzanna and Paul M Kellstedt. 2004. "The Political (and Economic) Origins of Consumer Confidence." *American Journal of Political Science* 48:633–649.
- DellaVigna, Stefano and Ethan Kaplan. 2007. "The Fox News Effect: Media Bias and Voting." *Quarterly Journal of Economics* 122:1187–1234.
- Duch, Raymond M. and Randy Stevenson. 2008. *The Economic Vote: How Political and Economic Institutions Condition Election Results*. Cambridge: Cambridge University Press.



- Dun, Lindsay, Stuart Soroka and Christopher Wlezien. Forthcoming. "Dictionaries, Supervised Learning and Media Coverage of Public Policy." *Political Communication*.
- Enikolopov, Ruben, Maria Petrova and Ekaterina Zhuravskaya. 2011. "Media and Political Persuasion: Evidence from Russia." *American Economic Review* 101:3253–3285.
- Evans, Geoffrey and Robert Anderson. 2006. "The Political Conditioning of Economic Perceptions." *Journal of Politics* 68:194–207.
- Goidel, Kirby, Stephen Procopio, Dek Terrell and H. Denis Wu. 2010. "Sources of Economic News and Economic Expectations." *American Politics Research* 38:759–777.
- Greene, William H. 2000. *Econometric Analysis*. 4th ed. New York: Prentice Hall.
- Hansen, Kasper M., Asmus L. Olsen and Mickael Bech. 2015. "Cross-national Yardstick Comparisons: A Choice Experiment on a Forgotten Voter Heuristic." *Political Behavior* 37:767–789.
- Healy, Andrew and Gabriel S. Lenz. 2014. "Substituting the End for the Whole: Why Voters Respond Primarily to the Election-Year Economy." *American Journal of Political Science* 58:31–47.
- Healy, Andrew J, Mikael Persson and Erik Snowberg. 2017. "Digging into the Pocketbook: Evidence on Economic Voting from Income Registry Data Matched to a Voter Survey." *American Political Science Review* 111:771–785.
- Hetherington, Marc J. 1996. "The Media's Role in Forming Voters' National Economic Evaluations in 1992." *American Journal of Political Science* 40:372–395.
- Hollanders, David and Rens Vliegenthart. 2011. "The Influence of Negative Newspaper Coverage on Consumer Confidence: The Dutch Case." *Journal of Economic Psychology* 32:367–373.
- Kayser, Mark A. and Michael Peress. 2012. "Benchmarking across Borders: Electoral Accountability and the Necessity of Comparison." *American Political Science Review* 106:661–684.
- Kayser, Mark A. and Michael Peress. 2021. "Accuracy and Bias in Media Coverage of the Economy: An Analysis of Sixteen Developed Democracies." *Quarterly Journal of Political Science* 16.
- Kinder, Donald R. and D. Roderick Kiewiet. 1979. "Economic Discontent and Political Behavior: The Role of Personal Grievances and Collective Economic Judgments in Congressional Voting." *American Journal of Political Science* 23:495–527.

- Kramer, Gerald H. 1983. "The Ecological Fallacy Revisited: Aggregate-versus Individual Level Findings on Economics and Elections, and Sociotropic Voting." *American Political Science Review* 77:92–111.
- Ladd, Jonathan McDonald and Gabriel S. Lenz. 2009. "Exploiting a Rare Communication Shift to Document the Persuasive Power of the News Media." *American Journal of Political Science* 53:394–410.
- Larcinese, Valentino, Riccardo Puglisi and James M Snyder. 2011. "Partisan Bias in Economic News : Evidence on the Agenda-Setting Behavior of US Newspapers." *Journal of Public Economics* 95.
- Lewis-Beck, Michael S., Nicholas F. Martini and D. Roderick Kiewiet. 2013. "The Nature of Economic Perceptions in Mass Publics." *Electoral Studies* .
- Lipset, Seymour Martin. 1993. "The Significance of the 1992 Election." *PS: Political Science and Politics* 26:7–16.
- Lott, John R. and Kevin A. Hassett. 2014. "Is Newspaper Coverage of Economic Events Politically Biased?" *Public Choice* 160:65–108.
- Lupia, Arthur. 1994. "Shortcuts Versus Encyclopedias: Information and Voting Behavior in California Insurance Reform Elections." *American Political Science Review* 88:63–76.
- Lupia, Arthur and Michael D. McCubbins. 1998. *The Democratic Dilemma: Can Citizens Learn What They Need to Know?* Cambridge: Cambridge University Press.
- Martin, Gergory J. and Ali Yurukoglu. 2017. "Bias in Cable News: Persuasion and Polarization." *American Economic Review* 107:2565–2599.
- Osborne, Peter. 2020. "Jeremy Corbyn: British Media Waged Campaign to Destroy Me." [Online; posted 2-June-2020].  
**URL:** <https://www.middleeasteye.net/news/jeremy-corbyn-labour-british-media-campaign-destroy>
- Park, Brandon B. 2019. "Compared to What? Media-guided Reference Points and Relative Economic Voting." *Electoral Studies* 62:102085.
- Péladeau, Normand. 1998. "WordStat Content Analysis Module for SIMSTAT & QDA miner: User's Guide." *Provalis Research, Montreal, Canada* pp. 22–29.
- Puglisi, Riccardo. 2011. "Being the New York Times: the Political Behaviour of a Newspaper." *B.E. Journal of Economic Analysis and Policy* 11:1–34.

- Rueters Staff. 2009. "L'Espresso Calls in Lawyers on Berlusconi Remarks." [Online; posted 24-June-2009].  
**URL:** <https://www.reuters.com/article/espresso/update-1-lespresso-calls-in-lawyers-on-berlusconi-remarks-idUSLO59656320090624>
- Sanders, David and Neil Gavin. 2004. "Television News, Economic Perceptions and Political Preferences in Britain, 1997-2001." *Journal of Politics* 66:1245–1266.
- Singer, Matthew M. and Ryan E. Carlin. 2013. "Context Counts: The Election Cycle, Development, and the Nature of Economic Voting." *Journal of Politics* 75:730–742.
- Soroka, Stuart N. 2006. "Good News and Bad News: Asymmetric Responses to Economic Information." *Journal of Politics* 68:372–385.
- Soroka, Stuart N. 2012. "The Gatekeeping Function: Distributions of Information in Media and the Real World." *Journal of Politics* 74:514–528.
- Vuong, Quang H. 1989. "Likelihood Ratio Tests for Model Selection and Non-nested Hypotheses." *Econometrica* 57:307–333.
- Wlezien, Christopher, Mark Franklin and Daniel Twigg. 1997. "Economic Perceptions and Vote Choice: Disentangling the Endogeneity." *Political Behavior* 19:7–17.

## A Appendix: Dates of Coverage

Country	Newspaper	Language	Relative Partisanship	Coverage
Austria	<i>Der Standard</i>	German	Left	Dec. 2007 – Aug. 2013
Austria	<i>Die Presse</i>	German	Right	Apr. 2004 – Aug. 2013
Australia	<i>The Age</i>	English	Left	Jan. 1991 – Sept. 2013
Australia	<i>The Herald Sun</i>	English	Right	Jan. 1987 – Aug. 2013
Canada	<i>Toronto Star</i>	English	Left	Sept. 1985 – Aug. 2013
Canada	<i>The Globe and Mail</i>	English	Right	Nov. 1977 – July 2013
France	<i>Le Monde</i>	French	Left	Jan. 1990 – Dec. 2012
France	<i>Le Figaro</i>	French	Right	Jan. 1997 – Aug. 2013
Germany	<i>Die Zeit</i>	German	Left	Nov. 2008 – Apr. 2014
Germany	<i>Frankfurter Allgemeine</i>	German	Right	Jan. 2010 – Sept. 2013
Ireland	<i>The Irish Times</i>	English	Left	Jun. 1992 – Dec. 2012
Ireland	<i>The Irish Independent</i>	English	Right	Oct. 2006 – Aug. 2013
Israel	<i>Globes</i>	English	Left	June 1996 – Sept. 2013
Israel	<i>The Jerusalem Post</i>	English	Right	Jan. 1989 – Aug. 2013
Italy	<i>La Stampa</i>	Italian	Left	Jan. 1992 – Dec. 2012
Italy	<i>Corriere della Serra</i>	Italian	Right	Jan. 2009 – Aug. 2013
Japan	<i>Nikkei Weekly</i>	English	Left	June 1980 – Sept. 2013
Japan	<i>Daily Yomiuri</i>	English	Right	Sept. 1989 – Mar. 2013
Luxembourg	<i>Le Quotidien</i>	French	Left	Apr. 2008 – Dec. 2013
Luxembourg	<i>Le Fax d'Agefi</i>	French	Right	Dec. 2009 – Apr. 2014
New Zealand	<i>The Press</i>	English	Left	June 1996 – Aug. 2013
New Zealand	<i>New Zealand Herald</i>	English	Right	Nov. 1998 – Aug. 2013
Portugal	<i>Correio da Manha</i>	Portuguese	Left	June 2012 – Aug. 2013
Portugal	<i>Jornal de Noticias</i>	Portuguese	Right	July 1997 – June 2013
Spain	<i>El Pais</i>	Spanish	Left	Apr. 1996 – Dec. 2012
Spain	<i>El Mundo</i>	Spanish	Right	July 2002 – Aug. 2013
United Kingdom	<i>The Guardian</i>	English	Left	July 1984 – July 2013
United Kingdom	<i>The Times (London)</i>	English	Right	Jul. 1985 – Dec. 2012
United States	<i>New York Times</i>	English	Left	Sept. 1989 – Sept. 2013
United States	<i>Wall Street Journal</i>	English	Right	June 1979 – Dec. 2013

Table 7