

# A Cross-National Analysis of the Causes and Consequences of Economic News\*

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*Objective.* Work on economic news argues that U.S. coverage focuses primarily on changes rather than levels of future economic conditions; it also both affects and reflects public economic sentiment. Given that economic perceptions are related to policy preferences and government support, this is of consequence for politics. This article explores the generalizability of these findings. *Methods.* Using nearly 100,000 stories over 30 years in the United States, the United Kingdom, and Canada, we compare media tone, public opinion, and economic conditions. *Result.* Analyses demonstrate that media tone and public opinion follow future economic change in all three countries. Media and opinion are also related, but the effect mostly runs from the public to the media, not the other way around. *Conclusion.* These results confirm the generalizability of prior findings, and the importance of considering more than a simple unidirectional link between media coverage and public economic sentiment.

Public perceptions of the state of the economy play an important role in politics, both in the United States and elsewhere. Yet, relatively little is known about the sources of these attitudes. Economic sentiment cannot be based solely on the real national economy, since most individuals have direct experience with only a small part of it. At least part of what citizens know about the economy seems likely to come from the mass media, then; and there is a long-standing and growing body of work finding a connection between media coverage and public attitudes about the economy (e.g., Behr and Iyengar, 1985; DeBoef and Kellstedt, 2004; Goidel and Langley, 1995; Ju, 2008; Nadeau et al., 1999; Soroka, 2006). The nature of coverage of economic news nevertheless remains underexplored, especially in the comparative context. In this article, we aim to broaden our understanding of the causes and consequences of economic news coverage, and its relationship to public perceptions about the economy, in three countries: Canada, the United Kingdom, and the United States.

We build specifically on our previous work (Soroka, Stecula, and Wlezien, 2015) that finds evidence that U.S. media coverage of the economy tends to (1) focus on future rather than the current or past economic conditions, and (2) react mainly to changes in rather than levels of those conditions. This appears to be true not just for media coverage, but public economic sentiment as well, which both responds to and affects coverage. The possibility that media coverage is driven by public sentiment has received little attention

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in past work—the tendency is simply to regard media as a driver of public sentiment.<sup>1</sup> But there are good reasons to expect a reciprocal relationship. Journalists regularly report on the state of public sentiment, after all, as it is captured in poll reports, but also more generally in economic coverage. Indeed, media organizations have been responsible for many public opinion polls, and presumably for a reason. So, it should not be surprising that we found strong evidence that public opinion matters to economic reporting, at least in the United States.

The finding of a reciprocal connection between media coverage and public sentiment, alongside results suggesting the significance of prospective changes in conditions, are of some significance given the established importance of economic sentiment on policy and spending preferences (e.g., Durr, 1993; Stevenson, 2001; Wlezien, 1995; Erikson, MacKuen, and Stimson, 2002; Soroka and Wlezien, 2010), as well as government approval and election outcomes (e.g., Hibbs, 1987; Erikson, 1989; Erikson and Wlezien, 2012; Nadeau et al., 1999; Sanders, Marsh, and Ward, 1993; for reviews, see Lewis-Beck and Stegmaier, 2000, 2007). The political significance of economic sentiment is by no means restricted to the United States either—there is a vast body of work, across a wide range of countries, establishing connections between economic sentiment and political behavior (e.g., Nadeau et al., 2012; Duch and Stevenson, 2008; Brug, Eijk and Franklin, 2007).

Whether prior findings regarding the nature of economic news coverage generalize beyond the United States is nevertheless unclear. There is a small, but growing, body of work considering the nature of economic news outside the United States (e.g., Kalogeropoulos et al., 2015; van Dalen, de Vreese, and Albaek, 2015; De Vreese, Peter, and Semetko, 2001; Ju, 2008). Rarely are there direct comparisons across countries, however. A small collection of research provides some hints about whether and when we should expect the nature of economic news to be different across countries. Lischka (2014) suggests that economic news content varies with the revenue incentives of news organizations, for instance, a domain-specific illustration of more general arguments about the differences between commercial and public broadcasters (e.g., Soroka et al., 2013).<sup>2</sup> Other research exploring role conceptions and practices among journalists suggests the possibility of both similarity and difference. On the one hand, the literature points to convergence across nations toward a global journalist culture rooted in similar notions of impartiality and critical reporting. On the other hand, work relying on surveys of journalists in particular serves to highlight some potentially important cross-national differences in approach. (The literature is considerable and growing, but see, e.g., Hallin and Mancini, 2004; van Dalen, de Vreese, and Albaek, 2001; Hanitzch et al., 2012; Hanitzsch and Mellado, 2011; Waheed et al., 2013.)

We thus do not yet have a good sense for whether we should expect cross-national differences, but we have some preliminary interests. Building in part on the work cited above, we are interested in, for example, the possibility that more competitive media markets produce different—perhaps more critical, or sensationalistic—approaches to economic

<sup>1</sup>There are some exceptions in the agenda-setting literature, which has more actively entertained the possibility of bidirectional causality. See, for example, Behr and Iyengar (1985), Soroka (2002), and Uscinski (2009). This work is focused on issue salience, however, not on the content or tone of public sentiment and/or media coverage.

<sup>2</sup>It may also be that media competition matters—a commercial media environment in which there is less competition for consumers may produce different news coverage, and thus different relationships between economic conditions, media content, and public sentiment. Consider the following possibility: an emphasis on prospective conditions may be greatest in more competitive media environments, while less competitive environments may facilitate a combination of prospective and retrospective reporting. This would be in line with work suggesting that the quality of journalism, and in particular the depth of reporting, suffers in highly commercialized environments (e.g., Croteau and Hoynes, 2001).

news, although we are aware that the three countries we examine here are all part of the same “liberal” media model in the Hallin and Mancini’s typology. We wonder whether institutional forces and varying journalistic norms will produce different approaches to leading or following public opinion. We also wonder whether the competitiveness of elections matters. We have argued that increased political competition may produce clearer signals about policy change (Soroka and Wlezien, 2010), and the same may be true for the economy. Political systems that impede or enhance accountability may also give different weight to retrospective versus prospective economic evaluations in media content and/or public opinion.

This is all just speculation, however. As this volume makes clear, there is very little directly comparable work in political communication. All we can reliably say at this point is that the existing literature does not point toward clear expectations where the change-oriented, prospective emphasis of news coverage, or the reciprocal (rather than unidirectional) relationship between news content and public sentiment are concerned. We thus take a first step down this path, offering what we hope will be a preliminary, research-stimulating exploration of the degree to which these U.S. findings are generalizable to two other Anglo-American countries: the United Kingdom and Canada. Our interest in these countries is both pragmatic and substantive. Pragmatically speaking, our use of automated content analysis to derive sentiment in news coverage depends on using English-speaking media; and a comparison of this content with public opinion depends on long-term trends in public economic expectations. Substantively speaking, there are established literatures in each of these countries on both economic voting and media influence on political and economic attitudes. (On the United Kingdom, see, e.g., Clarke and Stewart, 1995; Nadeau, Niemi, and Amato, 1996; Price and Sanders, 1993; Sanders, Marsh, and Ward, 1993; on Canada, see, e.g., Happy, 1986; Belanger and Soroka, 2012.) Just as for the United States, then, we know that economic news coverage has significant political implications in the United Kingdom and Canada.

Given the paucity of work on the elements of economic news coverage investigated here, we have no strong expectations about whether prior findings will be reflected in the United Kingdom and Canada. There is some variation in both media competitiveness and journalistic cultures, even within this entirely Anglo-American set. Among the larger set of more developed countries, however, what we have here is a study of more similar rather than different systems. Does economic news coverage exhibit the same systematic tendencies across all three countries? This is the focus of the analyses that follow, alongside diagnostic work comparing results across three different approaches to measuring sentiment in economic news coverage. In a concluding discussion, we consider our findings in light of the literatures on economic news and journalistic approaches in more broadly comparative contexts.

## Methods

This article builds on our previous work and follows much of the same methodological choices (Soroka, Stecula, and Wlezien, 2015). Our analyses rely on measures of (1) the economy, (2) the tone of economic news coverage, and (3) public economic sentiment. We use composite indicators as measures of the economy. The most straightforward measure is the composite leading indicators (CLI) series from the Organization for Economic Cooperation and Development (OECD), available for a wide range of countries.<sup>3</sup> Previously,

<sup>3</sup>These data and other economic data used here are readily available online through OECD.Stat. Note that we rely on the “amplitude adjusted” series here, but the other available series produce comparable results.

we were able to compare models using past, coincident, and leading indicators since we were dealing with the United States alone (Soroka, Stecula, and Wlezien, 2015). Unfortunately, it is not possible to do so outside the United States—there is no directly comparative lagging or coincident indicators series available for all three countries. Therefore, the “future” emphasis of media content cannot be tested across all three countries.<sup>4</sup> That said, we can explore the extent to which media focus on changes rather than levels, and across multiple indicators. In doing so, we can speak also to the duration of the impact of economy on media tone. Put differently, we can explore the extent to which media tone shifts, quickly and/or over the longer term, to economic change. The top panels in Figure 1 show trends for the OECD CLIs series in each country. (Note that some data are missing during 2008 in Canada.) Here, we can see a lot of fluctuation over time, much of which is common across countries; indeed, the average bivariate correlation between the three series is 0.73.

Our measures of media content are based on a database of news coverage over a 30-year period in each of the United States, the United Kingdom, and Canada. Articles are extracted from LexisNexis, using the same search criteria we employed in previous work (Soroka, Stecula, and Wlezien, 2015).<sup>5</sup> Supporting information in Appendix Table 1 shows a breakdown of stories across each of six newspapers, annually. We chose two high circulation, and widely considered to be influential, daily newspapers from each country that are available in the LexisNexis archive: *New York Times* and *Washington Post* in the United States, *The Times* and *The Guardian* in the United Kingdom, and *The Globe and Mail* and *Toronto Star* in Canada. Our data set misses newspapers in two years for each of the United Kingdom and Canada—a result of the absence of topic coding in the LexisNexis database. And because the *Times* and the *Toronto Star* come and go in two different years (1996–1997, and 1990–1991, respectively), we do not estimate models including article counts as either a dependent or independent variable, just article tone. Missing data are not the only reason for this decision, however: past work indicates a stronger link between the economy and newspaper sentiment than between the economy and simple article counts (Soroka, Stecula, and Wlezien, 2015).

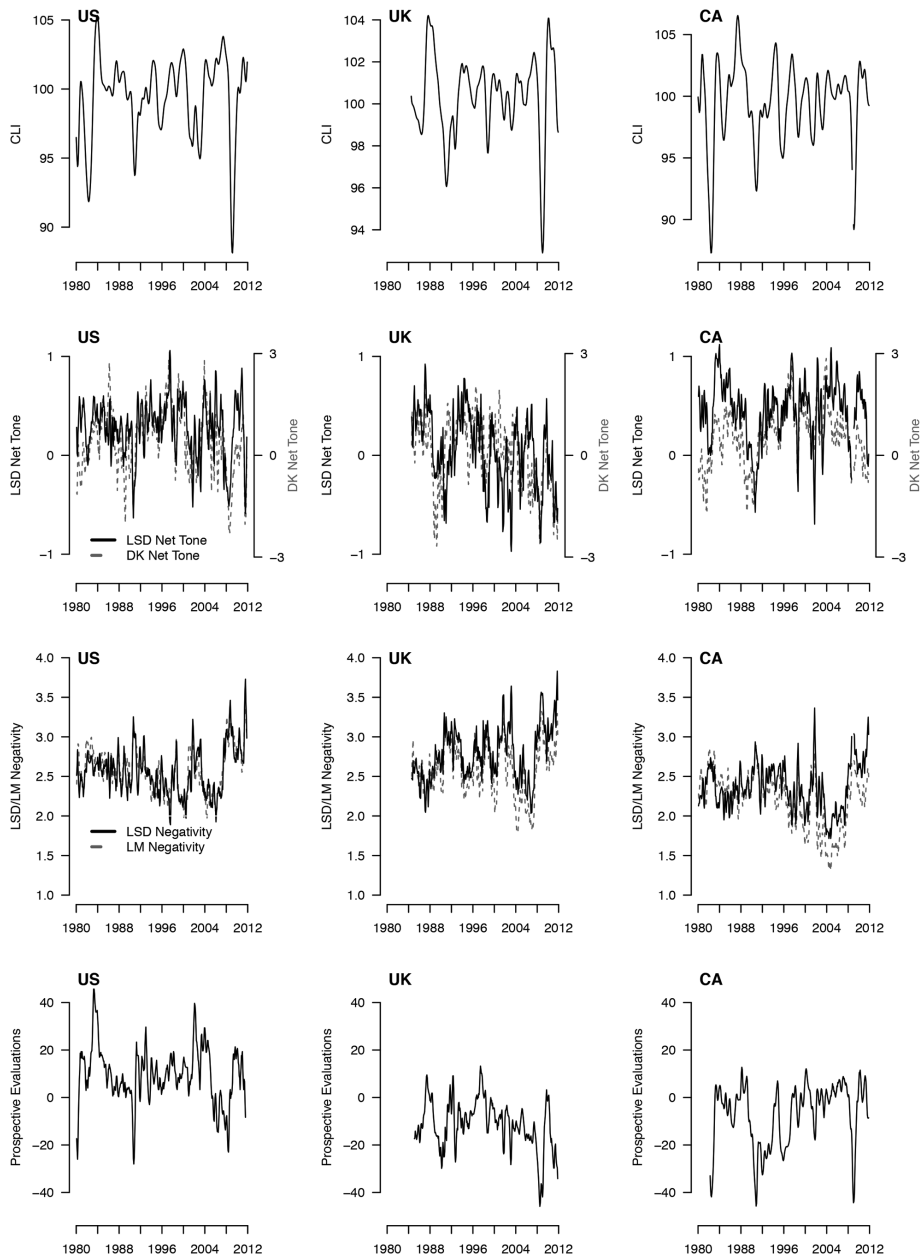
The second and third rows in Figure 1 depict our measures of sentiment in news content. The second row shows the first “net tone” based on the Lexicoder Sentiment Dictionary (LSD). The LSD was designed as a general purpose sentiment dictionary, and is described in some detail in Young and Soroka (2012). It is a relatively large sentiment dictionary, with roughly 3,000 negative and 3,000 positive words. The application of the dictionary here represents what typically is referred to as a “bag-of-words” approach—we count the number of words in an established dictionary. Note, however, that the creation and testing of the dictionary incorporates elements that sometimes are regarded as falling mainly under

Note also that OECD CLI series are provided by national statistical agencies, and thus vary in composition from one country to the next. This makes good sense—the economies of different countries should be best predicted by somewhat different factors.

<sup>4</sup>It is possible to run our analysis with directly comparative measures for the harmonized unemployment rate (HUR) and inflation rate (CPI), also drawn from the OECD. Results suggest that media coverage responds little to the CPI, but responds to the HUR in a way that is very similar to what we see with the CPI below. We see HUR results as useful supporting evidence for what we show here; results are available upon request.

<sup>5</sup>Indeed, the U.S. data used here are identical, with the exception that we do not include 2012 data since our comparative data are updated only to 2011. The search is based on a set of LexisNexis subject categories that, based on manual testing, most reliably return results pertaining to the national economy. (For a comparison of these results with a broader text-based search, see Barbera et al., 2016.) The final search captured stories for which any of the following terms were listed as “Relevancy: Major Terms only”—under (1) “Economic Conditions”: Deflation, Economic Decline, Economic Depression, Economic Growth, and Economic Recovery, Inflation and Recession; under (2) “Economic Indicators”: Average Earnings, Consumer Credit, Consumer Prices, Consumer Spending, Employment Rates, Existing Home Sales, Money Supply, New Home Sales, Productivity, Retail Trade Figures, Unemployment Rates, Wholesale Prices.

FIGURE 1  
Time Series



“supervised learning” approaches. To be clear, we do not rely here on a measure that is derived only by algorithms applied to the existing corpus. Rather, we rely on a dictionary built from a careful cross-tabulation of three very large existing dictionaries, in order to both expand coverage and remove potentially ambiguous words; and tested against both human coders, alongside eight other preexisting dictionaries (Young and Soroka, 2012).

The results here thus depend on a good deal of prior testing. We use a simple measure of net tone:  $(\# \text{ positive words} - \# \text{ negative words}) / \text{total word count} \times 100$ . The resulting measure captures both the direction and magnitude of article tone.

Although we have confidence in our LSD-based measure, we want to ensure that results are not dependent on the use of this dictionary. Our interest is motivated in part by recent work comparing the performance of both dictionary and supervised learning approaches—especially Barbera et al. (2016), who focus on the coding of sentiment in economic news. Note that the appendix to Soroka, Stecula, and Wlezien (2015) includes tests with an R-word Index, and an Angst Index. We extend that work here, using two other dictionaries, each of which was designed specifically for use with economic news content. The first of these was developed by De Boef and Kellstedt (2004). This dictionary takes a somewhat different approach than the more broadly aimed LSD—it is designed to count co-occurrences of economic keywords, e.g., unemployment, inflation, alongside directional and/or valence keywords, e.g., upward, downward, good, and bad. De Boef and Kellstedt (2004) use co-occurrences within the same paragraph; we narrow this to within-sentence co-occurrences. Otherwise, we implement the dictionary in the same way as De Boef and Kellstedt (2004): positive and negative mentions are counts of a specific, narrowly focused set of within-sentence co-occurrences; and overall tone is measured by subtracting the total number of negative mentions from the total number of positive mentions.

We also produce a measure of sentiment in news coverage using a dictionary built by Loughran and McDonald (2011) to capture sentiment specifically in financial texts. This dictionary is, like the LSD, a simple word count, though it estimates negativity only, not positivity. For the sake of comparison, we also generate a comparable measure from the LSD focused just on negativity. For both the Loughran-McDonald (LM) and LSD versions of negativity, the measure is:  $(\# \text{ negative words} / \text{total word count}) \times 100$ ; that is, the percent of words in an article that are categorized as negative.

The two measures of net tone are shown in the second row in Figure 1, while both measures of negativity are shown in the third row. There clearly are links between the different operationalizations, and Table 1 shows basic bivariate correlations between all of them. For the United States, we include correlations with the measure of net tone used in our previous article as well. That measure is based on the same dictionary as the one used here, but word counts were estimated in an older version of Lexicoder, the software we use for text analysis.<sup>6</sup> These are correlated at 0.96. Correlations between net tone estimated using the LSD and the De Boef-Kellstedt dictionary are positive and statistically significant, but relatively low in magnitude—across the three countries, the mean correlation is 0.48. Correlations between LSD net tone and LSD negativity are of course relatively high, given that the negativity dictionary is one-half of the LSD net tone measure; the mean across all three countries is  $-0.71$ . Correlations between net tone and the LM negativity measure are slightly lower, on average,  $-0.55$ . In sum, the various approaches to measuring the tone of economic news content produce measures that show both similarity and difference. Analyses below demonstrate whether and how the differences matter.

The final row in Figure 1 shows our measures of sociotropic economic evaluations. We do not have measures of retrospective evaluations in all countries, so we focus only on prospective evaluations here. Note that our prospective measures differ somewhat across countries. In the United States, the measure is from the University of Michigan's Survey of Consumers, and we focus here on responses to the question: "And how about a year

<sup>6</sup>The newer version of Lexicoder (3.0) is redesigned to reduce processing time for large data sets, and to facilitate integration in R. Because it deals with word counts and suffixes in a slightly different way than the older version, we compare the new and old estimates here.

TABLE 1  
Correlations Between Measures of Sentiment

United States	AJPS Net Tone	LSD Net Tone	DK Net Tone	LSD Negativity
LSD net tone	0.96			
DK net tone	0.56	0.56		
LSD negativity	-0.71	-0.71	-0.45	
LM negativity	-0.61	-0.59	-0.48	0.78
United Kingdom	LSD Net Tone	DK Net Tone	LSD Negativity	
DK net tone	0.40			
LSD negativity	-0.75	-0.22		
LM negativity	-0.55	-0.07	0.78	
CA	LSD Net Tone	DK Net Tone	LSD Negativity	
DK net tone	0.49			
LSD negativity	-0.66	-0.43		
LM negativity	-0.50	-0.42	0.75	

Cells contain Pearson's correlation coefficients. All correlations are significant at  $p < 0.05$ .

from now, do you expect that in the country as a whole, business conditions will be better, or worse than they are at present, or just about the same?" U.K. data are from Eurostat's European Sentiment Indicator, based on the question: "How do you expect the general economic situation in this country to develop over the next 12 months?" Canadian data are from the Conference Board of Canada, based on the question: "How do you feel the job situation and overall employment will be in this community six months from now?" The final indicator in each case is the percentage saying "better" minus the percentage saying "worse."

There are differences between these questions, to be sure, the most significant being the focus on jobs, on region rather than country, and on a six-month time horizon in the Canadian case. It thus is important not to compare levels across countries. Insofar as each series captures an element of prospective evaluations, however, we expect them to exhibit similar relationships with the economy and media content over time.

Supporting Information Table A2 includes unit root tests, specifically, augmented Dickey-Fuller tests with both one and three lags, across all series used in the analyses.<sup>7</sup> In no case do we fail to reject the null hypothesis of a unit root, though for leading economic indicators we come very close. This simplifies empirical analysis; since none of the variables are integrated, it means that cointegration is not a concern, and we can use more standard econometric approaches. This is true even when including leading economic indicators in our analysis, which are long-memoried, and are sometimes referred to as "near integrated" (DeBoef and Granato, 1997). For those concerned that those economic indicators really are integrated despite our diagnostics, it is important to keep in mind that they are not dependent variables in any of our analyses and we use error correction models (ECMs) to analyze their effects on media content and economic

<sup>7</sup>This number of lags is based on empirical analysis of statistical significance of the lagged differences; in most cases, no more than one lag is significant, in most other cases no more than three lags are so, and only in a handful are additional lags significant, specifically, for leading economic indicators, and including them makes no difference to the time-series diagnosis.

TABLE 2  
Responsiveness of Media to Leading Indicators

	DV: $\Delta$ in . . .			
	LSD Tone	DK Tone	LM Neg	LSD Neg
United States				
$DV_{t-1}$	-0.574*** (0.045)	-0.563*** (0.046)	-0.351*** (0.039)	-0.450*** (0.043)
$\Delta CLI_t$	0.194*** (0.031)	0.535*** (0.104)	-0.077*** (0.023)	-0.105*** (0.028)
$CLI_{t-1}$	0.014*** (0.005)	0.046*** (0.017)	-0.014*** (0.004)	-0.014*** (0.005)
Constant	-1.198** (0.511)	-4.280** (1.725)	2.307*** (0.469)	2.506*** (0.535)
$N$	383	383	383	383
$R^2$	0.311	0.286	0.188	0.237
United Kingdom				
$DV_{t-1}$	-0.634*** (0.051)	-0.555*** (0.050)	-0.458*** (0.047)	-0.510*** (0.048)
$\Delta CLI_t$	0.398*** (0.069)	0.678*** (0.183)	-0.159*** (0.048)	-0.185*** (0.054)
$CLI_{t-1}$	0.030*** (0.011)	-0.042 (0.029)	-0.032*** (0.009)	-0.034*** (0.010)
Constant	-2.970*** (1.146)	4.266 (2.946)	4.435*** (0.959)	4.827*** (1.045)
$N$	329	329	329	329
$R^2$	0.324	0.281	0.236	0.259
Canada				
$DV_{t-1}$	-0.462*** (0.043)	-0.427*** (0.042)	-0.244*** (0.034)	-0.353*** (0.040)
$\Delta CLI_t$	0.116*** (0.025)	0.337*** (0.068)	-0.044** (0.020)	-0.057*** (0.021)
$CLI_{t-1}$	0.021*** (0.005)	0.021* (0.012)	-0.013*** (0.004)	-0.014*** (0.004)
Constant	-1.875*** (0.472)	-1.812 (1.187)	1.838*** (0.418)	2.207*** (0.442)
$N$	380	380	380	380
$R^2$	0.248	0.225	0.137	0.187

\*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Cells contain OLS coefficients with SEs in parentheses.

perceptions. There seemingly is little risk of spurious results (Banerjee et al., 1993; Sims et al., 1990).

**Results**

Table 2 shows the basic ECMs relating different measures of media coverage and leading economic indicators. The first important finding is that *all* of the measures of media tone respond to economic indicators, in both changes and levels, and in expected ways: net tone is positively related to leading indicators, and negativity is appropriately negatively related to leading indicators. This is true in all three countries. Results also suggest that the LSD net measure performs better than all other measures, again in all countries. This interpretation



TABLE 3  
The Short- and Long-Term Impacts of the Economy on Media Tone

	United States	United Kingdom	Canada
Rate of error correction ( $\phi$ )	-0.574	-0.634	-0.462
Short-term effect ( $\beta_0$ )	0.194	0.398	0.116
Long-run multiplier ( $\gamma$ )	0.024	0.047	0.045

Based on models for LSD tone in Table 2.

is based on the model  $R^2$ s, which suggest that the LSD produces a measure more in line with economic indicators than does the DeBoef-Kellstedt dictionary, and also that both net tone measures outperform the negativity-only measures.<sup>8</sup> We take the improvement in model fit as an indication that including positive words is important to capturing the nature of economic news coverage. Even using negativity-only dictionaries, the LSD-based measure reflects conditions better than that produced using the LM dictionary.

These comparisons across measures are of some significance for those interested in the accurate estimation of sentiment in economic news. One concern about the LSD is that it is a general-purpose dictionary, intended to apply across a wide range of topics. It thus includes words that may not be relevant, or may have a different meaning, in an economic context (e.g., “liability”). This concern—not about the LSD especially, but about general-purpose dictionaries generally—was part of the motivation behind the LM dictionary. But the narrow dictionaries rely on smaller sets of words, and the narrower focus appears to miss relevant words in economic news coverage. Our supposition is that when journalists use the word “sad” in an economic news story, it tells us something about the economy, even though the word itself is not especially economic. As a result, the broader LSD produces a measure that follows the economy more closely than do the other measures, and likely offers a better indication of the “media signal” that readers get as well. All subsequent results thus focus just on LSD-estimated net tone (though note that our substantive findings are no different when using the other measures).

The test of dictionaries here is secondary to our interest in whether prior U.S. results generalize to the United Kingdom and Canada. Table 3 provides that test. It shows the estimated short- and long-term impacts of the economy on media content, drawn from results in Table 2, comparing across the three countries. In line with previous work, the short-term impact always outweighs the long-term impact, and by a lot, in all three countries. In Canada, for instance, a one unit change in the CLI is associated with a short-term increase in net tone of 0.12 in the current month.<sup>9</sup> The long-term impact, by contrast, is just under 0.05, and the error correction rate (-0.46) suggests that the remaining disequilibrium is corrected quite quickly, by about one-half each month. In short, the immediate impact of the economy on media tone is substantial and mostly short-lived. Indeed, the Canadian case is the only one in which the long-run effects make up roughly one-third of the total impact—in both the United States and the United Kingdom, nearly 90 percent of the impact of economic conditions is immediate. And it is important to keep in mind that these multipliers actually overstate the true long-term

<sup>8</sup>It is worth noting that all six of the estimated models of media negativity—in the third and fourth columns of Table 2—produce significantly autocorrelated errors. The same is true for one model of net tone, namely, that using the DeBoef-Kellstedt measure in Canada. In all of these cases, including the lagged difference of negativity removes the serial correlation and does not significantly change the results.

<sup>9</sup>Given that the *SDs* in CLI and net tone are 3.3 and 0.37, respectively, these estimates suggest, roughly speaking, that a one *SD* shift in CLI produces a one *SD* shift in net tone.

TABLE 4

Responsiveness of Media Tone to Prospective Economic Evaluations (and the Economy), and Vice Versa

	DV: $\Delta$ in LSD Tone		
	United States	United Kingdom	Canada
$DV_{t-1}$	-0.601*** (0.047)	-0.657*** (0.052)	-0.482*** (0.045)
$\Delta CLI_t$	0.151*** (0.033)	0.321*** (0.076)	0.104*** (0.030)
$CLI_{t-1}$	0.014*** (0.005)	0.022* (0.013)	0.014** (0.007)
$\Delta Pros\ Evals_t$	0.008*** (0.002)	0.009** (0.004)	0.014*** (0.005)
$Pros\ Evals_{t-1}$	0.004*** (0.001)	0.005** (0.003)	0.003* (0.002)
Constant	-1.290** (0.508)	-2.136* (1.273)	-1.193* (0.652)
$N$	380	323	354
$R^2$	0.334	0.344	0.268

	DV: $\Delta$ Prospective Evaluations		
	United States	United Kingdom	Canada
$DV_{t-1}$	-0.192*** (0.028)	-0.209*** (0.033)	-0.072*** (0.018)
$\Delta CLI_t$	2.995*** (0.730)	5.406*** (1.033)	2.632*** (0.318)
$CLI_{t-1}$	-0.201* (0.115)	0.127 (0.173)	0.178** (0.073)
$\Delta LSD\ tone_t$	3.814*** (1.137)	1.665** (0.765)	1.734*** (0.598)
$LSD\ tone_{t-1}$	1.940 (1.247)	1.272 (0.876)	1.950*** (0.578)
Constant	21.278* (11.375)	-15.199 (17.523)	-19.108*** (7.327)
$N$	380	323	354
$R^2$	0.174	0.179	0.296

\*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Cells contain OLS coefficients with SEs in parentheses.

effects of economic shocks, which technically are not permanent. Recall that our analysis of stationarity (see Supporting Information Table A2) indicates that while shocks diminish very slowly, they do not last indefinitely. Thus, an economic impulse will tend to decay, and this will have corresponding (decreasing) effects on media content.

Findings in Tables 2 and 3 make clear that the media focus on current change in prospective conditions is not exclusive to the United States. But, are there differences in the relationship between media coverage and public expectations? We want to know whether public evaluations reflect media coverage and also whether that coverage reflects economic evaluations. To begin with, the top panel of Table 4 incorporates economic evaluations into the models of media content. Specifically, it includes the current (time  $t$ ) changes in evaluations as well as their lagged ( $t - 1$ ) levels, the latter of which are of special importance to us given that they presumably are exogenous. (While the current changes in evaluations may be endogenous to current changes in media coverage, this is not true for lagged levels.)

And there is evidence in Table 4 that media respond in part to public sentiment. Most importantly, the effect of lagged evaluations is positive and significant in each country, though especially the United States and, to a lesser extent, the United Kingdom. The coefficients in the three countries are quite similar—between 0.003 and 0.005—and this is of real consequence given that the *SD* in those evaluations (and media tone) also is quite similar.<sup>10</sup> On average, a 1 *SD* change in lagged economic projections produces a 0.13 *SD* change in media tone, controlling for both leading economic indicators and current changes in projections.

In all three countries, then, results suggest that media content responds to public sentiment above and beyond the impact of the economy itself. This is an important finding particularly given that most research assumes that the causality runs in the other direction. (The literature exploring the unidirectional impact of media coverage on public sentiment is extensive, but consider, e.g., De Boef and Kellstedt, 2004; Goidel and Langley, 1995; Hester and Gibson, 2003; Nadeau et al., 1999; Soroka, 2006.) Now, let us consider the effect of media coverage on public evaluations.

The bottom panel of Table 4 shows results from estimating an ECM of prospective evaluations in the three countries. Here, we can see that the public's economic expectations do follow leading economic indicators, though most of the effects are short-lived, particularly in the United Kingdom. Results further suggest that evaluations also may respond to changes in media tone—though the strongest evidence of this is in Canada, the only country for which lagged levels of media tone are a significant predictor of evaluations.<sup>11</sup> This also is an important finding. While there may be a reciprocal relationship between media content and public sentiment, the effect appears to run primarily from the latter to the former, especially in the United States and the United Kingdom.<sup>12</sup> This has important implications for the way in which we interpret the substance of media coverage, as we discuss further, next.

## Discussion

This article offers a first comparative exploration of the relationships between the economy, news coverage, and public sentiment in three Anglo-American democracies. Results suggest remarkable similarities across the countries. In each case, media coverage follows economic conditions; it focuses more on change in the economy than on levels; and the impact of change appears to be primarily current, that is, the effect of economic change is reflected mainly in current media tone, and dissipates relatively quickly thereafter.

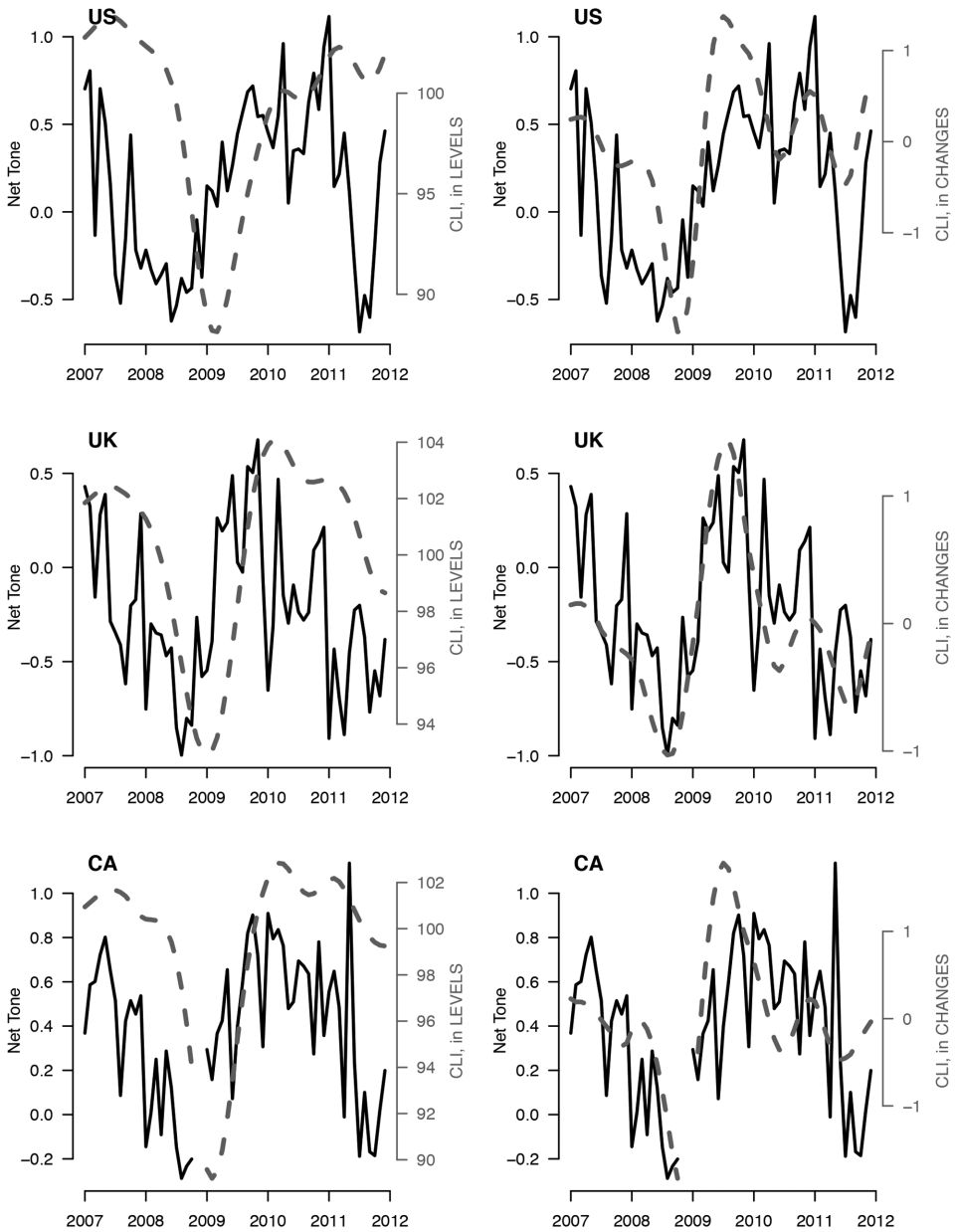
The reactivity of media coverage to change in economic conditions is illustrated in Figure 2, which replicates a figure from Soroka, Stecula, and Wlezien (2015) across all three countries, focusing on the period surrounding the Great Recession. The top-left

<sup>10</sup>Specifically, *SDs* in prospective evaluations (media tone) range from 13.35 (0.37) in Canada to 11.10 (0.47) in the United Kingdom and 12.80 (0.36) in the United States.

<sup>11</sup>The effect of lagged tone in Canada is less reliable ( $b = 0.189$ ,  $SE = 0.073$ ) when including the lagged difference in projections, which accounts for serially correlated errors. This is the only model in Table 4 for which this is necessary.

<sup>12</sup>Note that this finding is in line with Soroka, Stecula, and Wlezien (2015), where Granger causality tests indicated a stronger impact running from prospective evaluations to media tone than the reverse. This was not the case for retrospective evaluations, which showed stronger bidirectional causality, but we cannot test retrospective evaluations cross-nationally here. Note also that Granger tests using these data produce findings similar to those in previous work, though across three countries: while public evaluations Granger-cause media tone in all three countries, the reverse is not true. That said, we do not focus on these Granger results, since they are not ideal indications of causality—they are simple bivariate tests in what we know is a multivariate environment.

FIGURE 2  
Leading Indicators and Media Tone, 2007–2011



panel shows U.S. net tone and *levels* of the CLI; net tone is plotted alongside *changes* in CLI on the right. The first panel shows what appears to be a relatively weak correspondence between the two series; the second illustrates a powerful concurrent relationship. Indeed, the correlation between media tone and levels of the CLI in the United States over this period is  $-0.02$  ( $p = 0.88$ ), while the correlation between tone and changes in the CLI is  $0.61$

( $p < 0.01$ ). This is as we have seen in prior work (albeit with a new CLI measure here), and highlights the degree to which economic news coverage responds primarily to change.

Preceding results suggest a similar dynamic in the United Kingdom and Canada, so the second and third rows in Figure 2 illustrate the same quantities for these other countries. Results are strikingly similar. Changing from levels to changes in the CLI shifts the correlation with media tone in the United Kingdom from 0.20 ( $p = 0.11$ ) to 0.66 ( $p < 0.01$ ). In Canada, the change is more muted, from 0.29 ( $p = 0.02$ ) to 0.47 ( $p < 0.01$ ). The differences in correlations, across both levels and changes, may well tell us something about differences in economic reporting from one country to the next, though we do not wish to read too much into these differences without further investigation. For the time being, we take these as evidence that mass media coverage of the economy in all three countries focuses primarily on change.

Recall that in each case media coverage also reflects public sentiment itself; as the public becomes more optimistic or pessimistic about the future, economic news follows. The reverse is not consistently true, however, since media content reliably influences the public's economic expectations only in Canada. To be clear: while a considerable body of work finds evidence of media effects on public economic sentiment, we find that media coverage is more likely to reflect the nature of public sentiment than it is to affect it. This finding challenges conventional characterizations of the media–public relationship, which clearly is not a one-way street. It highlights potential consequences as well, particularly to the degree perceptions and economic reality do not match. The nature of media coverage might reflect tendencies in the way in which publics think about the economy. Most importantly, public perceptions may have a potentially distorting effect on media content, which has implications for understanding media coverage in the time of hyperpartisan politics.

We do not, as of yet, have clear expectations for a more broadly comparative study. Our sense from these analyses is that while some past work points toward cross-national differences in the tone of coverage, or the emphasis on one indicator or another, or the political ideological bias in economic news coverage, the emphasis on change in economic conditions may be broadly generalizable. The priority given to news that is both new and salient to news consumers' political and economic decision making would seem to make change in prospective conditions especially relevant across most, if not all, contexts. This should be true regardless of whether media, or the public, are leading. Of course, there may also be differences in the direction of the media–public relationship, both across countries and over time. Furthermore, whether these results generalize to other popular news mediums, such as television or the Internet, remains to be seen. For example, social media—including news from traditional producers designed for distribution through social media like Twitter or Facebook—may behave differently than newspapers or broadcast news. We cannot explore the many possibilities with the limited data set used here. But results above clearly highlight the importance of considering more than a simple unidirectional link between media coverage and public economic sentiment.

Future work on this subject might also focus on the broader implications of the nature of economic news. There is already work on some of the political consequences of that coverage, particularly for government support and electoral outcomes. The relationship between economic news and other political and policy preferences has barely been addressed, however, and neither has the impact that economic news may have on the economy itself. In short, these potentially broadly generalizable findings may be of real significance to a host of political and economic phenomena. Exploring these relationships in a context that looks beyond the United States is therefore an important goal for future research.

## REFERENCES

- Banerjee, Anindya, Juan Dolado, John W. Galbraith, and David F. Hendry. 1993. *Co-Integration, Error Correction, and the Econometric Analysis of Non-Stationary Data*. Oxford: Oxford University Press.
- Barbera, Pablo, Amber Boydston, Suzanna Linn, Ryan McMahon, and Jonathan Nagler. 2016. "Methodological Challenges in Estimating Tone: Application to News Coverage of the US Economy." Paper presented at the Annual Meeting of the Midwest Political Science Association, Chicago, IL.
- Behr, Roy L., and Shanto Iyengar. 1985. "Television News, Real-World Cues, and Changes in the Public Agenda." *Public Opinion Quarterly* 49(1):38–57.
- Belanger, Eric, and Stuart Soroka. 2012. "Campaigns and the Prediction of Election Outcomes: Can Historical and Campaign-Period Prediction Models Be Combined?" *Electoral Studies* 31:702–14.
- van der Brug, W., C. van der Eijk, and M. N. Franklin. 2007. *The Economy and the Vote: Economic Conditions and Elections in Fifteen Countries*. New York, NY: Cambridge University Press.
- Clarke, Harold D., and Marianne C. Stewart. 1995. "Economic Evaluations, Prime Ministerial Approval and Governing Party Support: Rival Models Reconsidered." *British Journal of Political Science* 25(2):145–70.
- Croteau, D., and Hoynes, W. 2001. *The Business of Media: Corporate Media and the Public Interest*. Thousand Oaks, CA: Pine Forge Press.
- van Dalen, Arjen, Claes H. de Vreese, and Erik Albaek. 2015. "Economic News Through the Magnifying Glass. How the Media Cover Economic Boom and Bust." *Journalism Studies* 18(7):890–909.
- De Boef, Suzanna, and James Granato. 1997. "Near-Integrated Data and the Analysis of Political Relationships." *American Journal of Political Science* 41:619–40.
- De Boef, Suzanna, and Paul M. Kellstedt. 2004. "The Political (and Economic) Origins of Consumer Confidence." *American Journal of Political Science* 48(4):633–49.
- De Vreese, Claes, Jochen Peter, and Holli A. Semetko. 2001. "Framing Politics at the Launch of the Euro: A Cross-National Comparative Study of Frames in the News." *Political Communication* 18(1):107–22.
- Deuze, Mark. 2002. "National News Cultures: A Comparison of Dutch, German, British, Australian and US Journalists." *Journalism and Mass Communication Quarterly* 79(1):134–49.
- Duch, R. M., and R. T. Stevenson. 2008. *The Economic Vote: How Political and Economic Institutions Condition Election Results*. New York, NY: Cambridge University Press.
- Durr, Robert H. 1993. "What Moves Policy Sentiment?" *American Political Science Review* 87(1):158–70.
- Erikson, Robert S. 1989. "Economic Conditions and the Presidential Vote." *American Political Science Review* 83:567–73.
- Erikson, Robert S., Michael B. MacKuen, and James A. Stimson. 2002. *The Macro Polity*. Cambridge: Cambridge University Press.
- Erikson, Robert S., and Christopher Wlezien. 2012. *The Timeline of Presidential Elections*. Chicago, IL: University of Chicago Press.
- Goidel, Robert K., and Ronald E. Langley. 1995. "Media Coverage of the Economy and Aggregate Economic Evaluations: Uncovering Evidence of Indirect Media Effects." *Political Research Quarterly* 48(2):313–28.
- Hallin, D. C., and P. Mancini. 2004. "Americanization, Globalization, and Secularization: Understanding the Convergence of Media Systems and Political Communication." Pp. 25–44 in F. Esser and B. Pfetsch, eds., *Comparing Political Communication. Theories, Cases, and Challenges*. Cambridge: Cambridge University Press.
- Hanitzsch, Thomas, Folker Hanusch, Claudia Mellado, Maria Anikina, Rosa Berganza, Incilay Cangoz, Mihai Coman, Basyouni Hamada, María Elena Hernández, Christopher D. Karadjov, Sonia Virginia, Peter G. Moreira, Patrick Lee Plaisance Mwesige, Zvi Reich, Josef Seethaler, Elizabeth A. Skewes, Dani Vardiansyah Noor, and Edgar Kee Wang Yuen. 2012. "Mapping Journalism Cultures Across Nations." *Journalism Studies* 12(3):273–93.
- Hanitzsch, Thomas, and Claudia Mellado. 2011. "What Shapes the News Around the World? How Journalists in Eighteen Countries Perceive Influences on Their Work." *International Journal of Press and Politics* 16(3): 404–26.

- Happy, J. R. 1986. "Voter Sensitivity to Economic Conditions: A Canadian-American Comparison." *Comparative Politics* 19(1):45–56.
- Hester, Joe Bob, and Rhonda Gibson. 2003. "The Economy and Second-Level Agenda Setting: A Time-Series Analysis of Economic News and Public Opinion About the Economy." *Journalism & Mass Communication Quarterly* 80(1):73–90.
- Hibbs, Douglas A. Jr. 1987. *The American Political Economy*. Cambridge: Harvard University Press.
- Ju, Youngkee. 2008. "The Asymmetry in Economic News Coverage and Its Impact on Public Perception in South Korea." *International Journal of Public Opinion Research* 20(2):237–49.
- Kalogeropoulos, Antonis, Helle Molgarrd Svensson, Arjen van Dalen, Claes de Vreese, and Erik Albaek. 2015. "Are Watchdogs Doing Their Business? Media Coverage of Economic News." *Journalism* 16(8):993–1009.
- Lewis-Beck, Michael S., and Mary Stegmaier. 2000. "Economic Determinants of Electoral Outcomes." *Annual Review of Political Science* 3:183–219.
- . 2007. "Economic Models of Voting." Pp. 518–37 in Russell Dalton and Hans-Dieter Klingemann, eds., *The Oxford Handbook of Political Behavior*. Oxford: Oxford University Press.
- Lischka, Juliane A. 2014. "Different Revenue Incentives, Different Content? Comparing Economic News Before and During the Financial Crisis in German Public and Commercial News Outlets Over Time." *European Journal of Communication* 29(5):549–66.
- Loughran, Tim, and Bill McDonald. 2011. "When Is a Liability Not a Liability? Textual Analysis, Dictionaries, and 10-Ks." *Journal of Finance* 66(1):35–65.
- Nadeau, Richard, Michael Lewis-Beck, and Eric Belanger. 2012. "Economics and Elections Revisited." *Comparative Political Studies* 46(5):551–73.
- Nadeau, Richard, Richard G. Niemi, and Timothy Amato. 1996. "Prospective and Comparative or Retrospective and Individual? Party Leaders and Party Support in Great Britain." *British Journal of Political Science* 26(2):245–58.
- Nadeau, Richard, Richard G. Niemi, David P. Fan, and Timothy Amato. 1999. "Elite Economic Forecasts, Economic News, Mass Economic Judgments, and Presidential Approval." *Journal of Politics* 61(1):109–35.
- Price, Simon, and David Sanders. 1993. "Modeling Government Popularity in Postwar Britain: A Methodological Example." *American Journal of Political Science* 37(1):317–34.
- Sanders, David, David Marsh, and Hugh Ward. 1993. "The Electoral Impact of Press Coverage of the British Economy, 1979–87." *British Journal of Political Science* 23(2):175–210.
- Sims, Christopher A., James H. Stock, and Mark W. Watson. 1990. "Inference in Linear Time Series Models with Some Unit Roots." *Econometrica* 58(1):113–44.
- Soroka, Stuart. 2002. *Agenda-Setting Dynamics in Canada*. Vancouver: University of British Columbia Press.
- . 2006. "Good News and Bad News: Asymmetric Responses to Economic Information." *Journal of Politics* 68(2):372–385.
- Soroka, Stuart, Blake Andrew, Toril Aalberg, Shanto Iyengar, James Curran, Sharon Coen, Kaori Hayashi, Paul Jones, Gianpetro Mazzoleni, June Woong Rhee, David Rowe, and Rod Tiffen. 2013. "Auntie Knows Best? Public Broadcasters and Current Affairs Knowledge." *British Journal of Political Science* 43(4):719–39.
- Soroka, Stuart, Dominik Stecula, and Christopher Wlezien. 2015. "It's (Change in) the (Future) Economy, Stupid: Economic Indicators, the Media, and Public Opinion." *American Journal of Political Science* 59(2):457–74.
- Soroka, Stuart, and Christopher Wlezien. 2010. *Degrees of Democracy: Politics, Public Opinion and Policy*. Cambridge: Cambridge University Press.
- Stevenson, Randolph T. 2001. "The Economy and Policy Mood: A Fundamental Dynamic of Democratic Politics?" *American Journal of Political Science* 45 (3):620–33.
- Uscinski, Joseph E. 2009. "When Does the Public's Issue Agenda Affect the Media's Issue Agenda (and Vice-Versa)? Developing a Framework for Media-Public Influence." *Social Science Quarterly* 90(4):796–815.

Waheed, Moniza, Andreas R. T. Schuck, Peter C. Neijens, and Claes H. de Vreese. 2013. "Values in the News: Comparing the News Coverage of Political Speeches in Developed and Developing Countries." *Journalism Studies* 14(4):618–34.

Wlezien, Christopher. 1995. "The Public as Thermostat: Dynamics of Preferences for Spending." *American Journal of Political Science* 39:981–1000.

Young, Lori, and Stuart Soroka. 2012. "Affective News: The Automated Coding of Sentiment in Political Texts." *Political Communication* 29:205–31.

### **Supporting Information**

Additional supporting information may be found in the online version of this article at the publisher's website:

Appendix Table 1: Data Set by Newspaper, Annually

Appendix Table 2: Tests of Stationarity