Supplementary Materials for

Partisan Bias in Economic News Content: New Evidence

Contents

Table S1. Source selection

Source	Sunday Circulation	Number of Articles		Presidential Endorsements							
		Inflation	Unemployment	88	92	96	00	04	08	12	16
Atlanta Journal-Constitution (91)	683,977	2,350	9,324	N	N	N	N	D	D	N	N
Boston Globe (88)	384,173	3,204	12,311	D	D	D	D	D	D	D	D
Chicago Sun-Times (92)	342195	4,789	9,145	R	D	D	R	D	D	N	D
Chicago Tribune (85)	789,915	10,210	22,063	R	R	R	R	R	D	D	D
Dallas Morning News (92)	705,675	4,111	8,894	R	R	R	R	R	R	R	D
Denver Post (94)	610,051	1,983	4,712	R	D	D	D	R	D	D	D
Detroit Free Press (94)	826,293	1,345	5,242	D	D	D	D	D	D	D	D
Houston Chronicle (91)	983,023	4,254	11,218	R	R	R	R	R	D	R	D
Los Angeles Times (85)	955,881	9,996	22,655	N	N	N	N	N	D	D	D
Minneapolis Star-Tribune (91)	569,743	1,297	5,537	D	D	D	D	D	D	D	D
New York Times (85)	2,517,307	13,952	27,588	D	D	D	D	D	D	D	D
Orange County Register (88)	661,911	1,699	5,409	N	N	N	N	N	N	N	N
Philadelphia Inquirer (94)	501,186	3,183	5,931	D	D	D	D	D	D	D	D
The Plain Dealer (92)	424,722	2,552	8,572	R	D	D	R	N	D	D	D
Salt Lake Tribune (94)	402,835	1,179	4,846	N	N	N	N	R	D	D	D
San Diego Union-Tribune (85)	362,166	4,057	11,719	R	R	R	R	R	R	R	D
San Francisco Chronicle (89)	418,032	1,725	5,271	R	R	D	D	D	D	D	D
San Jose Mercury News (94)	677,773	2,683	6,383	N	D	D	D	D	D	D	D
Seattle Times (89)	364,586	3,359	8,848	D	D	D	R	D	D	D	D
St. Louis Post-Dispatch (90)	479,281	3,742	11,826	D	D	D	D	D	D	D	D
Tampa Bay Times (88)	397,996	2,346	9,941	D	D	D	D	D	D	D	D
USA Today (89)	2,301,291	4,494	7,339	N	N	N	N	N	N	N	N
Washington Post (85)	805,565	7,430	21,992	N	D	D	D	D	D	D	D
Total Newspaper	**17,165,577**	**95,938**	**246,766**								
Associated Press (85)		30,254	42,176								
Total		**126,192**	**288,942**								

Note: Endorsement data from Noah Veltman (https://noahveltman.com/endorsements/)

A. Source Selection

The sources used in the main analyses in the paper are shown above in Table S1. They encompass 23 high-circulating newspaper sources, including important national newspapers like the *New York Times* and the *USA Today*, and large local newspapers like the *Atlanta Journal-Constitution*. They include newspapers from all parts of the country and with varied editorial positions. Also included is the *Associated Press* (AP), which provides content to over 1,500 newspapers and broadcasters in the United States as of 2016. At a time when newspapers are scrambling to afford providing content, the AP has grown in importance.

BODY(employment OR unemployment OR underemployment OR job creation OR jobs created OR created jobs OR job losses OR lost jobs OR jobs report OR jobless OR job market OR labor force OR labor market OR work force OR unemployed) AND BODY(United States OR U.S. OR America OR American OR national) AND SUBJECT(unemployment OR job creation OR employment OR labor sector OR labor force) AND COUNTRY(United States)

BODY(inflation OR cost of living) AND SUBJECT(inflation OR price changes OR price increases OR consumer price index OR cost of living OR food prices) AND BODY(United States OR U.S. OR America OR American OR national) AND COUNTRY(United States)

Figure S1. LexisNexis search terms

Perhaps the most notable gap in this sample of mainstream news is broadcast television. Together, the three major networks reach over 20 million viewers (Pew Research Center, 2017). The content provided by the major networks, however, has not as frequently been the focus of media and the economy literature, nor of research on media bias. This could, in part, be due to a data problem. Broadcasters provide less content per period than newspapers, leading to much noisier measures.

Table S2. Media Tone and Economic Conditions, 1985-2013

	Newspaper		**Associated Press**		**Broadcast**	
	Coef.	SE	Coef.	SE	Coef.	SE
Tone $_{t-1}$	-0.66***	0.08	-0.56***	0.08	-0.95***	0.18
Δ Unemployment Rate $_{t}$	-0.17**	0.08	-0.20*	0.12	-0.36	0.36
Unemployment Rate $_{t-1}$	-0.00	0.01	-0.00	0.02	-0.06	0.05
Δ Inflation Rate $_{t}$	-0.03*	0.02	-0.09***	0.03	0.09	0.19
Inflation Rate $_{t-1}$	-0.06	0.04	-0.11*	0.06	0.14	0.23
Δ CLI $_{t}$	0.06**	0.03	0.13***	0.05	0.03	0.12
CLI $_{t-1}$	0.01	0.02	0.01	0.03	-0.07	0.10
Constant	-0.57	1.76	-0.53	2.93	7.31	9.34
Trend	Yes		Yes		Yes	
N	115		115		115	
R^2	0.40		0.38		0.50	

Heteroskedastic-robust standard errors; * p<0.1, * p<0.05, ** p<0.01

Table S3. Public Economic Evaluations and Media Tone, 1985-2013

	Newspaper		**Associated Press**		**Broadcast**		**All**	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Public $_{t-1}$	-0.31***	0.05	-0.17***	0.04	-0.12	0.04	-0.26***	0.05
Δ Newspaper Tone $_{t}$	32.00***	4.98					20.59***	4.92
Newspaper Tone $_{t-1}$	36.13***	5.91					25.01***	8.47
Δ AP Tone $_{t}$			15.45***	2.85			7.99***	3.06
AP Tone $_{t-1}$			13.66***	2.86			5.19	3.90
Δ Broadcast Tone $_{t}$					1.67	1.42	-0.33	1.34
Broadcast Tone $_{t-1}$					3.23**	1.43	-0.19	1.45
Constant	11.51***	3.42	1.98	0.02	5.56	4.25	7.87**	3.51
Trend	Yes		Yes		Yes		Yes	
N	115		115		115		115	
R^2	0.41		0.36		0.09		0.43	

Heteroskedastic-robust standard errors; * p<0.1, * p<0.05, ** p<0.01

Over 7,000 transcripts on unemployment were downloaded from the three major networks using the same keywords and subject tags as for newspaper and newswire content. These are shown in Figure S1. Table S2 presents the results of error correction models that regress changes in media tone for newspaper, AP, and broadcast, on the changes and levels of economic performance indicators, such as the unemployment rate, inflation rate, and a composite index of leading economic indicators (CLI) used by the OECD. Tone for each media format was constructed identically as the tone measure used in the paper. As is clear from the results below, the relationships of newspaper and AP tone to economic conditions are very similar. Both media are responsive to changes in unemployment and the CLI, though the AP seems more responsive to inflation (even in its coverage of unemployment). Broadcast news is wholly unresponsive to these indicators. This could mean that broadcast news is genuinely unresponsive to economic conditions, but it is also possible the measure is simply too noisy to pick up this responsiveness with this type of analysis. A sign in favor of the latter interpretation can be found in the coefficient on the lagged dependent variable – it approaches -1, meaning there is virtually no memory in the tone of broadcast news.[1]

[1] The lack of responsiveness of broadcast tone to performance is also true in inflation coverage. More details can be provided by the author upon request.

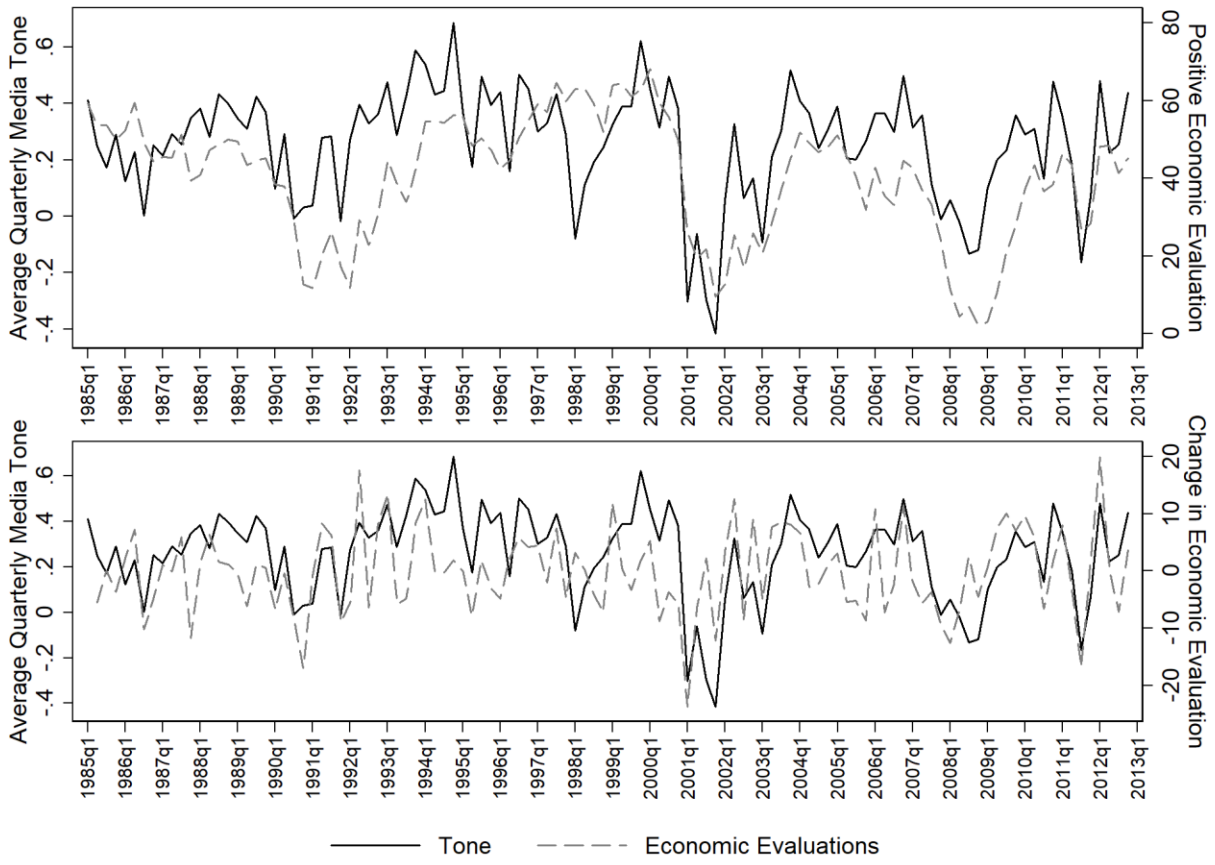

Figure S2. Average media tone and aggregate economic evaluations, 1985-2013

Ideally we would also want to see a strong association between media tone and public evaluations of the economy. This could occur because citizens learn about the state of the economy from the media coverage, or because journalists are responsive to the views of their readers. The direction of causality is tackled by the next section. For now, Table S3 provides the results of an error correction model where public economic evaluations are regressed on changes and levels of tone for each format independently, and then all together. The measure on public economic evaluations was taken from the *Survey of Consumer Attitudes and Behaviors* and reads as follows:

Would you say that at the present time business conditions are better or worse than they were a year ago?

It is expressed as the average percentage of respondents saying business conditions are better than they were a year ago for a given quarter. The results show that newspaper and AP tone are much more strongly associated with the public's perception of economic conditions than broadcast news. When all three tone measures are included in the model, broadcast tone drops completely out of significance.

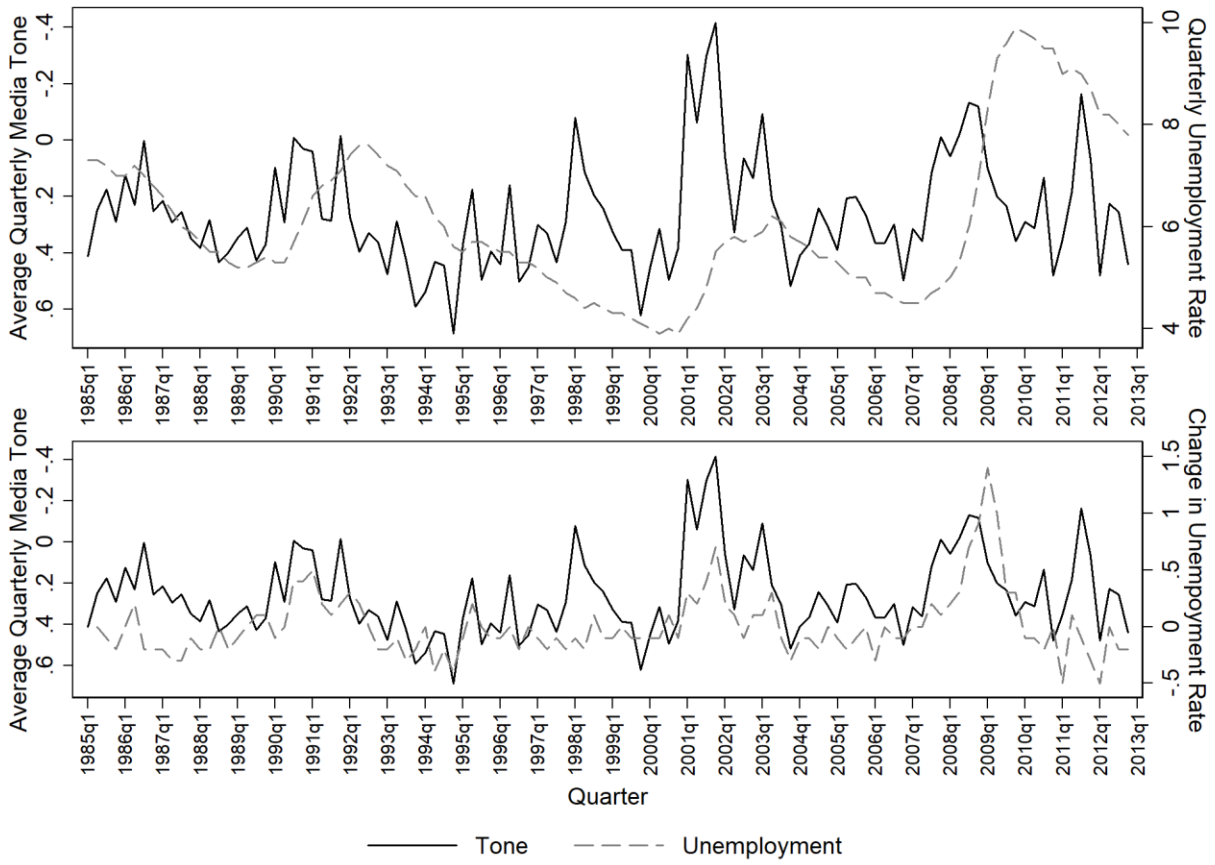

Figure S3. Average media tone and unemployment, 1985-2013

Thus, this paper will use content from our sample of newspapers and the *Associated Press*. This averaged tone measure for unemployment content tracks very strongly with public economic evaluations as shown in Figure S2. It is also strongly associated with changes in the unemployment rate as displayed in Figure S3. The tone of our content in inflation coverage, for its part, is strongly associated with changes and levels of inflation as well (Figure S4).

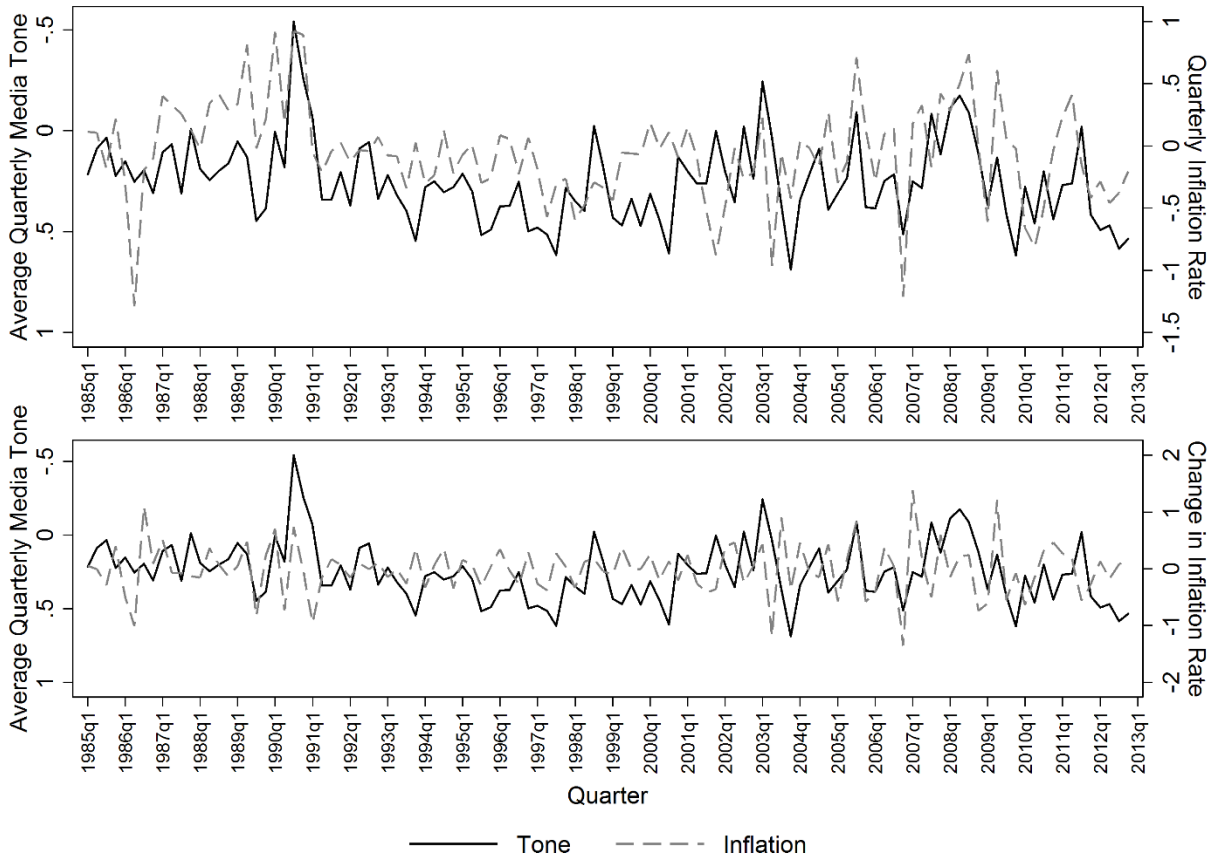

Figure S4. Average media tone and inflation, 1985-2013. Note: inflation presented after removing swings in inflation brought by the Financial Crisis

B. Replication with Economic News Data

Unemployment was chosen as the primary issue in this study because of its focus in the literature on economic news coverage and its status as an issue that is owned by the Democratic Party. Inflation was selected as a specific economic issue Republicans own because of their electoral coalition. The choice of these issues would be more justifiable if the former issue adequately proxies for news content about the broader economy – a status that surely won't be met by inflation, which was at generally low levels throughout the entire period of this study.

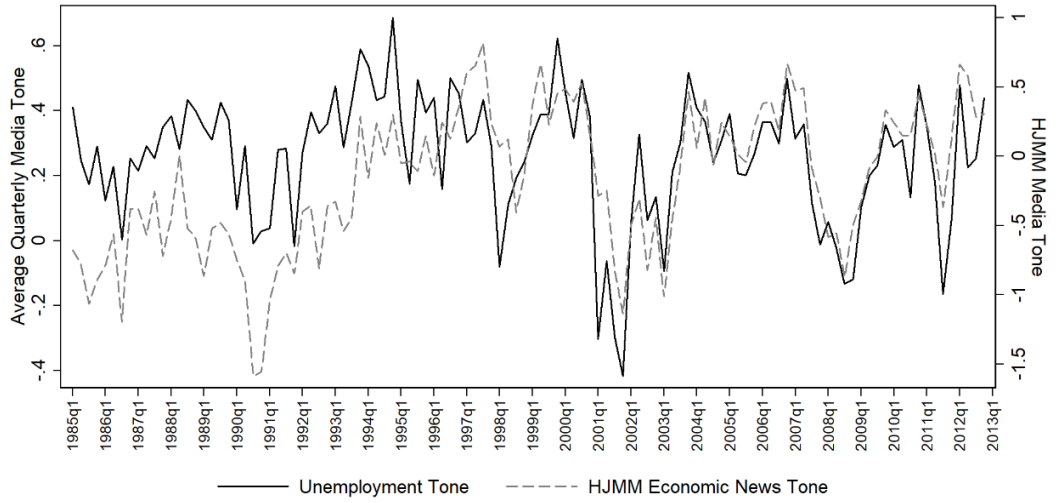

Figure S5. Average media tone and inflation, 1985-2013. Note: inflation presented after removing swings in inflation brought by the Financial Crisis

A study by Hicks, Jacobs, Matthews, and Merkley (HJMM, 2017) takes a similar approach to evaluating tone in economic news content as done in this paper. However, they analyze a far broader range of coverage in newspapers – everything that can be classified as economic news. The researchers downloaded news content from 32 high circulating newspapers – including the 23 used in this study – with two simple keywords: economy or economic, along with keywords indicating that the article is at least somewhat focused on the United States. This amounted to a sample of roughly 2.5 million news articles. They then used supervised machine learning to classify whether the lede of a given article had some focus on at least one dimension of the economy (e.g. unemployment, inflation, wages, economic growth, the stock market, etc.). HJMM used the Lexicoder Sentiment Dictionary to capture

tone in these news articles in an identical fashion as this paper. Figure S5 shows that there is a strong associated between the tone of unemployment coverage as measured in this paper, and their measure of tone in more general economic news. We have strong grounds to suspect the measure used in this paper reflects broader media coverage about the state of the economy.

Table S4. OLS Regression Estimates, HJMM Economic News Data – All Articles

	1		2		3		4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Tone $_{t-1}$	-0.50***	0.07	-0.76***	0.08	-0.82***	0.09	-0.81***	0.09
Δ Unemployment	-0.41***	0.15	-0.26*	0.14	-0.54***	0.17		
Unemployment $_{-1}$	-0.06***	0.02	-0.09***	0.02	-0.09***	0.02	-0.10***	0.02
Democratic President $_{t}$			0.34***	0.07	0.39***	0.07	0.34***	0.08
Δ Inflation	-0.21***	0.04	-0.19***	0.04	-0.22***	0.04	-0.23***	0.04
Inflation $_{t-1}$	-0.30***	0.08	-0.27***	0.07	-0.23***	0.07	-0.20***	0.07
Δ GDP Growth	0.24***	0.06	0.32***	0.06	0.32***	0.06	0.33***	0.06
GDP Growth $_{t-1}$	-0.02	0.04	0.04	0.04	0.06	0.04	0.07	0.04
Δ Presidential Approval	-0.00	0.00	-0.01*	0.00	-0.01**	0.00	-0.01***	0.00
Presidential Approval $_{t-1}$	-0.01**	0.00	-0.01***	0.00	-0.01***	0.00	-0.01***	0.00
Δ Unemployment * President $_{t-1}$					0.54***	0.18		
Improve							-0.48	0.34
Improve * President $_{t}$							0.19	0.41
Worsen							-0.52**	0.26
Worsen * President $_{t}$							0.74***	0.27
Constant	2.23	4.50	-3.88	4.36	-5.57	4.29	-6.68	4.42
Trend	Yes		Yes		Yes		Yes	
N	115		115		115		115	
R2	0.43		0.54		0.57		0.58	

Heteroskedastic-robust standard errors; * p<0.1, * p<0.05, ** p<0.01

Table S4 replicates the results from the paper using HJMM's measure of the tone of economic news. The results are strikingly similar, and, if anything, stronger. Model 1 shows that this measure of tone is highly responsive to unemployment, inflation, and the CLI. Model 2 shows that coverage is substantially higher during Democratic presidencies – 0.34 points higher in the short-run or 0.45 points cumulatively in the long run, which amounts to 0.83 standard deviations. Model 3 shows that media responsiveness to changes in the unemployment rate is higher under Republican presidencies, where a one point increase in the unemployment rate reduces tone by 0.54 points or 1.59 standard deviations ($p<0.01$). This effect is eliminated during Democratic presidencies ($p<0.01$). Model 4

demonstrates that this responsiveness is asymmetrical – it only occurs when short-run performance is worsening.

Table S5. OLS Regression Estimates, HJMM Economic News Data – Excluding Business Section

	1		2		3		4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Tone $_{t-1}$	-0.52***	0.08	-0.82***	0.09	-0.88***	0.10	-0.87***	0.10
Δ Unemployment	-0.38***	0.14	-0.18	0.14	-0.46***	0.16		
Unemployment $_{-1}$	-0.08***	0.02	-0.13***	0.02	-0.13***	0.02	-0.13***	0.02
Democratic President $_{t}$			0.35***	0.06	0.39***	0.07	0.36***	0.08
Δ Inflation	-0.20***	0.04	-0.17***	0.04	-0.21***	0.04	-0.21***	0.04
Inflation $_{t-1}$	-0.27***	0.08	-0.24***	0.07	-0.20***	0.06	-0.17***	0.06
Δ CLI	0.20***	0.06	0.29***	0.06	0.29***	0.06	0.30***	0.06
CLI $_{t-1}$	-0.01	0.04	0.06	0.04	0.08*	0.04	0.08**	0.04
Δ Presidential Approval	-0.00	0.00	-0.01	0.00	-0.01	0.00	-0.01*	0.00
Presidential Approval $_{t-1}$	-0.01**	0.00	-0.01***	0.00	-0.01***	0.00	-0.01***	0.00
Δ Unemployment * President $_{t-1}$					0.39***	0.07		
Improve							-0.44	0.32
Improve * President $_{t}$							0.32	0.38
Worsen							-0.44**	0.21
Worsen * President $_{t}$							0.71***	0.23
Constant	1.32	4.06	-5.45	4.05	-7.31	3.97	-8.04**	3.99
Trend	Yes		Yes		Yes		Yes	
N	115		115		115		115	
R2	0.39		0.52		0.56		0.57	

Heteroskedastic-robust standard errors; * p<0.1, * p<0.05, ** p<0.01

HJMM also constructed a tone measure excluding articles from the business section, since they view this section as less essential in shaping the public's economic evaluations. The results are robust to this change in inclusion criteria as shown in Table S5. In short, the central findings of this paper appear to hold in a broader sample of economic news content.

C. Direction(s) of Causality

There is substantial disagreement in the literature on the precise relationship between media coverage and public opinion. Most empirical research has found that the media plays an important role in shaping the public's perceptions of the state of the economy (Blood & Phillips, 1994; Nadeau et al., 1999; De Boef & Kellstedt, 2004; Doms & Morin 2004; Goidel et al., 2010; Hollanders &

Vliegenthart, 2011; Casey & Owen 2013; Soroka et al., 2015; Boydstun et al., 2018). Not all aspects of economic performance are lived experiences for citizens, so media coverage plays an important role in informing citizens on the state of the economy (Mutz, 1994). This information is largely conveyed through the *tone* of coverage, rather than its *volume* (Soroka et al., 2015). However, some recent work has called into question the direction of causality (Hopkins et al., 2017; Soroka et al., 2017). It is also possible that the news media is responsive to the beliefs of their readers and viewers in order to keep their customers satisfied. Thus, we might also expect public evaluations of the economy to affect the media's tone of coverage.

This debate is only tangentially relevant for this paper. The possibility that public economic evaluations have some influence on media coverage does not preclude media bias in economic news. If, however, we have some expectation that the public may also consistently biased against the Republican or Democratic Party's handling of different elements of the economy, then we might want to control for their evaluations in our models. Perhaps more importantly, the substantive importance of media bias in economic news is smaller if coverage is simply responsive to the economic perceptions of their audience.

The analyses provided here uses a reduced form vector autoregression (VAR) and resulting granger causality tests to tease out the likely causal direction between media tone and public economic evaluations based on our data. VAR provide simultaneous estimates of a series of equations where past values of endogenous variables are used to predict their contemporaneous values. VAR cannot, however, establish contemporaneous relationships between the endogenous variables in the system. The best it can do is show how strongly past values of the endogenous variables are associated with current values and allow for tests of granger causality – in other words, do past values of both endogenous variables better predict the current values of an endogenous variable better than past values of that endogenous variable alone?

The following two equations were simultaneously estimated, where Z is a vector of exogenous controls for economic conditions:

$$\text{Tone}_t = \alpha_0 + \beta_1 \text{Tone}_{t-1} + \beta_1 \text{Tone}_{t-2} + \beta_2 \text{Public}_{t-1} + \beta_3 \text{Public}_t + \beta_5 \Delta Z_t + \beta_6 Z_{t-1} + \varepsilon_t \quad (1)$$

$$\text{Public}_t = \alpha_0 + \beta_1 \text{Tone}_{t-1} + \beta_1 \text{Tone}_{t-2} + \beta_2 \text{Public}_{t-1} + \beta_3 \text{Public}_t + \beta_5 \Delta Z_t + \beta_6 Z_{t-1} + \varepsilon_t \quad (2)$$

A lag length of two was chosen based on the convergence of several tests – likelihood ratio, information criteria, and final prediction error – where results indicated that including additional lags failed to improve model fit. Further, there was no evidence of serial correlation in the residuals based on a Lagrange Multiplier test. Estimates are reported below in Table S6.

Table S6. Vector Autoregression Estimates (Two Lags)

	Average Tone		**Economic Evaluations**	
	Coef.	SE	Coef.	SE
Tone $_{t-1}$	0.47***	0.11	11.63***	4.19
Tone $_{t-2}$	0.06	0.10	-10.11	3.83
Public Economic Evaluations $_{t-1}$	-0.00	0.00	0.73***	0.10
Public Economic Evaluations $_{t-2}$	0.00	0.00	0.13	0.09
Δ Unemployment Rate $_{t}$	-0.13	0.09	-3.79	3.37
Unemployment Rate $_{t-1}$	0.01	0.01	0.22	0.46
Δ CLI $_{t}$	0.10***	0.03	5.45***	1.25
CLI $_{t-1}$	0.00	0.02	-0.02	0.74
Constant	-0.31	1.96	5.12	75.09
N	114		114	
R^2	0.47		0.87	

* p<0.1, * p<0.05, ** p<0.01

The estimates provide little evidence that past values of public economic evaluations are strongly associated with current values of media tone. The sign on the first lag is even in the wrong direction. In contrast, past values of tone strongly predict current values of public economic perceptions, though the coefficient on the second lag indicates that this effect decays quickly. The magnitude of the effects are plotted below with a pair of orthogonalized impulse response functions in Figure S6. Granger causality tests are reported in Table S7 below. There is evidence that tone granger causes public evaluations (p=0.005), but little evidence of the reverse (p=0.367).

Hopkins et al. (2017) take a similar approach in attempting to tease out the causal direction between media coverage and public opinion, but they do not simultaneously estimate their equations or control for exogenous economic conditions. They use granger F-tests to determine whether past values of both endogenous variables better explain a given endogenous variable's variance than just past values of that variable. This approach is replicated here for up to three lags. Again, there is only evidence that media tone granger causes public economic evaluations, rather than the other way around.

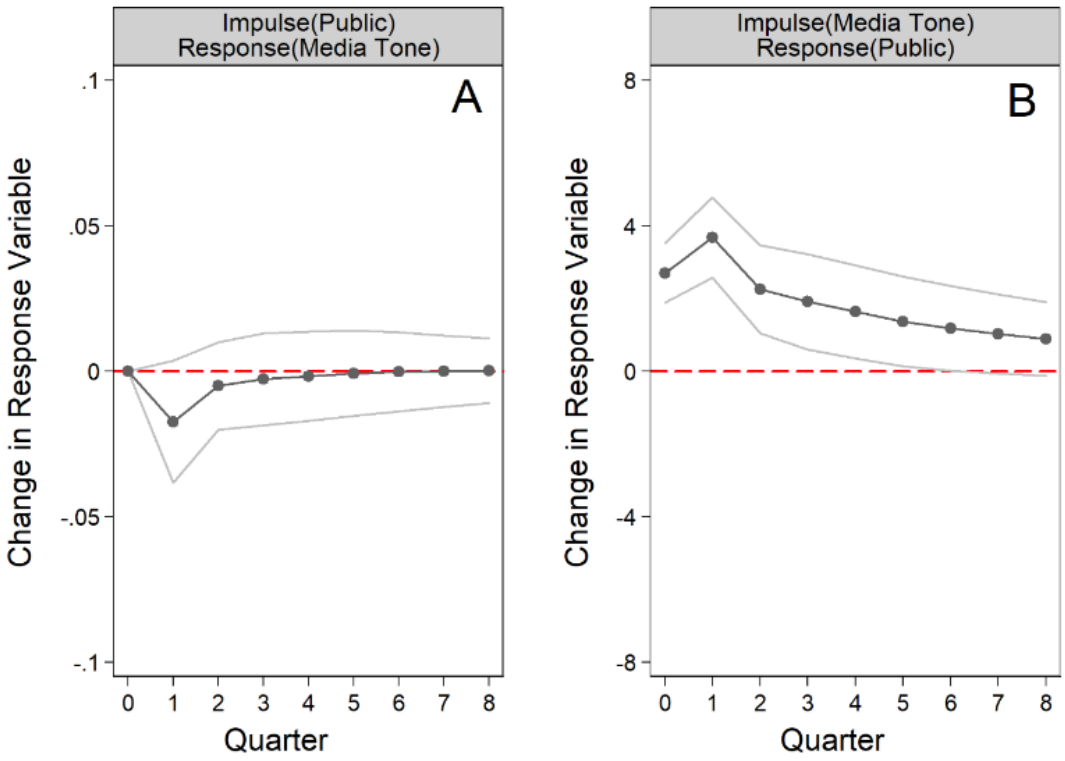

Figure S6. Orthogonalized Impulse Response Functions. A) Public Evaluations → Media Tone; B) Media Tone → Public Evaluations. Note: Represents the effect of a one standard deviation shock in the impulse variable expressed as units of the response variable.

Table S7. Granger Causality Tests

VAR	Granger Test	chi^2	p-value
	Tone → Public Evaluations	10.652	0.005
	Public Evaluations → Tone	2.002	0.367
Hopkins et al.	Granger Test	F-statistic	p-value
Lag 1	Tone → Public Evaluations	7.973	0.006
	Public Evaluations → Tone	0.183	0.669
Lag 2	Tone → Public Evaluations	1.081	0.301
	Public Evaluations → Tone	0.513	0.475
Lag 3	Tone → Public Evaluations	7.662	0.290
	Public Evaluations → Tone	1.134	0.913

In short, there is little evidence from this data that there is significant endogeneity in the relationship between media tone and public evaluations of the economy. Given the strong association between the two, it would be inappropriate to control for evaluations in the models used in this paper. However, models using these controls are included as robustness tests, which are displayed in section G of these supplementary materials. The results do not substantively change with the inclusion of this variable as a control.

This is also important because it suggests we can say something tentatively about the media environment. This paper uses a select sample of high circulating news sources. However, some studies of media bias have used many more sources for examining selection bias (Larcinese, et al., 2011) or headlines (Lott & Hasset 2014). Not all media sources are equal, however. The ones used here large circulation bases and others, like the *New York Times*, are agenda-setters in politics. In other words, some sources will be better than others at reflecting the media signal being sent to the public and have an influence on aggregate public opinion. The close fit between the average tone measure used here and public evaluations of the economy suggest the sources used here fit this description.

D. Variable Distributions and Unit Root Tests

Table S8. Distributions of variables

Dependent Variable	**N**	**Mean**	**Std.**	**95%**	**5%**
Δ Tone – Inflation	115	0.00	0.24	0.39	-0.44
Δ Tone – Unemployment	115	0.00	0.19	0.30	-0.30
Tone – Inflation	116	0.13	0.26	0.49	-0.22
Tone – Unemployment	116	0.27	0.20	0.54	-0.12
Independent Variable	**N**	**Mean**	**Std.**	**95%**	**5%**
Inflation Rate	116	0.69	0.49	1.51	-0.07
Δ Inflation Rate	115	-0.00	0.59	0.84	-0.83
Unemployment Rate	116	6.14	1.50	9.50	4.20
Δ Unemployment Rate	115	-0.00	0.28	0.5	-0.30

Table S9. Unit root tests, Dickey-Fuller GLS

	Test Statistic	5% Value
Tone, Inflation (1)	-3.959	-2.103
Tone, Unemployment (1)	-4.014	-3.010
Inflation (5)	-2.708	-2.061
Unemployment (1)	-2.179	-2.103

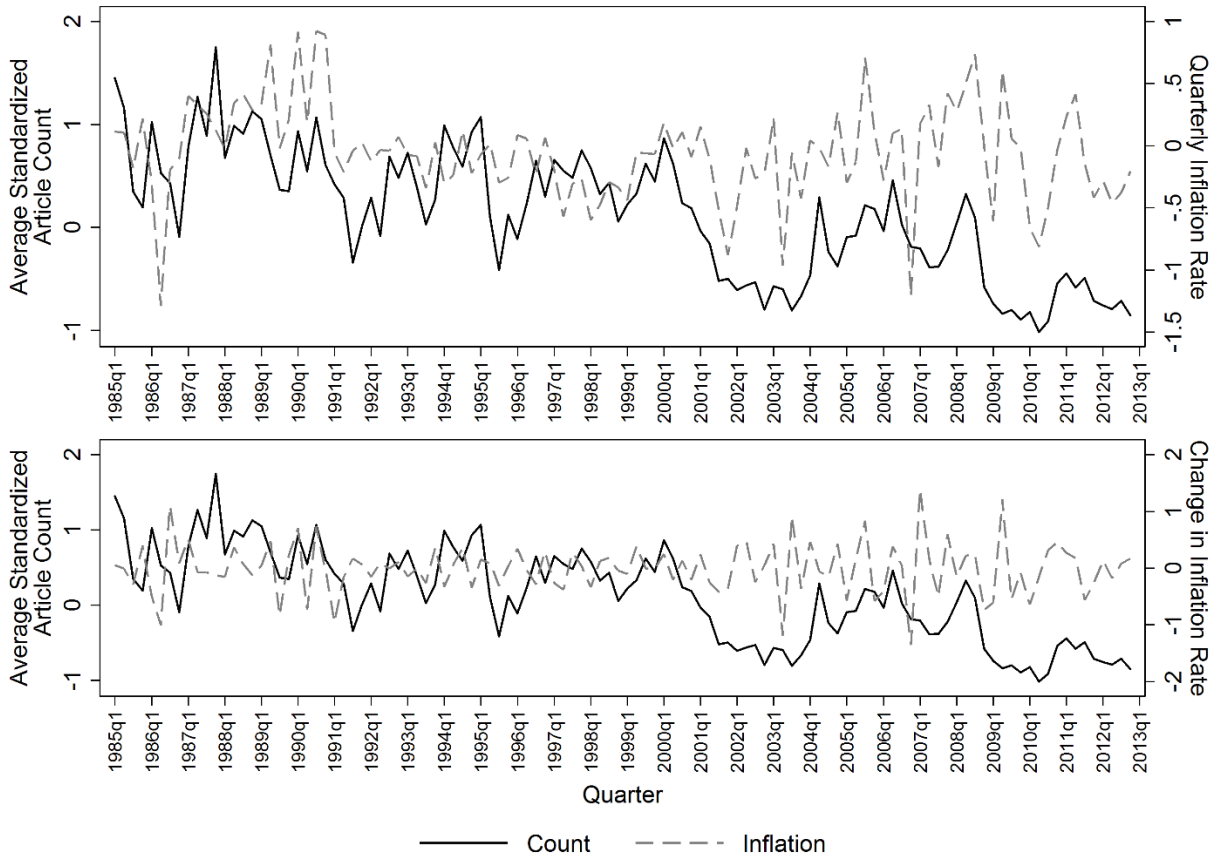

Figure S7. Average standardized article volume and inflation. Note: inflation presented after removing wild swings in inflation brought by the Financial Crisis

E. Agenda-Setting and Article Volume

Another approach that has been taken in the media bias literature is the examination of economic agenda-setting (Larcinese, Puglisi, & Snyder, 2011). This variable – volume of coverage – is omitted from the main analyses of this paper because prior work has found that tone matters more than article volume in shaping economic perceptions. It is a bit more complicated to construct a measure of volume using an aggregation of the newspapers in this study. Newspapers with a larger volume of content enter the sample earlier, like the *Washington Post* and the *New York Times*. Simply averaging the counts across all newspapers will create higher volumes of content early in the series. Thus each paper's article count series is standardized before being averaged together. This measure of salience for inflation and unemployment coverage is plotted below against changes and levels of

inflation and unemployment. The *Associated Press* (AP) is omitted because of periodic missing data in LexisNexis in 1992 and 1994.

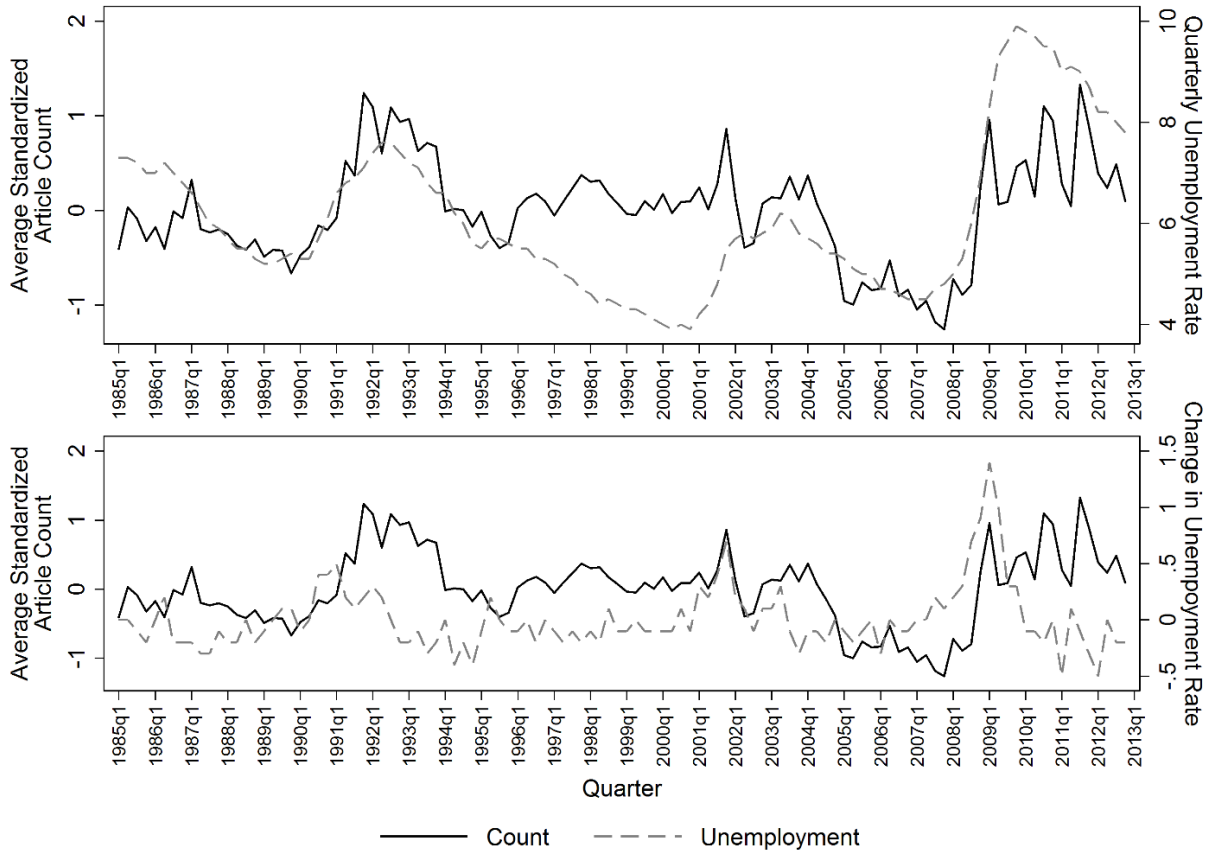

Figure S8. Average standardized article volume and unemployment

What becomes apparent is that this measure is much more "sticky" than tone, as found elsewhere. In other words, article counts are less responsive in the short-run and more responsive in the long-run compared to tone. The correlation of inflation coverage volume to the inflation rate is 0.50, compared to 0.02 for changes in the indicator. Similarly, the correlation between unemployment volume and the level of unemployment is 0.52, compared to only 0.09 for changes in the indicator. These are plotted in Figures S7 and S8.

It is apparent though, that volume of coverage dedicated to the economy has little bearing on public economic evaluations as shown below in Table S4. Model 1 shows that unemployment article volume is unrelated to public economic evaluations in stark contrast to the powerful effect of average unemployment tone in models 2 and 3. It also appears that there is no conditioning effect of volume

as shown in model 4. Substantively, article tone is much more important to understanding how the public updates their economic evaluations.

Table S10. Tone, Volume, and Aggregate Economic Evaluations

	1		2		3		4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Public $_{t-1}$	0.88***	0.04	0.70***	0.04	0.70***	0.04	0.71***	0.05
Count $_{t}$	0.60	1.53			0.44	1.00	-1.68	2.48
Tone $_{t}$			34.42***	4.73	34.38***	4.76	33.56***	5.08
Count * Tone $_{t}$							5.07	5.72
N	115		115		115		115	
R2	0.79		0.87		0.87		0.87	

Heteroskedastic-robust standard errors, * p<0.1, * p<0.05, ** p<0.01

Although economic coverage volume is not substantively what this paper is about, examining it can provide a useful robustness check for the findings in this paper. We might expect that volume of coverage is biased in a similar manner as coverage tone. In Table S6, equations 3 and 4 are re-run with our count variable on the left hand side. The AP is again omitted here because of missing data in LexisNexis for parts of 1992 and 1994. There is some evidence that partisan bias contaminates story selection as well – at least among newspapers.

Starting with inflation, model 1 shows that volume is much more persistent than article tone even after accounting for other economic indicators. Model 2 introduces the dummy for party control of the presidency and the interaction with both the changes and the levels of the indicators.[2] We find some evidence that bias contaminates story selection as well. The media is more responsive to changes in the inflation rate during Republican presidencies, though the interaction term is not quite significant. A much stronger effect is found in the long-run. Coverage of inflation rises in response to long-run increases in the indicator much more under Republican presidents than Democrats. The effect drops almost 70 percent during Democratic administrations.

[2] The interaction with the lagged coefficient is added because, unlike for article tone, the long-run coefficients are much more substantive due to the lengthy error correction rate. Article volume is more strongly correlated with the levels of indicators rather than the short-term changes in them. We might expect bias to show up here as well.

Table S11. Count Models

	Inflation				Unemployment			
	1		2		3		4	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Count $_{t-1}$	-0.65***	0.08	-0.75***	0.08	-0.27***	0.06	-0.34***	0.06
Δ Inflation $_{t}$	0.15***	0.05	0.18***	0.06	-0.11*	0.06	-0.04	0.06
Inflation $_{t-1}$	0.19***	0.06	0.36***	0.09	-0.14*	0.08	-0.13	0.10
Δ Unemployment	0.07	0.15	-0.22	0.14	-0.05	0.18	0.28**	0.22
Unemployment $_{t-1}$	-0.04	0.02	-0.05**	0.02	0.03	0.03	0.12**	0.06
Δ CLI $_{t}$	0.08	0.06	0.11**	0.06	-0.16**	0.07	-0.13*	0.07
CLI $_{t-1}$	0.11***	0.04	0.14***	0.04	-0.06	0.04	-0.08*	0.04
Δ Presidential Approval $_{t}$	0.00	0.00	-0.00	0.00	0.00	0.00		
Presidential Approval $_{t-1}$	-0.00	0.00	-0.00	0.00	0.00	0.00		
President $_{t}$			0.29***	0.10			0.76**	0.37
Δ Inflation * President $_{t}$			-0.10	0.15				
Inflation $_{t-1}$ * President $_{t}$			-0.25**	0.12				
Δ Unemployment * President $_{t}$							-0.59**	0.29
Unemployment $_{t-1}$ * President $_{t}$							-0.12**	0.06
Constant	-9.17**	4.60	1.15***	0.34	5.93	4.48	6.96	4.10
Inflation – Long-run	0.29***	0.06	0.48***	0.08				
Inflation * President – Long-run			-0.33***	0.12				
Unemployment – Long-run					0.12***	0.03	0.37***	0.05
Unemployment * President – Long-run							-0.35***	0.06
N	115		115		115		115	
R2	0.43		0.49		0.26		0.32	

Heteroskedastic-robust standard errors, * p<0.1, * p<0.05, ** p<0.01

Similar findings emerge from an analysis of the volume of unemployment coverage. Model 3 shows that this indicator, again, is much more persistent than tone, and it is much more responsive to long-run unemployment compared to short-term changes. Model 4 shows some evidence of partisan bias. Coverage volume is less responsive to short-term changes in unemployment under Democratic presidencies ($p<0.05$). There is strong evidence of story selection bias in the long-run. Coverage is more responsive to levels of unemployment under Republican presidencies ($p<0.05$). The effect drops by almost 94 percent during Democratic administrations.

Table S12. Panel Estimation, Inflation

	1		2		3		4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Tone $_{t-1}$	-0.90***	0.03	-0.75***	0.03	-0.75***	0.03	-0.75***	0.03
Δ Inflation $_{t}$	-0.12***	0.03	-0.12***	0.03	-0.14***	0.03	-0.11***	0.03
Inflation $_{t-1}$	-0.18***	0.04	-0.16***	0.05	-0.16***	0.05	-0.13***	0.05
Δ Unemployment $_{t}$	-0.17*	0.09	-0.15*	0.10	-0.20**	0.09	-0.17*	0.09
Unemployment $_{t-1}$	-0.04**	0.02	-0.05**	0.02	-0.04**	0.02	-0.04**	0.02
Δ CLI $_{t}$	0.12***	0.03	0.11***	0.01	0.12***	0.03	0.11***	0.03
CLI $_{t-1}$	-0.01	0.02	-0.02	0.01	-0.01	0.02	-0.02	0.02
Δ Presidential Approval $_{t}$	-0.01**	0.00	-0.01**	0.00	-0.01**	0.00	-0.01**	0.00
Presidential Approval $_{t-1}$	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
President $_{t}$	0.18***	0.04	0.20***	0.04	0.17***	0.04	0.19***	0.04
No Endorse $_{t}$			-0.02	0.04			-0.03	0.04
No Endorse $_{t}$ * President $_{t}$			-0.01	0.05			-0.01	0.05
GOP Endorse $_{t}$			0.07	0.04			0.06*	0.04
GOP Endorse $_{t}$ * President $_{t}$			-0.15***	0.05			-0.16***	0.05
Δ Inflation * President $_{t}$					0.10	0.07	0.06	0.08
Δ Inflation * No Endorse $_{t}$							-0.10**	0.05
Δ Inflation * No Endorse $_{t}$ * President $_{t}$							0.15	0.09
Δ Inflation * GOP Endorse $_{t}$							-0.02	0.05
Δ Inflation * GOP Endorse $_{t}$ * President $_{t}$							0.15*	0.09
Constant	1.55	2.36	2.07	2.37	1.15	2.35	1.78	2.36
Trend	Yes		Yes		Yes		Yes	
Fixed Effects	Yes		No		Yes		No	
T	79		79		79		79	
Panels	23		23		23		23	
N	1828		1828		1828		1828	
R2	0.46		0.39		0.47		0.39	

Panel-corrected standard errors; * p<0.1, * p<0.05, *** p<0.01

F. Panel Estimation

The media sample used in this study includes a wide variety of high-circulating newspapers with different editorial slants, from the consistently Republican-endorsing *San Diego Union-Tribune* to the reliably Democratic *New York Times*. The main analyses in the paper present models with tone averaged across all newspapers. But, we might expect important variation in bias depending on the editorial commitments of each newspaper. I leveraged the time series-cross sectional nature of the data to examine this possibility. Panel-corrected standard errors (PCSEs) are used to correct the standard errors for contemporaneous correlation across panels. This is paired with Prais-Winsten regression,

suggested by Beck and Katz (2011), to correct for remaining autocorrelation that is not addressed by the inclusion of the lagged dependent variable. Models 2 and 3 from the main paper were estimated for both inflation and unemployment. These contain fixed effects. Note that the large T (average = 80) ensures Nickell bias will be inconsequential (Beck & Katz, 2011; Judson & Owen, 1999). We can safely include fixed effects with a lagged dependent variable.

Presidential endorsements since the 1980s are provided by Noah Veltman and displayed in Table S1. Newspapers were coded as having endorsed a presidential candidate if they did so at the following presidential election. They were coded as either having endorsed a Republican candidate, a Democratic candidate or neither. To determine whether bias varies across editorial position, the presidential dummy in model 2 was interacted with a dummy indicating no endorsement and another indicating a Republican endorsement.

These dummies were then interacted with both the presidential dummy and the economic indicator to examine variation in responsiveness bias. Fixed effects were omitted from the models because editorial endorsements rarely vary. They were restricted to the period between 1994 and 2013 inclusive for balance.[3] Democratic-endorsing newspapers tend to enter the sample earlier, so it is problematic to include these years. The estimates are presented in Tables S7 for inflation and S8 for unemployment. There are two main findings. First, it does appear that bias varies across newspapers by presidential endorsement (Model 2). The cumulative, long-run effect of having a Democratic president on tone is approximately 0.26 points when a newspaper endorses a Democratic candidate in the following election across both issues. This effect drops by 75 percent inflation coverage when a newspaper endorses a Republican, and by 58 percent in unemployment coverage, but importantly does not reverse itself in either case. These effects are shown in panels A and C of Figure S6. Second, the tendency to react to negative short-run changes in economic conditions more during Republican presidencies does not appear to vary significantly by editorial position. The interpretation of three-way interactions is difficult, so the effects are presented in panels B and D of Figure S6.

Taken together, there is only inconsistent evidence that partisan bias in economic news varies due to the ideological and partisan leanings of the editorial board, and no evidence whatsoever that Republican-leaning newspapers counterbalance the bias found among Democratic-leaning outlets. The sample used here includes influential conservative newspapers like the *Dallas Morning News*, the

[3] There is a small gap in the data series for the Boston Globe with inflation coverage. Removing this newspaper does not alter the results.

Houston Chronicle, and the *San Diego Union-Tribune*. If such anti-Democratic bias is not found among them, it is likely not to be found among outlets outside of the right-wing echo chamber and a sign that the mainstream media environment may tilt towards the Democratic Party.

Table S13. Panel Estimation, Unemployment

	1		2		3		4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Tone $_{t-1}$	-0.69***	0.03	-0.38***	0.02	-0.70***	0.03	-0.39***	0.02
Δ Unemployment $_{t}$	-0.14**	0.07	-0.10	0.07	-0.29***	0.08	-0.11*	0.06
Unemployment $_{t-1}$	-0.03**	0.01	-0.02*	0.01	-0.02**	0.01	-0.02	0.01
Δ Inflation $_{t}$	-0.04*	0.02	-0.05**	0.02	-0.06***	0.02	-0.06***	0.02
Inflation $_{-1}$	-0.09***	0.04	-0.09***	0.04	-0.07*	0.04	-0.08**	0.04
Δ GDP Growth $_{t}$	0.06***	0.02	0.06**	0.02	0.06**	0.02	0.06***	0.02
GDP Growth $_{t-1}$	-0.00	0.02	-0.01	0.02	0.01	0.02	-0.00	0.02
Δ Presidential Approval $_{t}$	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Presidential Approval $_{t-1}$	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
President $_{t}$	0.14***	0.03	0.09***	0.03	0.14***	0.03	0.10***	0.03
No Endorse $_{t}$			0.01	0.04			0.03	0.04
No Endorse $_{t}$ * President $_{t}$			0.02	0.05			-0.00	0.05
GOP Endorse $_{t}$			0.05***	0.02			0.07***	0.02
GOP Endorse $_{t}$ * President $_{t}$			-0.05**	0.03			-0.07***	0.03
Δ Unemployment * President $_{t}$					0.26***	0.09	0.12	0.08
Δ Unemployment * No Endorse $_{t}$							-0.18	0.15
Δ Unemployment * No Endorse $_{t}$ * President $_{t}$							0.07	0.17
Δ Unemployment * GOP Endorse $_{t}$							-0.14	0.08
Δ Unemployment * GOP Endorse $_{t}$ * President $_{t}$							0.12	0.10
Constant	0.31	1.75	1.08	1.71	0.04	0.16	-0.16	0.15
Trend	Yes		Yes		Yes		Yes	
Fixed Effects	Yes		No		Yes		No	
T	80		80		80		80	
Panels	23		23		23		23	
N	1835		1835		1835		1835	
R2	0.36		0.22		0.38		0.22	

Panel-corrected standard errors; * p<0.1, ** p<0.05, *** p<0.01

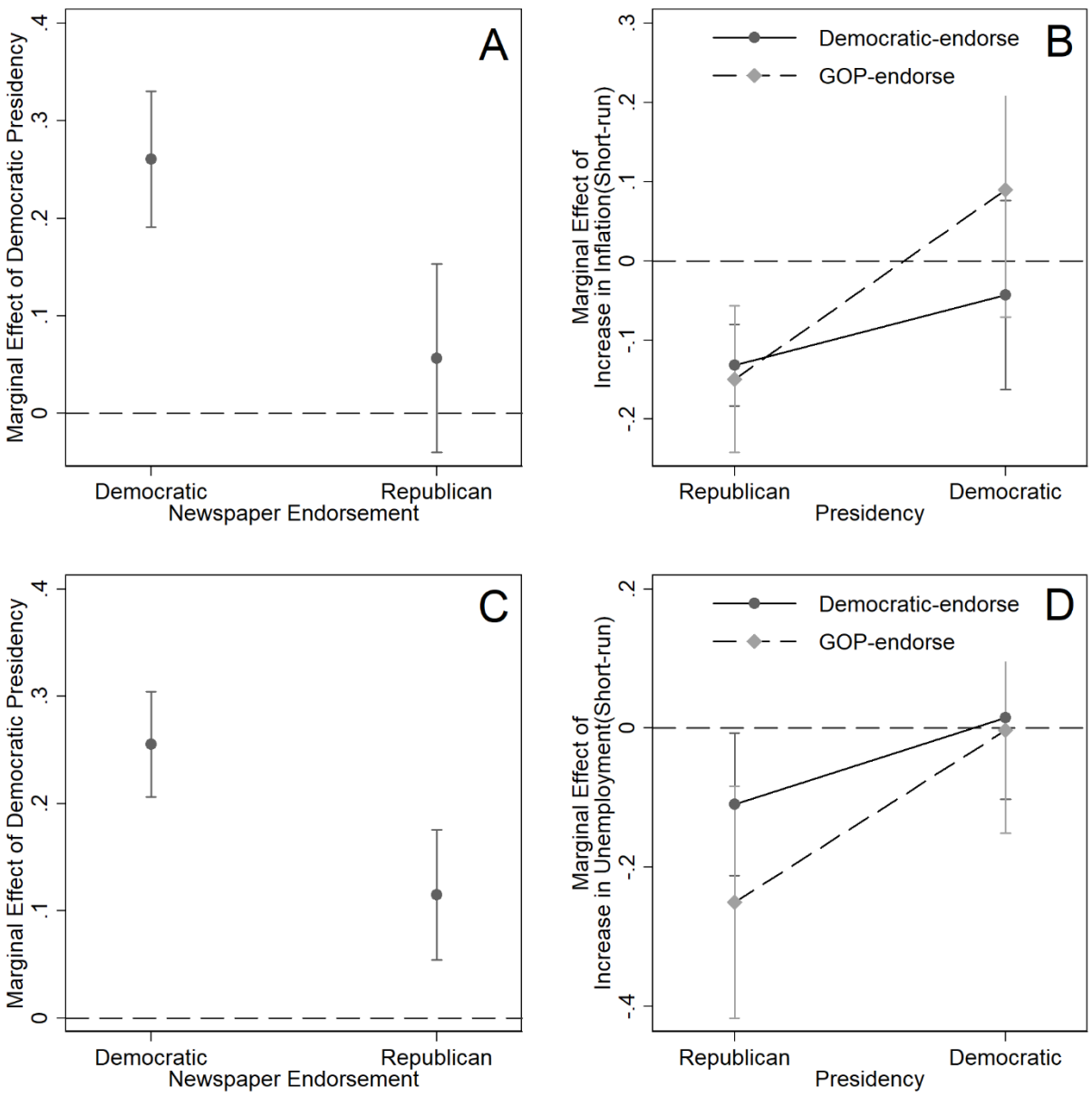

Figure S9. Estimated cumulative marginal effect of having a Democratic presidency on tone in inflation articles (A); Estimated marginal effect of increases in inflation (short-run) on tone (B); Estimated cumulative marginal effect of having a Democratic presidency on tone in unemployment articles (C); Estimated marginal effect of increases in unemployment (short-run) on tone (D). Note: 90% confidence intervals.

G. Robustness Tests

Table S14. Robustness Tests, Inflation

	Unconditional	Short-run Main Effect	Short-run Interaction
Baseline	0.17 (0.04)	-0.17 (0.03)	0.21 (0.09)
Recession	0.16 (0.04)	-0.17 (0.04)	0.21 (0.08)
No LDV	0.22 (0.05)	-0.21 (0.05)	0.21 (0.08)
Public Evaluations Control	0.15 (0.05)	-0.14 (0.04)	0.17 (0.05)
Newspaper-Only	0.12 (0.04)	-0.16 (0.03)	0.12 (0.08)
AP-Only	0.17 (0.04)	-0.17 (0.03)	0.21 (0.09)
Broadcast-Only	0.27 (0.14)	-0.23 (0.47)	0.12 (0.39)

Note: Heteroskedastic-robust standard errors

Table S15. Robustness Tests, Unemployment

	Unconditional	Short-run Main Effect	Short-run Interaction
Baseline	0.09 (0.03)	-0.27 (0.10)	0.26 (0.10)
Recession	0.09 (0.03)	-0.25 (0.11)	0.18 (0.12)
No LDV	0.19 (0.05)	-0.24 (0.10)	0.26 (0.11)
Public Evaluations Control	0.08 (0.04)	-0.26 (0.08)	0.26 (0.11)
Newspaper-Only	0.10 (0.02)	-0.30 (0.10)	0.28 (0.10)
AP-Only	0.10 (0.05)	-0.33 (0.11)	0.30 (0.18)
Broadcast-Only	0.40 (0.11)	0.13 (0.14)	0.24 (0.26)

Note: Heteroskedastic-robust standard errors

Table S16. All Newspapers, Inflation

Newspaper	Unconditional	Short-run Main effect	Short-run Interaction
Atlanta Journal-Constitution	0.64 (0.21)	-0.03 (0.20)	-0.06 (0.28)
Boston Globe	-0.16 (0.09)	-0.24 (0.07)	0.25 (0.19)
Chicago Sun-Times	0.25 (0.12)	-0.30 (0.08)	0.30 (0.29)
Chicago Tribune	0.19 (0.05)	-0.13 (0.04)	0.27 (0.15)
Dallas Morning News	0.25 (0.15)	0.03 (0.10)	-0.20 (0.31)
Denver Post	0.29 (0.14)	-0.15 (0.12)	-0.48 (0.23)
Detroit Free Press	0.45 (0.18)	-0.04 (0.10)	0.13 (0.22)
Houston Chronicle	0.20 (0.08)	-0.26 (0.07)	0.17 (0.14)
Los Angeles Times	0.03 (0.06)	-0.12 (0.06)	0.13 (0.16)
Minneapolis Star-Tribune	0.20 (0.13)	0.04 (0.10)	-0.34 (0.24)
New York Times	0.14 (0.04)	-0.14 (0.05)	0.07 (0.09)
Orange County Register	-0.12 (0.12)	-0.30 (0.18)	-0.00 (0.26)
Philadelphia Inquirer	0.30 (0.13)	-0.07 (0.15)	0.06 (0.24)
The Plain Dealer	-0.16 (0.20)	-0.13 (0.11)	-0.11 (0.32)
St. Louis Post-Dispatch	0.12 (0.11)	-0.23 (0.09)	0.39 (0.23)
Salt Lake Tribune	-0.04 (0.20)	0.03 (0.14)	0.23 (0.29)
San Diego Union-Tribune	0.14 (0.08)	-0.25 (0.10)	0.23 (0.19)
San Francisco Chronicle	0.08 (0.11)	-0.33 (0.09)	-0.35 (0.27)
San Jose Mercury News	0.36 (0.10)	-0.14 (0.08)	-0.15 (0.16)
Seattle Times	0.13 (0.10)	-0.29 (0.09)	0.17 (0.24)
Tampa Bay Times	0.24 (0.08)	-0.22 (0.06)	0.18 (0.19)
USA Today	0.04 (0.08)	-0.20 (0.05)	0.46 (0.19)
Washington Post	0.18 (0.05)	-0.11 (0.05)	0.21 (0.13)

Note: Heteroskedastic-robust standard errors

Table S17. All Newspapers, Unemployment

Newspaper	Unconditional	Short-run Main effect	Short-run Interaction
Atlanta Journal-Constitution	0.14 (0.07)	-0.50 (0.29)	0.22 (0.28)
Boston Globe	-0.08 (0.06)	-0.63 (0.16)	0.38 (0.19)
Chicago Sun-Times	0.40 (0.09)	-0.16 (0.31)	0.10 (0.28)
Chicago Tribune	0.12 (0.04)	-0.47 (0.13)	0.18 (0.14)
Dallas Morning News	-0.04 (0.08)	-0.43 (0.23)	0.20 (0.26)
Denver Post	0.44 (0.11)	0.31 (0.29)	-0.02 (0.30)
Detroit Free Press	0.36 (0.09)	-0.10 (0.20)	0.09 (0.21)
Houston Chronicle	0.21 (0.07)	-0.62 (0.15)	0.33 (0.16)
Los Angeles Times	0.27 (0.04)	-0.30 (0.13)	0.35 (0.14)
Minneapolis Star-Tribune	0.10 (0.08)	-0.38 (0.22)	0.32 (0.22)
New York Times	0.10 (0.03)	-0.39 (0.13)	0.44 (0.17)
Orange County Register	0.07 (0.09)	-0.47 (0.29)	0.08 (0.09)
Philadelphia Inquirer	0.08 (0.10)	-0.13 (0.21)	0.54 (0.27)
The Plain Dealer	0.01 (0.06)	-0.30 (0.20)	0.32 (0.19)
St. Louis Post-Dispatch	0.04 (0.06)	-0.41 (0.22)	0.43 (0.23)
Salt Lake Tribune	0.13 (0.12)	-0.68 (0.30)	0.68 (0.29)
San Diego Union-Tribune	0.20 (0.06)	-0.13 (0.21)	0.36 (0.23)
San Francisco Chronicle	0.26 (0.07)	-0.29 (0.20)	0.40 (0.19)
San Jose Mercury News	0.29 (0.12)	-0.80 (0.36)	0.67 (0.27)
Seattle Times	0.05 (0.06)	-0.44 (0.17)	0.55 (0.17)
Tampa Bay Times	0.15 (0.06)	0.19 (0.18)	-0.19 (0.22)
USA Today	-0.04 (0.08)	-0.42 (0.30)	0.28 (0.36)
Washington Post	0.04 (0.04)	-0.26 (0.14)	0.27 (0.18)

Note: Heteroskedastic-robust standard errors

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