# Partisan bias in economic news: Evidence on the agenda-setting behavior of U.S. newspapers ☆

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## ARTICLE INFO

## ABSTRACT

We study the agenda-setting political behavior of a large sample of U.S. newspapers during the 1996–2005 period. Our purpose is to examine the intensity of coverage of economic issues as a function of the underlying economic conditions and the political affiliation of the incumbent president, focusing on unemployment, inflation, the federal budget and the trade deficit. We investigate whether there is any significant correlation between the endorsement policy of newspapers, and the differential coverage of bad/good economic news as a function of the president's political affiliation. We find evidence that newspapers with pro-Democratic endorsement pattern systematically give more coverage to high unemployment when the incumbent president is a Republican than when the president is Democratic, compared to newspapers with pro-Republican endorsement pattern. This result is robust to controlling for the partisanship of readers. We find similar but less robust results for the trade deficit. We also find some evidence that newspapers cater to the partisan tastes of readers in the coverage of the budget deficit. We find no evidence of a partisan bias – or at least of a bias that is correlated with the endorsement or reader partisanship – for stories on inflation.

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## 1. Introduction

News provided by the mass media are the most important source of information on public affairs in modern democratic societies. Hence, media outlets play a fundamental role in keeping the public informed on the decisions of their political representatives, as well as on issues and events that are relevant to public decision-making. Time and space available being limited, journalists exercise a considerable degree of discretion on the topics covered and the tone of the reports. It would therefore not be surprising if the political views of individual editors and journalists were reflected in news reported in the mass media.

One of the most important claims about news in the mass media is the agenda-setting hypothesis. The idea is that editors and journalists have a large degree of freedom in deciding what is newsworthy and what is not, and these choices influence the perception of citizens about which issues are relevant and to what extent. Cohen (1963) stated it eloquently: the press "may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about."[1] The exploitation of agenda-setting power is potentially one of the most harmful behaviors by news media, especially if they use this power to suppress information. The reason is that it is difficult for consumers to distinguish the scenario "I did not see any news about X today because nothing important happened regarding X" from the scenario "I did not see any news about X today because, although something important happened, the media decided not to publish it". Theoretical models by Anderson and McLaren (2009), Baron (2006), Bernhardt et al. (2008), Besley and Prat (2006) and Puglisi (2004) incorporate precisely this source of media bias, and show how this can lead to suboptimal public policy decisions.

In this paper we try to gage the extent of agenda bias on economic issues. The logic of our approach is as follows. Consider the issue of unemployment and suppose that the incumbent president is a Democrat. Suppose also that some newspapers have a partisan bias and wish to increase or decrease the popularity of the president. When unemployment is high or rising (i.e., when the underlying

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[1] Beginning with the seminal contribution of McCombs and Shaw (1972), there is a vast literature in communication studies on agenda-setting effects. See also Iyengar et al. (1982), and Iyengar and Simon (2000).

circumstances are bad) Republican leaning newspapers should devote more coverage to that issue than Democratic newspapers. The opposite should occur when unemployment is low or falling (i.e., when circumstances are good).[2]

First, we illustrate our argument, and the relevance of supply-side factors in determining slanted coverage of economic news, by discussing the succession of Otis Chandler as publisher of the family-owned Los Angeles Times in 1960. Widely perceived as a solidly conservative newspaper, the Los Angeles Times became much more liberal under Otis Chandler. We document a substantial difference in the coverage of news related to unemployment and inflation in the two periods. In the conservative pre-Otis period, the LA Times would disproportionately report on unemployment and inflation when these variables where high and the president was Democratic. This differential coverage, however, disappears after Otis Chandler took control of the paper. We show that this change, as well as the overall shift of the LA Times from the conservative to the liberal camp, had probably little to do with ideological shifts on the demand side.

We then perform our analysis on a large number of U.S. newspapers over the period 1996–2005 for four key economic issues: unemployment, the budget deficit, inflation, and the trade deficit. These issues are not only important, but we can also match the coverage with actual economic figures. We collected data on the number of news stories on each of these issues appearing in a large sample of newspapers, using the NewsLibrary and Factiva electronic archives.

For each issue we construct a measure of newspaper bias based on the differential sensitivity of coverage to the underlying economic figures as a function of the party of the president. We investigate whether this measure is systematically related to supply and/or demand factors. As a proxy for the explicit partisan leaning of owners and editors of a given newspaper, we use the relative propensity to endorse Republican or Democratic candidates across a large sample of elections. As a proxy for the partisan leaning of a newspaper's readers, we use circulation-weighted voting data at the county level.

For unemployment, we find robust evidence of a correlation between intensity of news coverage and the partisanship of endorsements. More precisely, we find that newspapers with a pro-Democratic endorsement pattern systematically publish fewer stories about unemployment when the national unemployment rate is high and the president is a Democrat than when the national unemployment is equally high and the president is a Republican. The size of the estimated effects is nonnegligible, especially when expressed in relative terms. When the unemployment rate was one percentage point above the average, newspapers with a strong propensity to endorse Republican candidates reacted with about 10% fewer articles per month under Bush than under Clinton. For the same one percent increase, newspapers with a strong pro-Democratic endorsement policy published around 7% more stories on unemployment under Bush than under Clinton. Note that we do not make any claims about the *absolute* biases of newspapers, but only their relative positions.

With respect to readership, we find mixed results. While newspapers more heavily sold in Democratic areas tend to give more coverage to high unemployment under Bush than under Clinton as compared to those sold in Republican areas, this correlation is not significant, irrespective of whether we control for endorsement partisanship. On the other hand editorial partisanship is still significant when both variables are included, and it is robust to a large set of controls. These results suggest that agenda bias on

unemployment is more related to the partisan position of owners and editors than to the partisanship of readers.

The situation is reversed for coverage of the budget deficit. In this case newspapers appear to cater to the partisan tastes of their readers, but we find no statistically significant correlations with endorsement partisanship. Newspapers that are more heavily sold in Republican areas systematically devote more coverage to the budget deficit when the deficit is high and the incumbent president is a Democrat than when he is a Republican, as compared to newspapers sold in Democratic areas. The size of the estimated effect is again non-negligible, and larger than that found for unemployment, at least relative to the average amount of coverage devoted to the issue. When the budget deficit was one percentage point above the average, newspapers circulating among strongly Republican readers published about 20% more articles per month under Bush than under Clinton. For the same one percent increase, newspapers with a strongly Democratic readership reacted with about 28% more stories on the budget deficit under Bush than under Clinton. This result holds even when controlling for endorsement partisanship but is less robust than our result on unemployment, since it loses significance when controlling for the lagged instead of the contemporaneous level of the budget deficit.

We find results for the coverage of the trade deficit that are qualitatively similar to those on unemployment, but less robust. Finally, we find no systematic relationships between inflation coverage and either editorial partisanship or reader partisanship.

To sum up, we find that both supply-side and demand-side forces matter, although our results on the role played by the supply side are somewhat more robust.

Importantly, the issue for which we find the most robust correlations – unemployment – is also the most salient of the four during the time period studied. This is clear from the relative amount of coverage devoted to the issues by the newspapers themselves, and also from survey data. In our sample the breakdown of coverage is as follows: 50% of the newspaper articles discuss unemployment, 37% discuss inflation, 9% discuss the budget deficit, and only 3% discuss the trade deficit.[3] In the American National Election Studies from the period 1992–2004, nearly 10% of respondents cited unemployment as the "most important problem facing the nation."[4] By comparison, fewer than 0.5% of respondents mentioned inflation and, even counting generously, only about 1.5% of respondents mentioned trade issues.[5] Unfortunately, the survey data does not allow us to separate the government deficit from the general issue of government spending. It is likely that survey respondents did not perceive inflation to be a significant problem because during the period under study the inflation rate was generally low. During the 1992–2005 period, the highest inflation rate (CPI) was 3.4%.[6]

Our paper makes three contributions to the economics literature on media bias. First, we focus on the intensity of coverage across issues, rather than tone. Theoretically, it is arguable that intensity of coverage – especially, suppression of coverage – is more important than tone, because it poses a particularly difficult inference problem for citizens. Second, we focus on important economic topics that are relevant to all citizens and policy makers. Third, although we do not do this here, it is straightforward to apply our measurement strategy to different countries and time periods.

Similarly to Gentzkow and Shapiro (2010) and Puglisi and Snyder (2011), we code newspaper articles through an automatic keyword

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[2] We focus on the political affiliation of the incumbent president, because national economic conditions are most closely associated with the popularity and vote of the president, while there is no robust evidence suggesting that the economy has any significant effects on congressional elections (Fair, 1978; Tufte, 1978; Hibbs, 1987; Erikson, 1989, 1990; MacKuen et al., 1992).

[3] Of course, some articles discuss more than one issue.

[4] Overall, crime was mentioned most often, and unemployment second most often.

[5] Only 0.33% of respondents mentioned the trade deficit specifically, and more respondents mentioned "international competitiveness" or "outsourcing", which might be treated more appropriately as employment issues.

[6] With respect to inflation, there is another reason to suspect that partisan bias is less salient. The independence of the Federal Reserve makes it difficult for the public to establish links between presidential policies and inflation.

search, instead of a human-based content analysis. We can thus gather data on a large number of news outlets for a long time span, restricted only by availabilities in digital archives. More importantly, an automatic search is easily replicated, as it is based on known set of words and/or sentences that are used as classifiers.[7]

The paper is organized as follows: in the next section we briefly review the related literature, while in Section 3 – as a case study – we discuss the succession of Otis Chandler as publisher of the family-owned Los Angeles Times in 1960. In Section 4 we describe the data and the empirical strategy, in Section 5 we present the main results, and in Section 6 we present various robustness checks. Section 7 concludes.

## 2. Related literature

In the theoretical literature there are three approaches to modeling media bias. In the first approach, citizens have preferences directly over the ideological content of the news they consume, and media outlets cater to these preferences (Mullainathan and Shleifer, 2005). In the second approach media bias takes the form of "pandering" to citizens' prior beliefs, in order to maintain a reputation for reliable reporting (Gentzkow and Shapiro, 2006). In the third approach, outlets may suppress or skew information as a consequence of ideological preferences on the supply side or "capture" by third actors like the government, even if citizens prefer unbiased information and have common priors (Anderson and McLaren, 2009; Baron, 2006; Bernhardt et al., 2008; Besley and Prat, 2006, and Puglisi, 2004). As noted in the Introduction, in this case it may be difficult even for highly rational citizens to completely undo the malicious effects of news bias. In the first two approaches the bias is driven by demand-side forces. In the third approach bias is driven by supply-side factors. One such factor is the desire of politicians to suppress news that will hurt them. Another is ideological consumption by owners, editors, and journalists. Demsetz and Lehn (1985) discuss the "amenity potential" for owners of media firms, and find evidence that the scope for such consumption is large.[8]

The empirical studies on measuring bias can also be divided into three groups. One type focuses on the *explicit* political behavior of newspapers, analyzing endorsements of candidates or ballot propositions (e.g., Ansolabehere et al., 2006; Puglisi and Snyder, 2009). A second type measures the *implicit* political behavior of media outlets, analyzing the language they use or the sources they cite in their news stories (e.g., Gasper, 2007; Gentzkow and Shapiro, 2010; Groseclose and Milyo, 2005). The idea is to compare the words, phrases or sources used by the media with those used by politicians. Outlets that employ language or sources that are used mainly by Republican (Democratic) politicians are then classified as relatively conservative (liberal). The third type also measures the implicit political behavior of the media, but focuses on the *amount* of coverage devoted to various issues, that is, on agenda-setting (e.g., Puglisi, 2011; Puglisi and Snyder, 2011). The idea is to analyze how the behavior of newspapers varies as the partisan identity of the sitting president (or

main national leader) varies. For example, Puglisi and Snyder (2011) study political scandals. A newspaper is classified as relatively conservative (liberal) if it devotes relatively more attention to scandals involving Democrats (Republicans).[9]

Our paper provides a new measure of the third type of bias.

## 3. The case of the Los Angeles Times

We begin with a case study, which illustrates our approach and provides initial evidence that supply-side factors may account for some newspaper behavior. The case involves the succession of Otis Chandler in 1960 as publisher of the Los Angeles Times. The Chandler family owned the LA Times from 1884 to 2000. Prior to 1960 it was widely perceived as having a conservative, pro-Republican bias. Chandler sought to change this, and transform the paper into a credible rival of the New York Times.[10] As Halberstam (2000) notes, Otis Chandler had "always been more liberal politically than other members of his family and other people he grew up with" (p. 290). When he took over as publisher of the Los Angeles Times, the newspaper was solidly conservative and Republican. For example, "In its political coverage, the *Times* made no pretense of fairness. In 1950, the political editor, Kyle Palmer, wrote that the Los Angeles Times intended to back Richard M. Nixon for the Senate while covering his liberal Democratic rival, Helen Gahagan Douglas, 'from time to time, as space allows.'"[11] The newspaper supported Nixon again in the 1960 presidential race: "In 1960 the Chandlers gave their all for Nixon, there was even some talk about Buff [Chandler] becoming an ambassador… there was no doubt about the tilt, the favorite son was Richard Nixon." Kennedy said "the Los Angeles Times is against me and that's very tough, I think it's going to cost me California" (Halberstam, 2000, p. 298).

After Otis Chandler became publisher, he fought with the other Chandlers over the newspaper's editorial policy. Initially, Otis lost some of these fights. For example, "in the 1964 presidential election, Mr. Chandler's parents insisted that their newspaper endorse Senator Barry Goldwater, the Republican candidate, and not President Lyndon B. Johnson."[12] Eventually, however, the young Chandler's views came to dominate. For example, "by 1970, Otis Chandler's more liberal views were reflected in editorials that urged an American withdrawal from the Vietnam War."[13]

Two decisions illustrate the changes that occurred. First, shortly after Otis took over as publisher, the John Birch Society began organizing in California. The LA Times ran a five-part series on the Society, and Otis Chandler wanted a strongly critical editorial to accompany them. The editor, Nick Williams, instead wanted the editorial to be more low key, and therefore assigned the task to "a very conservative editorial writer" on the staff. His argument was, "we're a Republican paper and this is our constituency." Otis did not like it, and insisted on a stronger critique. In the end, the editorial was much tougher, "tearing into the Birchers for their attacks on Roosevelt,

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[7] As pointed out by Antweiler and Frank (2005), automated procedures of text classification have the further advantage of reducing the "degrees of freedom" available to the researcher in the choice of the media outlets to be included in the sample.

[8] Other studies such as Gilens and Hertzman (2000), Puglisi and Snyder (2011) and Durante and Knight (forthcoming) find evidence that media content is significantly correlated with supply-side factors. Also, the incentives to bias media content should be stronger if the bias has a persuasive effect on readers. A number of studies show that this is the case (e.g., DellaVigna and Kaplan, 2007; Gerber et al., 2009; and Knight and Chiang, forthcoming). In addition, Corneo (2006) and Petrova (2008a) provide formal models on the effects of wealth concentration on media behavior and policy choices. Ellman and Germano (2009) and Petrova (2008b) focus on the role played by advertisers and interest groups. See also the recent surveys by DellaVigna and Gentzkow (2010) and Prat and Strömberg (2010).

[9] Lott and Hassett (2004) shares features of the second and third groups. They analyze newspaper coverage when official data about various economic indicators are released. They code the "tone" – positive or negative – of newspaper headlines, and relate this to the partisanship of the sitting president. Larcinese (2007) studies another type of bias — the propensity for newspapers in the UK to overprovide news that is of interest to audiences that are more valuable to advertisers. Strömberg (2004) provides a formal model that rationalizes this type of behavior.

[10] He succeeded on some dimensions. For example, the daily circulation of the LA Times went from approximately 500,000 in 1960 to over 1,000,000 in 1976. The newspaper also won four Pulitzer Prizes in the 1960s, which was more than it had won in the previous 90 years combined. See Halberstam (2000) for a historical account of the changes.

[11] From the *New York Times* obituary, "Otis Chandler, Publisher Who Transformed Los Angeles Times, Dies at 78", February 28, 2006.

[12] *New York Times* obituary, see the previous footnote.

[13] *New York Times* obituary, see footnote 11.

Truman, Eisenhower, and both Dulles brothers." Otis Chandler signed his own name to it and placed it on the front page. "For the *Times* it was like a declaration of independence from the past… and a sign of the coming of a new and different newspaper… The Family [the older Chandlers] were furious" (Halberstam, 2000, pp. 297–298).

Second, in 1964 Otis Chandler hired cartoonist Paul Conrad, a well-known liberal. "Conrad became almost immediately *the* symbolic figure of the new Los Angeles *Times*, every day jarring old conservative nerves. (…) There was no way to turn away from a Conrad cartoon without having gotten its point. Conrad was the enemy within, mocking them, tormenting them" (Halberstam, 2000, p. 394). "He was fierce in his liberalism and expressed it with a stark, powerful visual style. Southern California political junkies for decades would start their day either outraged or delighted at a Conrad drawing. (…) Conrad's favorite target was Nixon. At the time of the president's resignation, Conrad drew Nixon's helicopter leaving the White House with the caption: 'One flew over the cuckoo's nest.' He always said he was most proud of being on Nixon's enemies list."[14] Chandler was constantly forced to defend Conrad from attacks both from outside and inside the newspaper, and did so for 22 years.

Otis Chandler's editorial shift had clear implications in terms of the LA Times electoral endorsements. Fig. 1 shows the time-series variation in the propensity of the LA Times to endorse Democratic candidates in California statewide and congressional elections, together with the average yearly share of the Democratic vote in presidential, senatorial and gubernatorial elections in California. In the 1960s, after Otis Chandler took control, there was a steep increase in the propensity to endorse Democratic candidates.[15] This was not matched by a comparatively rapid surge in the Democratic vote. This suggests that there was a large change in the "tastes" of the LA Times editors, with Otis Chandler being much less pro-Republican than his predecessors.

Did the LA Times editorial shift spill into the newsroom? Fig. 2 presents the salient patterns regarding news coverage. The top two scatter plots in the figure show the relationship between the actual unemployment rate and the relative frequency of unemployment stories in the LA Times, before and after 1965.[16] In each graph, coverage–unemployment combinations under a Democratic (Republican) president are indexed by a one (zero). The bottom two graphs parallel the top graphs, showing the same relationship for the inflation rate. The figures also show the estimated regression lines relating the economic variables and coverage, as a function of the political affiliation of the incumbent President. The two scatter plots on the left show that before 1965 the LA Times systematically gave more coverage to high unemployment and inflation – i.e., more coverage to bad economic news – under Democratic presidents than under Republican presidents.[17] This is evidence of a pro-Republican bias. On the other hand, the two graphs on the right show that after 1965 there is no systematic difference in the slopes under presidents of different parties. That is, after Otis Chandler took over as publisher, the pro-Republican bias exhibited by the LA Times disappeared.

Ideally, we would like to expand this single case study into a large-scale analysis. However, this would require data on a large sample of
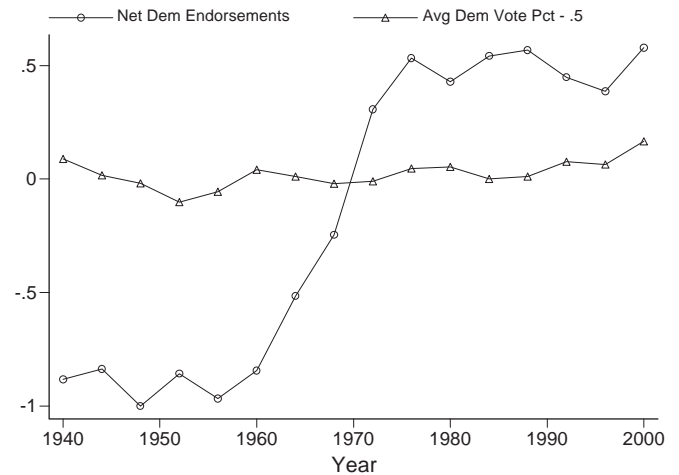


**Fig. 1.** Dynamics of Democratic vote in California and LA Times endorsements.

newspapers over a long period of time, in which there was a significant number of changes in ownership or management. Currently, collecting the necessary data would be an extremely time-consuming and expensive task. Such a study might become feasible in the near future, as historical archives for more newspapers become available on-line. For the present, we hope to satisfy the reader with an analysis of a large number of newspapers over a short period of time. This study necessarily focuses on cross-sectional variation rather than variation over time.

## 4. The panel data and empirical strategy

We collected data from the NewsLibrary electronic archive, recording the monthly number of hits on unemployment and inflation, and the quarterly number of hits on the federal budget deficit and the trade deficit.[18] First, we conducted a number of preliminary searches to identify a set of keyword search strings which produced a relatively low number of false positive and false negative hits. Then we ran automated searches, retrieving the number of articles containing the selected keywords for each topic in each newspaper and time interval. Overall, we collected data on 140 U.S. newspapers for which electronic archives dating back to 1996 are available to be searched through NewsLibrary. We use the newspapers' own archives to add data on the Los Angeles Times and the Chicago Tribune, and the Factiva archive for the New York Times.[19]

In this section we will first present some summary statistics of the economic news data, and describe how we use it to compute a measure of partisan coverage. We then illustrate the procedure used to recover the endorsement propensity of the various newspapers. We do the same for the measure of reader partisanship. Finally we investigate the simple correlation between our measure of agenda

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[14] "In a 2006 interview with The Associated Press, Conrad compared his favorite target to then-president George W. Bush. 'I felt two ways about Nixon. First, how did an idiot like that become president,' said Conrad… 'And, secondly, how soon can we get rid of him. Almost the same thing applies to Bush.'" From, Andrew Dalton, The Associated Press, "Pulitzer-Winning Cartoonist Dies at 86," September 10, 2010.

[15] Other members of Chandler family kept some influence and, in spite of a clearly more liberal leaning, the LA Times remained for some time a Republican newspaper. It endorsed Nixon in 1960 and 1968 and mildly endorsed Goldwater in 1964.

[16] The data on the number of stories is from Proquest. We discuss how the data was collected in more detail below.

[17] This is confirmed by proper difference-in-differences regressions, available upon request from the authors.

[18] The official macroeconomic figure is made available to the public monthly for the unemployment and the inflation rate, and quarterly for the two deficits.

[19] We conducted some ex-post checks and detailed reading of random samples of articles, focussing on unemployment. We used various sampling strategies, all providing broadly similar results. In one instance we (1) randomly chose 10 newspapers, then (2) randomly chose 10 months, then (3) randomly chose 3 dates within the months. We obtained 229 hits of which 203 (88.6%) were "good" hits and 26 false positives. Of the good hits, 147 were about unemployment level or unemployment rate (local, state, or national but not foreign unless there was also a comparison with the U.S.): this is 72.4% of the good hits (147 out of 203). Of the remaining good hits, 6.4% were about layoffs, 5.4% about personal stories, 3.4% about unemployment insurance policy, 2.5% about the difficulties of being unemployed generally. Of the 26 false positives, 12 involved unemployment in foreign countries (46.2%). Other sampling methods provided broadly similar patterns.
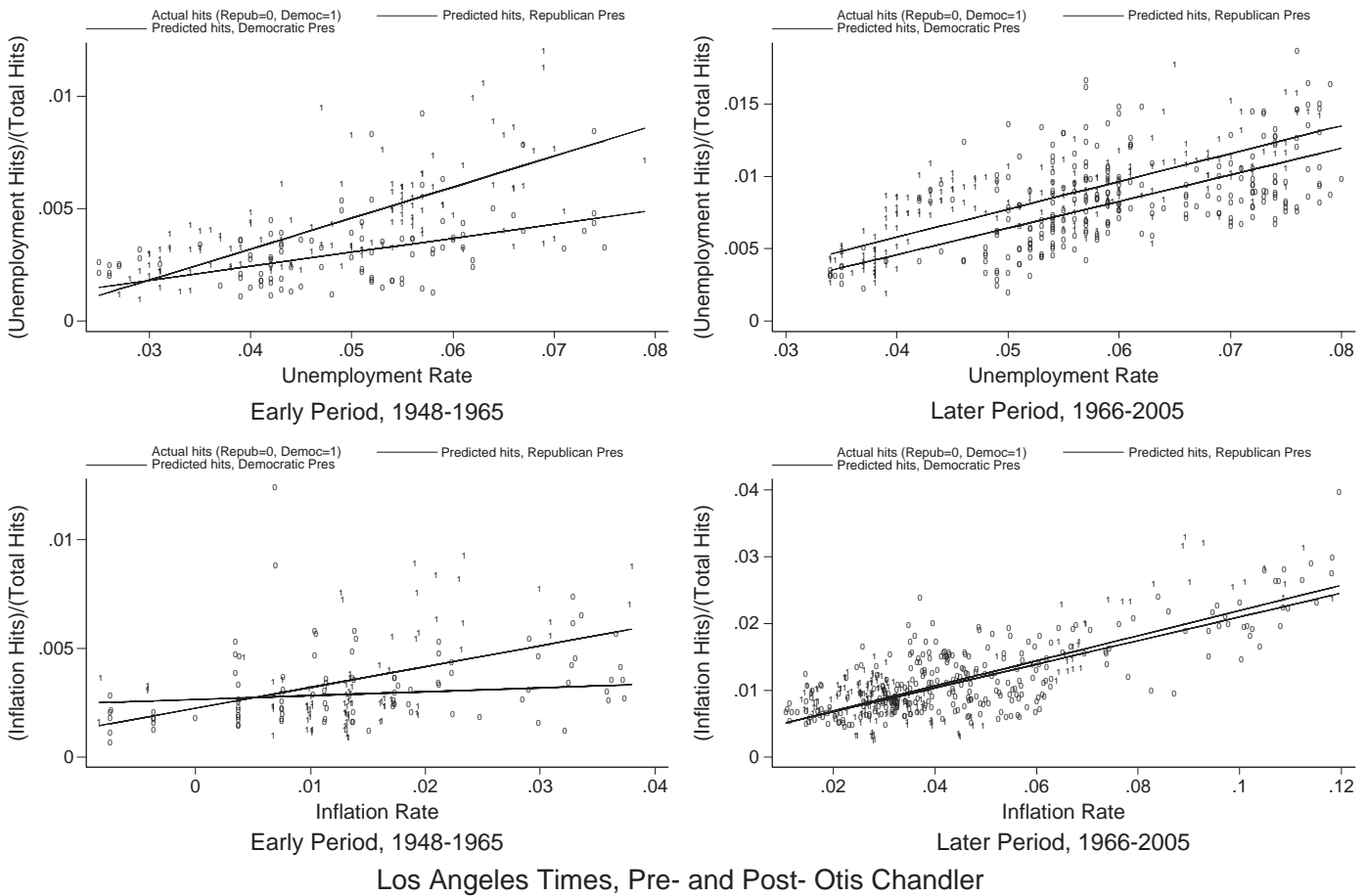
**Fig. 2.** Coverage of unemployment and inflation on the LA Times.

bias and either endorsement or reader partisanship. This illustrates our empirical strategy, in a less rigorous but more intuitive fashion. We will then be ready to present our panel specification.

### 4.1. Economic news data

The key variables in our analysis are the values of the four underlying economic indicators, and the amount of newspaper coverage devoted to the four economic issues. Since newspapers vary greatly in size cross-sectionally (total number of pages, stories, and words), and can also vary in size over time, our dependent variable is the relative frequency of stories in each newspaper during each time period about a given economic issue.

More formally, we focus on $n_{jt}^i = h_{jt}^i / H_{jt}$ — i.e. the relative frequency of articles in newspaper $j$ at time $t$ regarding issue $i$, where $i \in \{$unemployment, inflation, budget deficit, trade deficit$\}$. The numerator $h_{jt}^i$ is the count of stories appearing in outlet $j$ at time $t$ which contain the keywords related to issue $i$. Table 1 reports the keywords that we use.[20] The denominator $H_{jt}$ is the number of stories in newspaper $j$ and time period $t$ in which the word "and" appears, which we use as a proxy for the total number of stories.

To get an initial sense of the variation in newspaper coverage, consider the following. Let $EV_t^i$ be the value of the economic figure

regarding issue $i$ at time $t$.[21] For each newspaper $j$ and each economic issue $i$, we run a separate OLS regression:

$$n_{jt}^i = \alpha_j^i + \beta_{1j}^i EV_t^i + \beta_{2j}^i \Delta EV_t^i + \gamma_j^i DP_t + \delta_j^i \left( EV_t^i \cdot DP_t \right) + \lambda_j^i \ln s_{jt} + \varepsilon_{jt}^i \tag{1}$$

where $DP_t$ is a dummy variable indicating that the incumbent president is a Democrat. In addition, we control for the change in the economic variable of interest (month by month for unemployment and inflation, quarter by quarter for the budget and the trade deficit). We also control for the logarithm of the total number of articles in each newspaper at time $t$, $s_{jt}$. The coefficient $\delta_j^i$ represents the difference in how newspaper $j$ reacts to bad economic news when the president is Democratic compared to when the president is a Republican. Positive values indicate that the newspaper is more reactive to bad economic news when the incumbent president is a Democrat.[22]

There is considerable variation in the differential coverage of the four economic issues we study. Consider unemployment. The Fresno Bee lies at one extreme, with $\delta_j = -0.87$. That is, given a one-percentage-point increase in the unemployment rate, the Fresno Bee would devote almost one percent *fewer* of their stories to

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[20] A potential concern is that all the variation in the coverage of economic news might be driven by editorials. Thus, we also ran the searches excluding the words "editorial" or "editor". We explore the robustness of our results to this narrower definition of coverage below.

[21] Table 2 displays summary statistics of the relative frequency of stories and the economic figures of interest for the 1996–2005 period.

[22] If we had data for a period long enough to cover numerous presidents, it would be possible to treat this interaction term as a measure of the *absolute* pro-Republican bias of a newspaper. However, given the short time span available, the time series variation by itself could easily be misleading. In particular, other newsworthy events and issues could be crowding out economic news more in some years than others.

**Table 1**
Variable definitions.

| Symbol | Variable | Definition | Source |
|---|---|---|---|
| $EV_{Ut}$ | Unemployment | U.S. monthly unemployment rate | BLS, LNS 14000000 |
| $EV_{It}$ | Inflation | Monthly inflation rate, on annual basis | BLS, CPI data, CUUR0000SA0 |
| $EV_{Bt}$ | Budget deficit | Quarterly federal deficit, as percentage of GDP | BEA: NIPA Tables 3.2 and 1.1.5 |
| $EV_{Tt}$ | Trade deficit | Quarterly trade deficit, as percentage of GDP | BEA: NIPA Tables 4.1 and 1.1.5 |
| $n_{jt}^U$ | Relative frequency of unemployment stories | Relative frequency of unemployment stories during month t on newspaper j | Electronic search on www.NewsLibrary.com: (unemployment or jobless) |
| $n_{jt}^I$ | Relative frequency of inflation stories | Relative frequency of inflation stories during month t on newspaper j | Electronic search on www.NewsLibrary.com: (inflation) |
| $n_{jt}^B$ | Relative frequency of budget deficit stories | Relative frequency of budget deficit/surplus stories during quarter t on newspaper j | Electronic search on www.NewsLibrary.com: "government debt" or "government surplus" or "government deficit" or "federal debt" or "federal surplus" or "federal deficit" |
| $n_{jt}^T$ | Relative frequency of trade deficit stories | Relative frequency of trade deficit/surplus stories during quarter t on newspaper j | Electronic search on www.NewsLibrary.com: ("trade balance" or "trade deficit" or "trade surplus") |

unemployment under Clinton than under Bush. In relative terms this is a fairly large difference, since the newspaper only devotes 1.35% of its stories to unemployment on average. The Bismark Tribune lies at the opposite extreme, with $\delta_j = 0.46$. A one-percentage-point increase in the unemployment would lead this paper to print one-half of one percent *more* stories under Clinton than under Bush (on average). Most newspapers are noticeably more centrist, including almost all of the largest newspapers. For example, the estimated $\delta_j$ is $-0.075$ for the New York Times, $-0.19$ for the Los Angeles Times, and 0.136 for the Detroit Free Press.

### 4.2. Endorsement and readership data

We collected endorsement data for 102 newspapers. For 85 newspapers the data is from Ansolabehere et al. (2006). We supplement this with data on 17 additional newspapers searched via the News-Library archive. For the remaining 38 newspapers in our sample, in some cases the newspaper has an explicit policy not to endorse candidates for political offices (e.g. the Deseret News in Salt Lake City, the Orange County Register, and the Colorado Springs Gazette). In addition, many smaller ones do not bother to make endorsements, even though they may not take an explicit editorial stance on the subject. Table A1 in the online appendix lists the newspapers with endorsement data, together with the chain to which they belong, if any.

Following Ansolabehere et al. we can calculate the propensity of each newspaper to endorse one of the parties during electoral campaigns. We used a linear regression model to estimate the "partisan bias" in endorsement behavior. Let $k$ index offices, let $j$ index newspapers and let $t$ index years. Let

$$E_{kjt} = \begin{cases} 1 & \text{if newspaper } j \text{ endorses Democrat for office } k \text{ in year } t \\ -1 & \text{if newspaper } j \text{ endorses Republican for office } k \text{ in year } t \\ 0 & \text{if newspaper } j \text{ makes no endorsement for office } k \text{ in year } t \end{cases}$$

measure the endorsement behavior by each newspaper that makes an endorsement (or an explicit refusal to endorse) in a race.[23] Also, let

$$I_{ijt} = \begin{cases} 1 & \text{if Democrat for office } k \text{ in year } t \text{ is only incumbent} \\ -1 & \text{if Republican for office } k \text{ in year } t \text{ is only incumbent} \\ 0 & \text{if otherwise} \end{cases}$$

measure the incumbency status of the candidates in each race.[24] Finally, we use previous electoral experience to measure non-incumbent quality. Specifically, define a "high-quality" candidate as

a candidate who currently holds a U.S. House seat or an elected statewide office other than the office sought. Let

$$Q_{ijt} = \begin{cases} 1 & \text{if Democrat for office } i \text{ in year } t \text{ is only high quality non−incumbent} \\ -1 & \text{if Republican for office } i \text{ in year } t \text{ is only high quality non−incumbent} \\ 0 & \text{otherwise} \end{cases}$$

We estimated the following linear model for the period 1992–2006, exploiting the panel nature of the data[25]

$$E_{ijt} = NE_j + \theta_t + \beta_1 I_{ijt} + \beta_2 Q_{ijt} + \varepsilon_{ijt}. \tag{2}$$

The newspaper-specific fixed effects, $NE_j$, capture newspapers' partisanship.[26] Positive values indicate a propensity to endorse Democratic candidates and negative values a propensity to endorse Republican candidates.

A few newspapers exhibit strong partisan biases in their endorsement behavior. For example, the estimated $NE_j$ for the Florida Union is $-0.75$, and the estimated $NE_j$ for the Sacramento Bee is 0.62. The Washington Times is something of an outlier, with an $NE_j$ of $-1.14$. Overall, however, most newspapers appear to be relatively centrist. More than half of the newspapers have an estimated $NE_j$s between $-0.35$ and 0.24. The $NE_j$s of a few prominent newspapers are as follows: New York Times = 0.50, Los Angeles Times = 0.27, Washington Post = 0.21, and Chicago Tribune = $-0.24$.

As a proxy for the average political position of readers of a given newspaper $j$, we weight the average Democratic vote in presidential, senatorial and gubernatorial elections in each county during the time period by the relative sales of that newspaper in that county. We call this variable "reader partisanship," and denote it by $NR_j$. It is important to note that, since we do not have individual level data on readership, $NR_j$ is not equal to the actual partisanship of newspaper $j$'s readers. Instead, it measures the partisanship of the voters in newspaper $j$'s market area.

Reader partisanship appears to be less concentrated than endorsement partisanship, and larger newspapers are sold in Democratic and Republican areas as well, rather than being concentrated in moderate areas. Not surprisingly, the $NR_j$s for the six largest newspapers in our sample are larger than one half, suggesting that their readers tend to vote Democratic more than half of the time.

Ex ante, one might be concerned that endorsement and reader partisanship are so correlated that it is very difficult to tell one from the other. Fig. 3 displays a scatter plot of the endorsement

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[23] There are a few cases in our sample where a newspaper endorsed both candidates in a race. We drop these from our analysis.
[24] After redistricting there are some U.S. House races with two incumbents running, in which case $I_{ijt} = 0$. There are a few such cases in our sample. If we drop them the results are unchanged.

[25] The panel is unbalanced, since we do not have endorsement data on some newspapers in the earlier years.
[26] The model also includes year fixed-effects, $\theta_t$, to capture partisan tides.
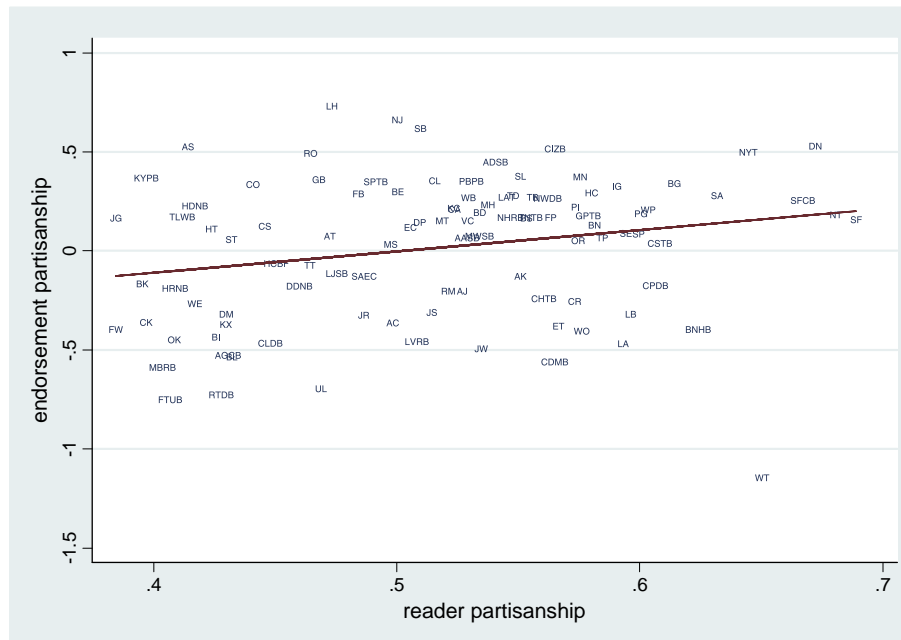
**Fig. 3.** Correlation between endorsement and reader partisanship.

partisanship $NE_j$ against readers' ideology $NR_j$ for our sample of newspapers, together with the estimated regression line. As expected, there is a statistically significant correlation between the partisan stance on the demand and on the supply side in the cross section. But the correlation is only 0.23, which is hardly overwhelming. The Washington Times is a noticeable outlier, but even dropping this newspaper the correlation is only 0.30. Evidently, there is a substantial amount of "slack" between the partisan positions of news consumers and news providers.

### 4.3. Specification

Here, we describe our main specification, which exploits the panel nature of our data. Consider the relationship between news coverage and endorsement partisanship first. For each of the economic outcomes $i \in \{$ unemployment, inflation, budget deficit, trade deficit$\}$, we estimate the following model:

$$n_{jt}^i = \alpha_j^i + \zeta_t^i + \beta_j^i EV_t^i + \gamma_j^i DP_t + \phi^i\left(EV_t^i \cdot DP_t \cdot \widehat{NE}_j\right) + \lambda^i ln s_{jt} + \varepsilon_{jt}^i \ (3)$$

where $EV_t^i$ is the underlying economic outcome variable; $DP_t$ is a dummy variable indicating that the president at time $t$ is a Democrat; $\widehat{NE}_j$ is the estimated newspaper-specific endorsement propensity from Eq. (2) above; $s_{jt}$ is the logarithm of the total number of articles in newspaper $j$ at time $t$; $\alpha_j^i$ is a newspaper-specific fixed effect on economic issue $i$; and $\zeta_t^i$ is a time-specific fixed effect on issue $i$. This specification is quite general, as it allows each newspaper to react differently to the party of the president (captured by $\gamma_j^i DP_t$), and also to the underlying economic variables (captured by $\beta_j^i EV_t^i$). That is, it allows newspapers to react differently to $DP_t$ and $EV_t^i$ not only as a function of their endorsement partisanship but also as a function of any other (fixed) unobserved newspaper characteristics. The main coefficient of interest in terms of relative bias is $\phi^i$, the coefficient on the three-way interaction term between the economic variable $EV_t^i$, the party of the president $DP_t$, and newspaper partisanship $\widehat{NE}_j$. A negative value of $\phi^i$ implies that newspapers that tend to endorse

Democratic candidates have a relatively pro-Democratic agenda-setting bias on economic issue $i$, compared to newspapers that tend to endorse Republican candidates.

We use the same type of specification to investigate the relationship between the bias in coverage and reader partisanship, by replacing $\widehat{NE}_j$ with $NR_j$ in Eq. (3). In addition, we explore the role of demand-side and the supply-side partisanship simultaneously, by including the three-way interactions for both $\widehat{NE}_j$ and $NR_j$ in the same specification.

To account for the possibility that the fixed effects may not absorb the entire within-newspaper correlation in the error term, we run all regressions clustering the standard errors by newspaper. We also conduct a variety of robustness checks on the baseline specification, which are presented and discussed in Section 6.

One especially important check is to compute bootstrapped standard errors, since the model includes generated regressors (Pagan, 1984; Murphy and Topel, 2002). This involves re-sampling from the endorsement data to generate new $\widehat{NE}_j$s in each iteration of the bootstrap. Also, since we are concerned about within-newspaper correlation in the error term, we use cluster-sampling in implementing the bootstrap.[27] It turns out that the bootstrapped standard errors are actually slightly smaller than the ordinary standard errors, at least for the main coefficients of interest ($\phi^i$). Thus, we present the more conservative standard errors in our baseline table, and report the results of the bootstrap in the robustness section (in Table 5).

Other robustness checks include: adding control variables, as well as three-way interaction terms of these controls with $EV_t^i \cdot DP_t$; using lagged values of the economic variables rather than contemporaneous values; including local economic conditions alongside national conditions; using changes in economic conditions rather than levels. Finally, we also considered several alternative specifications in addition to Eq. (3). We do not present the results for these specifications, but they are reported in a working paper version of this article.[28]

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[27] See Cameron et al. (2008) for an extensive discussion of cluster-bootstrap techniques.
[28] See Larcinese et al. (2007).

**Table 2**
Summary statistics, 1996–2005.

| Symbol | Variable | Obs. | Mean | Median | Std. dev. | Min | Max |
|---|---|---|---|---|---|---|---|
| $EV_{Ut}$ | Monthly unemployment rate | 120 | 5.013 | 5.100 | 0.672 | 3.800 | 6.300 |
| $EV_{It}$ | Monthly inflation rate | 120 | 2.514 | 2.579 | 0.759 | 1.067 | 4.687 |
| $EV_{Bt}$ | Quarterly budget deficit | 40 | 1.047 | 1.229 | 1.936 | −2.209 | 4.114 |
| $EV_{Tt}$ | Quarterly trade deficit | 40 | 3.432 | 3.604 | 1.579 | 1.070 | 6.166 |
| $n_{jt}^U$ | Relative frequency of unemployment stories on newspaper $j$ during month $t$ | 12,004 | 0.689 | 0.633 | 0.372 | 0 | 3.138 |
| $n_{jt}^I$ | Relative frequency of inflation stories on newspaper $j$ during month $t$ | 12,004 | 0.564 | 0.474 | 0.394 | 0 | 3.824 |
| $n_{jt}^B$ | Relative frequency of budget deficit stories on newspaper $j$ during quarter $t$ | 4009 | 0.123 | 0.102 | 0.099 | 0 | 1.887 |
| $n_{jt}^T$ | Relative frequency of trade deficit stories on newspaper $j$ during quarter $t$ | 4009 | 0.056 | 0.039 | 0.059 | 0 | 0.539 |
| $NE_j$ | Endorsement partisanship of newspaper $j$ | 101 | 0.029 | 0.128 | 0.340 | −0.748 | 0.734 |
| $NR_j$ | Reader partisanship of newspaper $j$ | 101 | 0.517 | 0.524 | 0.074 | 0.384 | 0.689 |

Notes: all economic figures and relative frequencies of stories are expressed in percentage points.

After matching with all the explanatory variables, our final sample consists of 101 newspapers for the period 1996–2005. We exclude the Washington Times from all of our regression analyses, because it is an extreme and influential outlier, and we do not want our results to be unduly affected by one newspaper.

## 5. Results

Table 3 presents the results. There are four panels, one for each of the economic variables. For each economic variable there are three columns. The first column focuses on newspaper endorsement partisanship, the second focuses on reader partisanship, and the third jointly considers newspaper endorsement and reader partisanship. The first two rows of each panel present the estimates of the $\phi^i$'s, the coefficients on the main variables of interest, i.e., the three-way interaction terms in Eq. (3). The third row reports the estimates of $\lambda^i$, the coefficient on the log of the total number of articles. Clustered standard errors are reported in brackets below each coefficient.

First, consider the endorsement partisanship columns. The results in the first panel show that the three-way interaction between the level of the unemployment rate, the Democratic President dummy and the Democratic endorsement variable has the expected negative sign and is significant at the 5% level. This is evidence of a bias in coverage that is significantly correlated with the editorial stance of newspapers as measured by endorsements. Newspapers with a pro-Democratic-endorsement pattern, compared to pro-Republican newspapers, give significantly less coverage to unemployment in times of high unemployment under Clinton than under George W. Bush. For the other three economic variables the three-way interaction terms are all small, although for the trade deficit the coefficient is significant at the 10% level.

Next, consider the reader partisanship columns. Here, the estimated three-way interaction term is relatively large and significant at the .05 level for the budget deficit issue. This is evidence of a bias in coverage that is significantly correlated with the partisan leaning of readers. Newspapers more heavily sold in Democratic

counties are significantly more reactive to a larger budget deficit under George W. Bush than under Clinton, compared to newspapers sold in Republican counties. For the other three economic variables the point estimates of the three-way interaction are all negative, but they are never significant even at the 10% level.

Finally, consider the third column in each panel, where endorsement and reader partisanship are both included in the model. The results basically confirm those in the columns 1 and 2. The differential coverage of unemployment is significantly correlated with endorsement partisanship, but not with reader partisanship. On the other hand, the differential coverage of the budget deficit is significantly correlated with the average partisan leaning of readers but not with that displayed by editors through their endorsements. For the trade deficit there is again some weak evidence of a significant three-way interaction with endorsement partisanship. In fact, the three-way interaction is no longer significant when dropping the New York Times from the sample. The coverage of inflation is not significantly correlated with either endorsement or reader partisanship.

As an additional check on the comparative relevance of reader and endorsement partisanship, we also perform a test on the null hypothesis that – for a standard deviation increase in reader and endorsement partisanship – the three-way interaction effects are equal. We do this for each economic issue and report the corresponding p-value at the bottom of columns (3), (6), (9) and (12). One cannot reject at ordinary confidence levels the null hypothesis of equal effects. The p-values are between 0.3 and 0.4 in the case of unemployment and trade deficit, while they are close to 0.6 for inflation and the budget deficit.

How large are the effects shown in Table 3? Table 4 presents some simple comparisons, for the most significant coefficients. In the top panel (panel [A]) we focus on the coverage of unemployment, stratifying newspapers by their endorsing behavior. In panel [B] we focus on coverage of the budget deficit, stratifying newspapers by their readers' partisanship. In panel [C] we focus on the trade deficit, stratifying newspapers again on the basis of their endorsing behavior.

More precisely, in panel [A] we group newspapers into quintiles on the basis of their endorsement patterns. We refer to newspapers belonging to the first, third and fifth quintiles in the endorsement distribution, as, respectively, Pro-Republican Endorsing, Neutral Endorsing, and Pro-Democratic Endorsing. For each group of newspapers we compute the difference between the average change in the predicted number of stories under Clinton and the average change in the predicted number of stories under George W. Bush, given a 1 percentage point increase in unemployment.[29] Thus, for example, given a 1% increase in the unemployment rate, a Pro-Republican Endorsing newspaper will print 0.056 more stories on unemployment if the president is a Democrat than if the president is a Republican. This represents a difference of about 10%, since these papers only print an average of 0.576 stories on unemployment per month. By contrast, given a 1% increase in the unemployment rate, a Pro-Democratic Endorsing newspaper will print 0.051 fewer stories on unemployment if the president is a Democrat than if the president is a Republican, a difference of about 7%.

In panel [B] we group newspapers into quintiles on the basis of their reader partisanship scores. We refer to newspapers belonging to the first, third and fifth quintiles in the endorsement distribution, as, respectively, Pro-Republican Readers, Neutral Readers, and Pro-Democratic Readers. For each group of newspapers we compute the difference between the average change in the predicted number of stories under Clinton and the average change in the predicted number of stories under George W. Bush, given a 1% increase in the budget deficit.[30] Again, the magnitudes are substantively meaningful. Given a

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[29] To put the 1 percentage point change in perspective, the standard deviation of the unemployment rate during the period under study was 0.672.

[30] The standard deviation of the budget deficit during the period under study was 1.936.

**Table 3**
Reader partisanship, endorsement partisanship and agenda bias in the coverage of unemployment and inflation.

| | Unemployment | | | Inflation | | | Budget deficit | | | Trade deficit | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Democratic President dummy × economic variable × reader partisanship | – | −0.264 [0.291] | −0.105 [0.300] | – | −0.076 [0.132] | −0.088 [0.158] | – | −0.065** [0.025] | −0.056** [0.028] | – | −0.037 [0.050] | −0.017 [0.046] |
| Democratic Pres. dummy × economic variable × endorsement partisanship | −0.122** [0.052] | – | −0.115** [0.053] | 0.003 [0.031] | – | 0.009 [0.036] | −0.01 [0.007] | – | −0.006 [0.008] | −0.015* [0.009] | – | −0.014* [0.008] |
| Ln of total articles | 0.028 [0.022] | 0.029 [0.023] | 0.028 [0.022] | 0.032** [0.015] | 0.032** [0.015] | 0.032** [0.015] | −0.02 [0.022] | −0.02 [0.022] | −0.02 [0.022] | 0.004** [0.002] | 0.004* [0.002] | 0.004** [0.002] |
| Newspaper fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Date dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Newspaper-specific slope w.r.t. economic variable | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Newspaper-specific slope w.r.t. democratic President dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Equal effects of a SD increase in reader and endorsement partisanship, p-value | – | – | 0.33 | – | – | 0.66 | – | – | 0.6 | – | – | 0.38 |
| Observations | 12,004 | 12,004 | 12,004 | 12,004 | 12,004 | 12,004 | 4009 | 4009 | 4009 | 4009 | 4009 | 4009 |
| Number of newspapers | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 |
| R-squared | 0.63 | 0.63 | 0.64 | 0.72 | 0.72 | 0.72 | 0.61 | 0.62 | 0.62 | 0.72 | 0.72 | 0.72 |

Notes: the table displays the output of fixed-effects regressions, with the relative frequency of stories about unemployment, inflation the budget and the trade deficit as the dependent variable. Observations are at the monthly level for unemployment and inflation, and at the quarterly level of the two deficits.
Reader partisanship is the circulation-weighted Democratic partisanship of voters for each newspaper. Endorsement partisanship is the newspaper-specific propensity to endorse Democratic vs. Republican candidates. The focus is on the triple interaction between the reader partisanship variable, the Democratic president dummy and the relevant economic variable, and on a similarly defined triple interaction with the endorsement partisanship variable. In columns (3), (6), (9) and (12) we also report the p-value on a test for the null hypothesis that – for a standard deviation increase in reader and endorsement partisanship – the triple-interaction effects are equal. Standard errors are clustered at the newspaper level and are reported in brackets below each coefficient.
  * Significant at 10%.
 ** Significant at 5%.

1% change in the deficit, newspapers with Pro-Republican Readers would react by publishing 0.023 more stories under Bush than under Clinton (a difference of about 20% with respect to the average number of stories), while newspapers with Pro-Democratic Readers would more strongly react by publishing 0.035 more stories under Bush than under Clinton, a difference of about 28%.

Finally, panel [C] shows that – given a 1% increase in the trade deficit – a Pro-Republican Endorsing newspaper will print 0.007 more stories on the issue if the president is a Democrat than if the president is a Republican, a difference of about 20%.[31] On the other hand, given a 1% increase in the deficit, a Pro-Democratic Endorsing newspaper will print 0.006 fewer stories on trade deficit if the president is a Democrat than if the president is a Republican, a difference of about 10%.

## 6. Robustness checks

In this section we present the results of a variety of robustness checks. The estimates are all shown in Table 5.[32] As in Table 3 above, we focus on the main parameters of interest, the coefficients on the relevant three-way interaction variable, $\phi^i$.

The bottom line from Table 5 is that the estimates in Table 3 are quite robust. Consider first the unemployment issue. In all cases, the estimates of $\phi^i$ for newspaper endorsement partisanship are similar to those in Table 3 (in the range −0.11 to −0.13) and statistically significant at the .05 level. Similarly, for the budget deficit issue the estimates of $\phi^i$ for reader partisanship are in all but one case similar to those in the baseline specification (in the range of −0.05 to −0.06) and statistically significant at the .10 or .05 level. The results for the trade deficit and inflation are also generally similar to those in Table 3.

In panel [A], in order to deal with endorsement partisanship as a generated regressor, we estimate the standard errors using a bootstrap. Since we must cluster our standard errors by newspaper, we employ cluster-sampling in the bootstrap, and follow the

**Table 4**
Agenda bias in the coverage of economic news, implied magnitudes.

| [A] Unemployment news | Pro-Republican endorsing | Neutral endorsing | Pro-Democratic endorsing |
|---|---|---|---|
| Differential change in the relative frequency of news for a 1% increase in unemployment under Democratic vs. Republican president | 0.056 | −0.014 | −0.051 |
| As percentage of average unemployment news for that quintile | 9.78% | −1.85% | −7.15% |
| [B] Budget deficit news | Pro-Republican readers | Neutral readers | Pro-Democratic readers |
| Differential change in the relative frequency of news for a 1% increase in budget deficit under Democratic vs. Republican president | −0.023 | −0.029 | −0.035 |
| As percentage of average budget deficit news for that quintile | −19.29% | −24.04% | −28.44% |
| [C] Trade deficit news | Pro-Republican endorsing | Neutral endorsing | Pro-Democratic endorsing |
| Differential change in the relative frequency of news for a 1% increase in trade deficit under Democratic vs. Republican president | 0.007 | −0.002 | −0.006 |
| As percentage of average trade deficit news for that quintile | 19.56% | −2.87% | −10.07% |

Notes: the first row in Panel [A] displays – for the first, the third and the last quintiles in the endorsement partisanship score – the differential change in the relative frequency of unemployment news for a one percent increase in the unemployment rate under a Democratic vs. a Republican president. In the second row of the panel this differential change is reported as a percentage with respect to average relative frequency of unemployment news in that quintile. Panel [B] replicates the format of Panel [A], but it focuses on budget deficit news and quintiles in the reader partisanship distribution. Finally, Panel [C] is devoted to trade deficit news and quintiles in the endorsement score distribution.

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[31] The standard deviation of the trade deficit during the period is 1.579.
[32] Full results for these robustness checks are available in the online appendix to the paper, more precisely in Tables A2, A3 and A4.

**Table 5**
Agenda bias in the coverage of economic news, robustness checks.

| | Unemployment | Inflation | Budget deficit | Trade deficit |
|---|---|---|---|---|
| *[A] Bootstrapped standard errors* | | | | |
| Democratic president dummy × economic variable × reader partisanship | −0.105 [0.237] | −0.088 [0.127] | −0.056*** [0.021] | −0.017 [0.035] |
| Democratic pres. dummy × economic variable × endorsement partisanship | −0.115*** [0.041] | 0.009 [0.03] | −0.006 [0.006] | −0.014** [0.006] |
| | | | | |
| *[B] Lagged value of economic controls* | | | | |
| Democratic president dummy × economic variable × reader partisanship | −0.139 [0.284] | −0.069 [0.152] | −0.026 [0.029] | −0.018 [0.050] |
| Democratic pres. dummy × economic variable × endorsement partisanship | −0.116** [0.054] | 0.013 [0.036] | −0.009 [0.007] | −0.014 [0.009] |
| | | | | |
| *[C] Controlling for state level unemployment* | | | | |
| Democratic president dummy × economic variable × reader partisanship | −0.122 [0.306] | −0.089 [0.158] | −0.054* [0.028] | −0.019 [0.046] |
| Democratic pres. dummy × economic variable × endorsement partisanship | −0.128** [0.053] | 0.009 [0.036] | −0.006 [0.008] | −0.014* [0.008] |
| | | | | |
| *[D] Triple interactions with percent of college graduated and percent urban* | | | | |
| Democratic president dummy × economic variable × reader partisanship | −0.11 [0.295] | −0.092 [0.179] | −0.051* [0.027] | −0.004 [0.044] |
| Democratic pres. dummy × economic variable × endorsement partisanship | −0.109** [0.055] | 0.009 [0.035] | −0.006 [0.008] | −0.014 [0.009] |
| | | | | |
| *[E] Triple interactions with percent of college graduated, percent urban and income per capita* | | | | |
| Democratic president dummy × economic variable × reader partisanship | −0.117 [0.288] | −0.071 [0.186] | −0.049* [0.027] | 0.012 [0.039] |
| Democratic pres. dummy × economic variable × endorsement partisanship | −0.110* [0.057] | 0.011 [0.035] | −0.006 [0.008] | −0.012 [0.008] |
| | | | | |
| *[F] Dropping non-endorsements* | | | | |
| Democratic president dummy × economic variable × reader partisanship | −0.11 [0.301] | −0.089 [0.159] | −0.057** [0.029] | −0.017 [0.046] |
| Democratic pres. dummy × economic variable × endorsement partisanship | −0.107** [0.052] | 0.009 [0.036] | −0.005 [0.008] | −0.014* [0.008] |
| | | | | |
| *[G] Count of articles as dependent variable* | | | | |
| Democratic president dummy × economic variable × reader partisanship | −9.674 [9.328] | −5.501 [4.367] | −3.914* [2.290] | −9.124 [7.524] |
| Democratic pres. dummy × economic variable × endorsement partisanship | −4.549*** [1.373] | −0.66 [0.861] | −0.345 [0.592] | −1.593 [1.238] |
| Newspaper fixed effects | Yes | Yes | Yes | Yes |
| Date dummies | Yes | Yes | Yes | Yes |
| Newspaper-specific slope w.r.t. economic variable | Yes | Yes | Yes | Yes |
| Newspaper-specific slope w.r.t. Democratic president dummy | Yes | Yes | Yes | Yes |
| Ln of total articles | Yes | Yes | Yes | Yes |
| Number of newspapers | 101 | 101 | 101 | 101 |

Notes: the table displays the output of fixed-effect regressions, with the relative frequency of stories about the four economic issues as the dependent variable.
Reader partisanship is the circulation-weighted Democratic partisanship of voters for each newspaper. Endorsement partisanship is the newspaper-specific propensity to endorse Democratic vs. Republican candidates. The focus is on the triple interaction between the reader partisanship variable, the Democratic president dummy and the relevant economic variable, and on a similarly defined triple interaction with the endorsement partisanship variable.
In Panel [E] we use bootstrapped standard errors to account for generated regressors. In panel [B] we control for the lagged value of the economic variable, properly interacted with the other variables of interest. In Panel [C] we control for the level and change of the unemployment rate in each state. In Panels [D] the Democratic president dummy and the economic variable are interacted with the newspaper-specific, circulation-weighted percentage of college-graduated, and percentage of individuals living in an urban area. In Panel [E] we also add the triple interaction with income per capita. In Panel [F] we drop non-endorsements when calculating endorsement partisanship scores. In Panel [G] the dependent variable is the count of articles about a given issue, instead of the relative frequency. Standard errors are clustered at the newspaper level and are reported in brackets beside each coefficient.
   *** Significant at 1%.
   ** Significant at 5%.
   * Significant at 10%.

bootstrap-se procedure, as described in Cameron et al. (2008). More precisely, in the first stage we estimate endorsement scores by resampling newspapers as clusters (not the single endorsements). In the second stage we then estimate our baseline specification 3 with clustered standard errors. We run 500 replicas for each regression and extract bootstrapped standard errors from the resulting distribution. As mentioned above, those standard errors are slightly smaller than the ones found with our baseline specification.

It is not clear a priori whether newsworthy economic events are more correlated with contemporaneous values of the relevant economic figures, or lagged values. Government agencies such as the Bureau of Economic Analysis and Bureau of Labor Statistics can only publish lagged values of macroeconomic variables. However, newspapers do not only report on the release of official data – which are related to what happened in the past – but also on contemporaneous events, which may be correlated with the current value of the relevant macroeconomic figure. For example, with respect to unemployment, there are sometimes news stories about large layoffs in a given sector or by a particular firm, or reports of large current spikes in applications at local unemployment agencies.

Panel [B] shows the results when we use lagged values of the economic variables of interest instead of contemporaneous values. More

precisely, we use the previous month's unemployment rate and inflation rate, and the previous quarter's budget deficit and trade deficit. For unemployment, the results are similar to those in Table 3. For the budget deficit, however, they are not. The three-way interaction with reader partisanship is only about half as large as that when we use contemporaneous values, and no longer significant even at the .10 level.

Newspapers typically have a locally concentrated readership that cares about local events, and local aspects of common phenomena. Since there is noticeable variation in unemployment across regions and states, the local unemployment rate in an area or state may represent a newsworthy issue. This can potentially introduce an omitted variables bias. The concern is that, in Democratic-voting areas, the local unemployment rate could be systematically lower than its average when the incumbent president is a Democrat, because of public job-creating projects being targeted to the area. Since the political partisanship of potential readers in the area where a newspaper sells is positively correlated with its endorsement policy (see Fig. 3), it is possible that the less intense coverage of high unemployment by Democratic-leaning newspapers under a Democratic president is driven by the fact that the *local* unemployment rate is lower in those areas where the newspapers are sold. This would not indicate a partisan bias trickling down from the editorial page to the economic news section, but simple reporting on local economic

conditions. Panel [C] addresses this issue. The panel presents estimates in which we include controls for both the level and change in the unemployment rate in the state where each newspaper is based. For completeness, and because of potential crowding out effects in news coverage, we also control for the local unemployment rate in the regressions for the three other economic issues. Again, the results are similar to those reported in Table 3.

In panel [D] and panel [E] we control for various demographic variables in each newspaper's market area that are correlated with newspaper readership and may also be correlated with partisanship. In the table we focus on education (percent who graduated from college), per-capita income, and percent living in urban areas. We do this by including the three-way interaction terms involving these demographics, i.e. the interaction of the demographic control with $EV_t^i \cdot DP_t$. Once again, the pattern of estimates is similar to that in the baseline specification. This further increases our confidence that the results in Table 3 are not driven by omitted variable bias.[33]

In constructing $\widehat{NE}_j$ for Table 3 we include races in which a newspaper explicitly refused to endorse any candidate, setting $E_{kjt} = 0$. This only happens 2.18% of the cases, but these could be especially salient. Panel [F] shows what happens if we treat these as missing, and simply drop them when estimating $\widehat{NE}_j$. The results are again similar to those in Table 3.

Finally, panel [G] presents estimates where the dependent variable is defined in terms of the total numbers of articles rather than the relative frequencies. We cannot directly compare the coefficients with those in Table 3 since the scales are now different, but we see that for unemployment the estimated coefficient on the three-way interaction term involving endorsement partisanship is large and statistically significant at the .01 level. The results for the budget deficit are slightly weaker, but even there the estimated coefficient on the three-way interaction term involving reader partisanship is large and statistically significant at the .10 level.[34]

To reiterate, we conclude from Table 5 that the estimates in Table 3 are not fragile, but generally stable across a variety of alternative specifications.

## 7. Discussion and conclusions

In this paper we have analyzed the relationship between reader and endorsement partisanship of U.S. newspapers and the coverage of economic issues, as a function of the true economic datum and the political affiliation of the incumbent president. We began with a case study of the Los Angeles Times, and found a striking correlation between the biases in coverage of news on unemployment and inflation, and the partisan bias in political endorsements on the editorial page. Next, we studied a large number of newspapers over the period 1996–2005. There is strong evidence that newspapers endorsing Democratic candidates give less coverage to high unemployment (and more coverage to low unemployment) under Clinton than under George W. Bush, as compared to Republican-leaning newspapers. This relationship is robust to a number of alternative specifications and robustness checks. There is also evidence of a similar pattern of coverage for the trade deficit issue, although this is less robust. For the budget deficit

issue, we find evidence of a bias in coverage that is correlated with the partisanship of newspapers' readers, although this finding is not fully robust. We find no significant patterns for inflation. Together, these findings suggest that supply-side and demand-side forces both play a role in determining the bias in newspaper coverage.

As mentioned in the Introduction, we only study agenda-setting and do not attempt to estimate any framing of economic events done through tone. Another limitation of our approach is that we simply count the number of articles featuring the chosen keywords.[35]

We can extend our analysis in two main directions. First, we would like to expand the time window under consideration. This would allow us to study more than two presidencies, and – if we could go back to the 1970s – we could add an era where inflation was high and perceived as a much bigger problem than in our sample.[36] Second, any debate on the extent of "mass media bias" in the U.S. should be put into a comparative perspective.[37] Since the economy represents a salient issue almost everywhere, one could use the same keywords-based search procedure on the electronic archives of newspapers and media outlets in other countries, and construct similar datasets to the one analyzed here. We could thus compare – on a cross-country basis – the amount of within-country variation in agenda bias.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at doi:10.1016/j.jpubeco.2011.04.006.

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[33] We thank an anonymous referee for this suggestion.

[34] We ran two more robustness checks for the unemployment issue, not reported in Table 5. First, it is not clear a priori whether *levels* or *changes* in economic variables are more newsworthy in the eyes of editors, journalists and readers. Thus, we also estimated Eq. (3) using the change in unemployment rather than the level in the interaction term. The estimates using changes are small and statistically insignificant. Second, the dependent variables in Table 3 include both new articles and editorials. We constructed another dependent variable that excludes all stories containing the keyword "editorial" or "editor." The estimated coefficient on the three-way interaction term is about 11% smaller than those in Table 3, and statistically significant at the .05 level. Thus, a large part of the differential coverage of unemployment takes place on the news pages, not merely on the editorial pages, suggesting that agenda-setting indeed spills over into the economic news section.

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[35] One could for example refine the search algorithm to code the page number and newspaper section on which each piece appears, and give a higher weight to front page stories. A further improvement would be to weight articles by their length.

[36] Historical electronic archives such as ProQuest can be used to construct long time series on the coverage of economic issues at least for a few newspapers.

[37] See Gentzkow et al. (2006) for a time-series comparison of the extent of bias on the U.S. press in the coverage of two political scandals, the Crédit Mobilier in the 1870s and the Teapot Dome in the 1920s.

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