

Whose News?

Class-Biased Economic Reporting in the USA

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Abstract

There is considerable evidence that citizens' choices at the ballot box are shaped by their assessments of the state of the economy and that these assessments, in turn, are strongly influenced by the news. We know much less about how the nature of economic news responds to different components of the economy – and, specifically, *whose* economic welfare drives economic news. In a context of rising inequality at the top, to what degree does economic news reflect the welfare of rich relative to non-rich households? In this paper, we analyze a new dataset of economic news content over the last three decades in the United States to examine how the tone of economic news responds to real economic developments with differing distributional consequences. The study draws on the automated coding of sentiment in approximately 464,000 economic news stories from 32 high-circulation newspapers between 1980 and 2014. The analysis reveals a strong and pervasive “pro-rich” bias in economic reporting, a skew that affects papers owned by publicly-traded corporations and those that are privately held, and that manifests in both liberal- as well as conservative-leaning outlets. Rather than reflecting corporate interests or the sociology of the journalistic profession, we conclude that class-biased economic news likely reflects media's focus on economic aggregates that have, over time, become less sensitive to changes in the welfare of the average American.

1 Introduction

There is considerable evidence that citizens' choices at the ballot box are shaped by their assessments of the state of the economy (Duch and Stevenson 2006; Lewis-Beck 1988; Lewis-Beck et al. 2008). A critical question for the evaluation of the quality of democratic accountability is how voters form their perceptions of economic performance, and a substantial literature suggests that economic perceptions are greatly influenced by the news media (Boydston et al. 2018; De Boef and Kellstedt 2004; Duch, Palmer, et al. 2000; Hetherington 1996). An important question, thus, is how the nature of economic news responds to different components of the economy. There exists a growing literature exploring the differential responsiveness of the news media to different economic parameters, such as unemployment as compared to inflation, to levels as compared to changes, and to negative as compared to positive outcomes (Soroka 2006, 2012; Soroka et al. 2015). What we know very little about, however, is *whose* economic welfare economic news reflects. How responsive is economic news to developments shaping the material fortunes of different income groups – such as those of the rich as compared to those of the average household?

In this paper, we analyze a new dataset of economic news content from 32 high-circulation U.S. newspapers over the last three decades to examine how the tone of economic news responds to different distributions of welfare. Using an automated coding tool, we measure the evaluative direction – i.e., positivity vs. negativity – of economic news over the period of analysis. We examine how this variable responds to real economic developments at different points in the income distribution, and then examine the mechanisms that might explain these patterns of responsiveness.

As a descriptive matter, we find clear and robust evidence of a strong bias in economic news tone toward the fortunes of the most affluent – what might be termed *class-biased economic news*.¹ Put simply, good or bad news is much more likely to emerge when the very rich are

¹We follow the nomenclature of “class-biased economic voting” coined by Bartels (2008). In doing so, we acknowledge that associating “class” purely with income difference runs counter to conventional sociological approaches to the term that are focused on occupation and related concepts.

experiencing gains or losses, respectively, than when the non-rich are.

In principle, this upward class bias in the news could emerge from a set of conscious biases in the media sector, such as the distributional preferences of rich media owners and well-to-do journalists, or from owners' and journalists' greater concern for the welfare of the most affluent. In contrast, we report evidence that points to a less direct and, arguably, more plausible mechanism: the efforts of economic reporters simply to report on economic performance in the *aggregate*. While the fruits of economic growth were broadly shared in the decades immediately following World War II, the last 35 years has witnessed a fundamental shift in the relationship between aggregate growth and distribution. As we detail below, since the mid-1980s, aggregate economic expansion and contraction have been far more closely tied to the rise and fall of top incomes than to changes in the incomes of the non-rich. Moreover, top-end inequality has been a procyclical phenomenon, rising when the economy as a whole is doing well and falling when aggregate performance flags. Class-skewed economic news, we argue, emerges not from a conscious pro-rich bias in media actors' attitudes or preferences, but merely from journalists seeking to track the ups and downs of the business cycle, and attending little to who exactly is winning or losing beneath the surface of aggregate performance.

The results provide novel insight into the political economy of economic information, yielding a systematic and detailed portrait of the informational environment within which voters punish and reward their representatives for economic performance. More specifically, the results shed new light on the informational dimensions of the politics of inequality in the United States. Rising inequality at the top represents a puzzle in a liberal democratic context. In theory, electoral majorities should punish governments that oversee rising concentrations of income at the top and reward incumbents that deliver broad-based economic growth. How can public officials that preside over growing inequality at the top survive in office? Why are incumbents not incentivized to offer greater compensatory redistribution or to reshape the political economy in ways that would distribute material gains more broadly? The paper's findings suggest that the news media, rather than facilitating citizens' pursuit of their enlightened self-interest, serve as an informational substrate for the growth of a "winner take all" political economy (Hacker

and Pierson 2011).

Beyond this class-biased economic voting literature, this paper also contributes to a growing body of work on the (often political) relationship between the news media and the economy. In addition to those papers cited above, there has been important work on the role of the media in benchmarking economic performance (e.g. Kayser and Leininger 2015; Kayser and Peress 2012), focusing attention on particular aspects of the economy (e.g. Larcinese et al. 2011; Soroka et al. 2015), and framing macroeconomic issues in particular ways (e.g. Barnes and Hicks 2018). Our work adds the dimension of *class* to this burgeoning literature (e.g. Arceneaux et al. 2016; DellaVigna and Kaplan 2007; Gentzkow and Shapiro 2010; Levendusky 2013; Martin and McCrain 2019; Merkley 2019; Prior 2013).

Finally, the paper’s findings suggest that mechanisms of economic accountability hinge on the *structure* of the economy itself. When macroeconomic gains and losses are broadly distributed – when most of society wins or loses together – it is relatively easy for citizens to form economic assessments of relevance to their own welfare. If one wants to know whether most people are doing well or poorly, it is enough to know whether the economy as a whole is doing well or poorly. The argument of this paper implies that, in recent decades, the U.S. economy has changed in ways that create a much greater informational challenge for the citizen seeking to evaluate governments’ economic performance. With the welfare of most citizens largely decoupled from economic aggregates, knowing how “most people” are doing requires far more complex economic information – information that we show the news media rarely provide. Indeed, low levels of citizen awareness of, and political attention to, the sharp rise in top-income shares since the 1970s is likely in part attributable to the fact that inequality has risen fastest at times when the aggregate economic picture has been rosier – i.e., when the economic news has been good.

2 Motivation

This paper is motivated in part by a large and growing literature on rising economic inequality and its political causes and consequences, particularly in relation to the rising relative fortunes and mounting political influence of the richest households in the United States (Bartels 2008; Gilens 2012; Hacker and Pierson 2011). In a democracy, an increasing concentration of resources in the hands of a small proportion of the population represents a puzzle: given that politicians typically must win majority (or plurality) approval at elections, and that votes are in principle distributed equally, how can incumbent governments afford to preside over such an unequal pattern of economic outcomes?

One general possibility is that voters' evaluations of economic conditions do not effectively incorporate distributional information. Indeed, past research on economic voting suggests voters may not be especially focused on defending their personal economic interests at the ballot box. The conventional wisdom is that voters hold governments to account for economic developments applying to society as a whole, rather than for changes in personal economic well-being; in the argot of the literature, voters are sociotropic, not egocentric (Kinder and Kiewiet 1981). While some recent research indicates voters may be more sensitive to their "pocketbooks" than commonly thought, even here the conclusion is not that economic voting is strongly egocentric, only that personal economic experiences are "just as important as national evaluations in determining vote choice" (Healy et al. 2017, 783). To be sure, sociotropic voters are sensitive to economic performance within a social unit of which they are a part and, thus, may be seen as defending their interests in a minimal sense. Yet this conclusion holds only to the extent sociotropic voters form and act on economic perceptions that represent a sensible aggregation of – possibly quite divergent – developments across society.

Work by Bartels (2008) suggests that, when the fortunes of the affluent diverge from those of the rest, it is the well-being of the affluent that drives voters' political evaluations. Bartels finds that, controlling for mean income growth, income growth among the richest 5 percent of households makes lower- and middle-income voters more likely to vote for the incumbent. In

fact, voters in the bottom two-thirds of the income scale are more responsive to top-end income growth than they are to mean income growth or to income growth among the less-affluent – an effect that Bartels terms “class-biased economic voting.”² Related research by Hopkins (2012) similarly suggests citizens respond differently to developments at different points in the income distribution. In contrast to Bartels (2008), however, Hopkins (2012) finds that it is the fortunes of the poor that exert outsize influence on economic perceptions, with income growth at the 20th percentile considerably more influential than growth at the 95th percentile among the wealthy, middle-income earners and the poor.

Past research indicates that voters’ economic perceptions are shaped by the media, particularly by the evaluative direction – or *tone* – of news about the economy (Boydstun et al. 2018; Nadeau et al. 1999; Soroka 2006). Boydstun et al. (2018) show that the tone of economic news predicts public perceptions of the economy after taking into account measures of actual economic performance, providing evidence of an independent effect of news coverage on attitudes, above and beyond that of the underlying economic developments being covered. While the media’s influence may be exerted through various mechanisms (Hetherington 1996, 374–375), a straightforward possibility is that messages about the economy directly shape the content of voters’ economic beliefs: that is, voters exposed to communications suggesting the economy is performing poorly (or well) may accept these reports and integrate them into their view of economic conditions. While citizens are not equally likely to accept media messages about the economy, especially when those messages implicate partisan identities (Zaller 1992), media attention ought to, on average, push voters’ economic evaluations in the direction implied by the tone of economic news coverage (Hetherington 1996).

²Hicks et al. (2016) extend Bartels’ analysis to a comparative context, finding evidence of class-biased economic voting in many other OECD countries.

3 Mechanisms of class-biased economic news coverage

If the media's influence on mass economic perception seems clear, it is far less clear that the media will provide citizens with a picture of economic reality that is sensitive to *distributional* considerations. The news media's neglect of political substance in favor of a "game-centered" interpretation of politics is a recurring theme in political communications (Dunaway 2008; Patterson 1993). We may, accordingly, be pessimistic that media will provide high-quality analysis of change in politically consequential variables, including the distributive state of the economy. Beyond this, however, are there reasons to expect the tone of economic news to be class-biased – in particular toward the interests of the relatively affluent – in such a way as to generate class-biased economic perceptions?

In referring to class-biased news, we refer to *a differential in the sensitivity of the valence of economic news to the economic welfare of different socioeconomic groups*. Given empirical trends in the income distribution since the 1970s, which have sharply favored the very rich (i.e. the top 1% and above), our interest is in news responsiveness to the fortunes of the very rich as compared to the rest of the population. Of particular interest in this paper is the possibility of a steep *upward* bias: one in which the positivity or negativity of news coverage of the economy is more sensitive to the welfare of (or developments that affect the welfare of) the very rich than to the welfare of the non-rich.

We first assess two potential sources of class bias that have received attention in the existing literature on the sociology of the media, identifying reasons to doubt that either could readily explain economic reporting patterns that systematically favor the interests of the very rich. We then propose a third logic that links prevailing mental models of the economy to the empirical relationship between economic growth and distributional dynamics over the last quarter century.

3.1 The media’s corporate interests

It is often supposed that commercial media are subject to a pervasive *corporate bias*. The content of economic news, on this view, is likely to reflect the general economic interests of the owners of media, which are generally either large corporations or very rich families (e.g. Herman and Chomsky 1988). If we further assume that media owners share an interest in rising economic inequality, then this corporate-bias theory would seem to account for class-biased economic news.

The problem with the corporate bias account, however, is in explaining just *how* owners’ (presumed) collective economic interests might get translated into media content (Sutter 2002). Even if we assume that media owners share common interests, it is not obvious that they have an incentive to act on them: the benefit of disseminating “biased” content (the promotion of the general economic interests of media owners) would constitute a public good such that no single media entity, in a market with many such outlets, would have an incentive to absorb the cost of diverging from audience demands to deliver such a good.³ Empirical research suggests that effects of owners’ economic interests are most plausible in relation to coverage of specific policy controversies that *divide*, rather than unite, media owners, and that have “clear implications for [owners’] financial interests” (Gilens and Hertzman 2000, 371; see also Bailard 2016).

3.2 Socioeconomics of the profession

A second source of class bias discussed in the literature could arise from the *sociology of journalism*, particularly the upper-middle-class composition of the profession. In his classic study of four national news organizations in the 1960s and 1970s, Gans (2004) identifies a significant class bias in recruitment to the journalistic profession in the U.S., with most journalists educated at Ivy League or, at least, “quality” schools (p.209). A more contemporary and com-

³A similar problem of collective action applies among advertisers. Specifically, if advertising to the audience of a less pro-corporate news source is efficient for a particular advertiser, then that advertiser pays a cost to advertise elsewhere, and does so for a very small expected benefit, in terms of promoting the general economic interests of business (Sutter 2002).

prehensive portrait of the profession, based on a 2012 national probability sample, suggests a similar conclusion (Weaver et al. 2019). An overwhelming majority (92 percent) of American journalists report holding a college degree (p.12), a rate that is nearly three times the overall rate of degree-holding. The median income of journalists also sets them apart: whereas the median personal income of all Americans in 2012 was \$26,989, the median among journalists was \$50,028.⁴

Class bias in the composition of the journalistic profession could affect the content of economic news in several ways. A straightforward possibility is that journalists' interpretation of economic events is shaped directly by their class interests: thus, an upper-middle-class media means an upper-middle-class interpretation of economic reality. More subtly, journalists' involvement in upper-middle-class social networks may shape the kind of information about the economy to which they are incidentally exposed and, in turn, influence (in a class-biased manner) beliefs about what economic topics are newsworthy (Gans 2004, 124–138). Relatedly, the composition of the journalist's social network may be a site of class-differentiated access for those who actively seek to affect the news. As Gans (2004, 125) writes, “[U]pper-middle-class sources . . . are not likely to have difficulty reaching reporters and may even have a mutual friend; people of lower social status often do not know how to deal with professionals, and fear rejection to begin with”.

Importantly, however, while such sociological mechanisms could plausibly explain a reporting bias in favor of the interests of the *relatively affluent*, they cannot obviously explain a bias toward the welfare of the very rich from whom all but the most well-to-do journalists' would be expected to be socially distant. In 2012, for instance, it took an income of at least \$427,110 for an individual to make it into the top-1 percent of income earners; a threshold more than 8 times the median income of U.S. journalists.⁵

⁴National education and income estimates from the U.S. Census Bureau, Current Population Survey, 2013 Annual Social and Economic Supplement (Table PINC-01).

⁵Figure from World Inequality Database, for pre-tax national income, adults, equal split, current dollars.

3.3 Covering the “business cycle”

In the remainder of this paper, we focus on a third possible source of class-biased economic news: the operation among journalists of an understanding – a “mental model” – of the economy that interacts with actual economic developments in class-biased ways. The core of this mental model is captured in the aphorism “a rising tide lifts all boats”: a view of the economy that positions the promotion of *aggregate expansion* as the central, if not exclusive, concern of government and the public. In his classic study, Gans (2004, 46) finds that “responsible capitalism” is among the core values of American journalism and that, in economic reporting, “[e]conomic growth is always a positive phenomenon.” “Good” and “bad” economic news, then, are defined by developments that signal or reflect an upturn or a downturn, respectively, in the business cycle, especially in output and its close correlate, employment. In this framework, moreover, distributional questions as such are generally not salient, on the assumption that the benefits of economic growth are typically broadly distributed (and so distribution-preserving). Notably, while most evidence indicates the average American journalist is left-leaning (e.g. Weaver et al. 2019, 11), the group is thought to be more liberal socially than economically (Schudson 2002, 259).

On this understanding of economic performance as a primarily aggregate-level phenomenon, reporters can be expected to focus on broad indicators of economic expansion and contraction, such as GDP growth and the unemployment rate. They may also attend, however, to an array of indicators understood to be predictors or symptoms of aggregate growth. Given a common view of “business conditions” as a core economic foundation, we would expect corporate earnings and valuations (i.e., share prices) to receive special attention. The continuous movement of the stock market is likely to be a particular focus of economic coverage, given that it seemingly provides a daily update on the overall health of the economy and also plays to journalists’ strong bias toward novelty and change (Soroka et al. 2015). Importantly, in reporting on market indices or corporate profits, journalists need not do so out of a specific concern with their immediate implications for those most directly affected – e.g., shareholders – but because of the light that these indicators seem to shed on the *overall* state of the economy. As Gans

aptly notes, “. . . [W]hen anchormen gave the stock market report, even the most detached ones looked cheerful when the market had had a good day, assuming this to be of universal benefit to the nation and the economy.”

How might a journalistic focus on economic aggregates generate a class bias in economic news? In principle, it need not. When economic gains and losses are equally distributed, a focus on the business cycle will be equally sensitive to the fortunes of all income groups. As we show in the next section, however, there is strong reason to believe that, for the last quarter century, a journalistic tendency to view growth and employment as ultimate yardsticks of economic performance would be likely to generate class-biased economic news.

3.3.1 Aggregates and distribution in the U.S. economy since 1980

For much of the postwar era, aggregate growth and employment were relatively closely related to the incomes of the non-rich. Yet this historical relationship appears to have broken down over the last 35 years. Among the early work recognizing the emergence of this disconnect was Cutler and L. F. Katz (1991), who noted that the economic expansion of 1983–1989 was accompanied by rising inequality in the distribution of income and minimal poverty reduction. Using data for the 1947 to 1989 period, Cutler and L. F. Katz find low unemployment to be strongly associated with rising income shares for the bottom three quintiles and falling shares for the top two. However, they also find a large, statistically significant structural break in 1983. After 1983, incomes in the bottom quintile fell between 0.5 and 1.0 percentage points more than macroeconomic variables would predict, given average postwar relationships, while incomes in the top quintile rose by between 1 and 4 percentage points more.⁶

More recent work has confirmed that, over multiple business cycles, it is the very rich whose fortunes rise fastest and fall most steeply with the business cycle. Using administrative data from the Social Security program, Guvenen et al. (2014) find that in the recessions of 2000–2002 and 2007–2010, while the poor suffered more than those in middle incomes, the (pre-recession)

⁶Similar results hold for the poverty rate.

richest 1 percent saw sharper income drops than any group in the bottom 99 percent. At the trough of the Great Recession, in 2008, percentage losses for the top 1 percent were about double that for the median earner, while losses for the top 0.1 percent were about three times as large (see also Wiczer 2014). Since 1985, a 1 percentage point drop in GDP growth has been correlated with a 4.55 percent drop in the incomes of the top 0.1 percent, but a 1.08 percent *increase* in the income of the median earner. Similar findings hold for unemployment: a one-point rise in the male unemployment rate is associated with an average income loss of 6.87 percent for the top 0.1 percent, but only a 1.77 percent loss at the median (Güvenen et al. 2014). The very rich also gain more than the median during expansions. During the 1993–2000 and 2002–2007 expansions, the incomes of the top 1 percent grew by 98.7 percent and 61.8 percent, respectively, while the incomes of the bottom 99 percent grew by only 20.3 percent and 6.8 percent, respectively (Saez 2016).⁷ Bivens and Shierholz (2018) likewise point to countercyclicality in inequality, showing that the wages of the bottom 90 percent of earners *rose* as a share of personal income, from 45.8 to 51.1 percent, during the Great Recession and then *fell* back to 46.6 percent in 2015 as the economy recovered.

Why have top incomes become so exceptionally sensitive to aggregate fluctuations? Explanations are contested, but several studies point to changes in the distribution of demand for skills driven by trade and technical change. Cutler and L. F. Katz (1991) argue that, during the recovery of the 1980s, while aggregate employment rose – a phenomenon that, on its own, would have benefited lower-paid workers – this aggregate development was overwhelmed by an increase in relative demand for higher-, as compared to lower-, skilled labor, generating a net increase in wage dispersion and income inequality. Aghion et al. (1999) argue that technical change, especially the spread of general-purpose technologies, has become a key driver of both economic growth and earnings inequality by creating a growing skill premium, particularly as the supply of higher-end skills fails to keep pace with rising demand (see also, more recently, Goldin and L. F. Katz 2007). Parker and Vissing-Jorgensen (2010) argue that rapid advances

⁷Parker and Vissing-Jorgensen (2010) similarly demonstrate a large increase in the cyclicality of top incomes in the U.S. since the 1980s. Since 1982, the incomes of the top 1 percent have been more than twice as sensitive to changes in aggregate income than have the incomes of the average household.

in information and communications technology allow higher-skilled workers to scale their work and handle larger production inputs, a development that simultaneously increases their income shares and makes their incomes more sensitive to the rise and fall of the macroeconomy.

It is, moreover, not hard to see why journalistic frames and prevailing mental models might be insensitive to these recent distributional dynamics. For one thing, making sense of distribution is far more complex than tracking economic aggregates; while aggregates move only up or down, distribution is intrinsically multi-dimensional. Second, distribution implicates contested values (who *should* win or lose, and by how much?), while there has generally been broad consensus on the merits of high growth and low unemployment. Further, and perhaps most importantly, for the first several decades of the postwar era, a focus on economic aggregates *worked*: the key indicators of growth and employment had an excellent track record in capturing broad welfare gains and losses. Between 1947 and 1982, growth and unemployment were generally associated with reduced income inequality and poverty (Cutler and L. F. Katz 1991); likewise, before 1982, top wage incomes were *acyclical* (Parker and Vissing-Jorgensen 2010). To the extent that mental models are “sticky,” it is not surprising that journalists’ “growth-is-good” outlook has survived changes in the underlying structure of the economy that were themselves difficult to observe. Importantly, the tight link between aggregates and high incomes is only apparent if one zeroes in on *very* high incomes. It continues to be true, for instance, that the incomes of lower quintiles are more cyclical than those of middle and high quintiles. It is, however, *within* the top quintile – among the top 1 percent – that we observe the highest levels of cyclicality. It is also at the very top that the most dramatic distributional shifts in the U.S. have occurred, with the very highest income quantiles witnessing the steepest growth in income shares since the late 1970s (Piketty and Saez 2006).

In sum, the relationship between the U.S. macroeconomy and distribution over the last quarter century implies that the tone of news focused on economic aggregates, like growth and unemployment, will be characterized by a distinct bias toward the interests of the very rich. To the extent that growth and wage inequality arise from a common source, “good” economic times – understood in aggregate terms – will tend to be accompanied by rising concentrations of

income at the top. We should, on this logic, thus expect economic news focused on the business cycle to more closely track the incomes of the very rich than the incomes of the non-rich, and we should expect the news to become more *positive* as income inequality – understood as an income skew toward the very top – rises. Given the steep concentration of company shareholding among the very rich,⁸ economic assessments tied to corporate or stock market performance will likewise be disproportionately correlated with welfare at the top of the income scale.

Given a mental model of the economy focused on aggregate growth, therefore, journalists, editors, and owners need not have interests or motives aligned with those of the very rich or any conscious intention of delivering a skewed portrait of the economy. The skew, instead, would only emerge indirectly, from a focus on economic aggregates and associated indicators, combined with the systematic but little-attended-to relationship between those aggregates and the distribution of gains and losses.

3.3.2 A causal model

We can usefully formalize the core argument as a simple causal model (Pearl 2009):

$$NewsTone \leftarrow GrowthAndEmployment \leftarrow \mathbf{X} \rightarrow Inequality \quad (1)$$

where \mathbf{X} denotes a set of inequality-inducing drivers of growth and employment, such as skill-biased technological change. In this model, the drivers of growth simultaneously generate aggregate expansion and higher inequality (understood as higher income shares for the very rich). Economic aggregates, in turn, drive the positivity or negativity of the economic news, resulting in a positive correlation between inequality and news tone. Class-biased news arises here from media actors placing a positive value on features of the economy that are systemati-

⁸Among the top 1 percent of earners in 2013, 92.8 percent owned \$5,000 or more in stocks, either directly or indirectly (e.g., through a mutual or pension fund, while only 30.3 percent of those in the middle 3 income quintiles did. While stocks comprised a quarter of the asset portfolios of the top 1 percent, they comprised only 9.5 percent of the assets of the middle 3 quintiles, whose wealth was concentrated overwhelmingly in their principal residences. Moreover 76.6 percent of the top 1 percent, and only 6.6 percent of the middle 60 percent, were business owners (Wolff 2016).

cally correlated with rising inequality, owing to common causes of these features of the economy and of rising inequality.

We have also argued that, in a search for indicators of the overall health of the economy, journalists are likely to pay particular attention to gauges of corporate performance, such as corporate profits and stock market performance, yielding the following data-generating process:

$$NewsTone \leftarrow CorporatePerformance \rightarrow Inequality \quad (2)$$

Again, a positive correlation between news tone and inequality emerges from their common cause, corporate performance itself.⁹

We return to these causal models in Section 6 when we derive and test empirical predictions of the “covering the business cycle” mechanism.

4 Measuring Economic News Tone

In subsequent sections, we assess the presence, magnitude, and sources of class bias in economic news. The cornerstone of these analyses is an over-time measure of *economic news tone* that we develop from a large set of high-circulation U.S. newspapers. In this section, we describe the construction of this measure.

We measure the tone of the economic news reported in *newspapers* because of the availability of a longer time series of newspaper content for a larger number of sources than would be available for other media, such as broadcast or cable news or news websites. Newspapers were selected for inclusion based on three criteria. First, as we aim to characterize the news environment inhabited by the American voter, our news sources had to collectively capture a substantial share of the media environment. We thus limited the sample to sources in the

⁹One subtle structural difference between Equation 2 and Equation 1 is that, in the former, the phenomenon that drives news tone is itself a cause of inequality; while in the latter, it is the drivers of growth and employment that cause inequality.

top 50 in print circulation based on data from the Alliance for Audited Media. Second, the sources had to be available for download as full text, via either *Lexis*, *Lexis-Nexis Academic* or *Factiva*, with appropriate indexing to be compatible with the use of automated content analysis software. Third, newspapers had to be available over a sufficiently long period of time to enable well-powered time series analysis. We set a publication start date cutoff of 1994 to enable a sufficiently long series for analysis. A total of 32 newspapers met these criteria and entered our sample.

Constructing appropriate search criteria to download articles posed a set of choices. There are a number of ways of selecting a sample, such as by keywords in the body or headline of a story, or by the story’s coded subject in the database. While the latter is intuitive, *Factiva* and *LexisNexis* differ substantially in how they subject-code their articles. For this reason, we opted for a uniform, if less precise, selection rule: we selected all stories that mention the word “economy” or “economic” in the body of the text, along with a mention of the United States or any of the 50 states. The full downloaded sample amounted to 2,460,000 articles.

We then restricted our sample to stories that fell outside a given newspaper’s business section. We did so for two reasons. First, we want to focus our analysis on those parts of the newspaper likely to be read by the broad public. While business sections contain a large number of economic news articles, this section is less likely to be read than others. Second, the inclusion of the business section, given its focus on the stock market and corporate earnings, would likely bias results toward a finding of (upwardly) class-biased media responsiveness. The exclusion of business-section articles reduced the sample to 1,880,000 articles.

Our next step was to address the possibility that our search procedures on *Lexis*, *Lexis-Nexis Academic*, and *Factiva* may have yielded a substantial share of “false positives”: articles that contained one of our search terms but were not in fact about the U.S. economy.¹⁰ We adopted a machine-learning approach to refining our sample. We began by creating a set of definitions and coding rules that would allow a team of research assistants to read an article and determine

¹⁰There is evidence that measures of media tone can be very susceptible to choices regarding the precise composition of the corpus (Barberá et al. 2016), so we take this issue seriously.

whether it was relevant to the U.S. economy. The full coding rules are reproduced in Section A of the supplementary material. The rules take an expansive view of economic news, as reporting on anything relating to the incomes, production activities (including inputs to production), assets, or liabilities of individuals or collectivities (e.g., firms, governments, social groups) in the United States. Among the topics captured by the rule were, for instance, macroeconomic developments, macroeconomic policies, government taxation and spending, firms, consumer activity, labor markets and skills, and infrastructure. We implemented this coding procedure at two levels of stringency. The most permissive coding rule deemed an article “relevant” if it contained a single mention of something that met this broad definition of the economy of the United States. This rule likely captured a substantial share of articles that were not *primarily* about the U.S. economy. A more restrictive coding rule classified an article as “Lede-Relevant” by applying the same mention-of-the-economy decision rule only to the headline and first 400 characters of text in each article.¹¹ Given journalistic practice, this second rule tended to select more precisely for newspaper articles that had a major focus on some aspect of the economy.

With these coding rules in hand, we tasked three research assistants to classify a randomly-drawn sample of 2,400 articles from the full sample for their relevance to the economy.¹² We then split these 2,400 classifications into a training sample (80%) and a held-out testing sample (20%). The 1,920 classified articles in the former were used to train a Support Vector Machine (SVM) using the Scikit-learn Python package (Pedregosa et al. 2011). The SVM used the “linear” kernel, and we performed a grid search for the best-performing classifier across $C \in [1 \times 10^{-8}, 1 \times 10^6]$.¹³ The best classifier was selected on the basis of $K = 5$ -fold cross-validation, with the “score” metric for the selection being “precision” in order to minimize the number of false positives in the final sample and so reduce the noise we are modeling.¹⁴ We trained

¹¹We allowed that the reference to the United States itself might occur later in the article or be implicit, given that these were all U.S. newspapers.

¹²The RAs received training, and we performed multiple pilot rounds to hone the coding rules and check for consistency of coding across the RAs. Tests of inter-coder reliability based on the final round of training indicated a reliable coding instrument. Specifically, Krippendorff’s Alpha (Krippendorff, 2012) for a three-level ordinal classification of economic mentions (i.e., code yl v. y v. n; see Appendix A) was .802 (95% CI 0.726, 0.869).

¹³We searched across 15 values of C , equally spaced in log-space through that range.

¹⁴ $Precision \equiv \frac{T_P}{T_P + F_P}$, where T_P and F_P are the numbers of true positives and false positives, respectively.

two classifiers: one for the full-text sample (SVM^{Full}) and one for a sample including only the headline and first 400 characters of each article (SVM^{Lede}).¹⁵

Once the classifiers were trained, we then assessed their performance on the held-out samples. SVM^{Full} and SVM^{Lede} exhibited average precision scores of 0.86 and 0.79,¹⁶ respectively, as well as average recall scores of 0.86 and 0.75, respectively.¹⁷ Satisfied with this performance, we then applied the trained classifiers to the full corpus, and used these classifications to further restrict the sample in various ways, described below. The resulting samples from the various steps in this process of corpus restriction are summarized in Table 1.

Our measures of tone were constructed from these various corpora using the Lexicoder Sentiment Dictionary (LSD), which has 6,016 words coded for positive and negative connotations. This dictionary, when used in combination with the automated content analysis software *Lexicoder*, generates counts of positive and negative words for each article. Both *Lexicoder* and the LSD have been found to produce comparable results to those produced by human coders (Soroka 2012; Young and Soroka 2012). Each article (or just the headline-and-lede) was given a tone score according to the following formula: (number of positive words - number of negative words)/total number of words. This score captures the general “charge” of the article, while adjusting for the article’s amount of neutral content. Importantly, this variable cannot be seen to have a true zero point that represents neutrality (Soroka et al. 2015) – all the more so because we normalize the variables (mean= 0, standard deviation= 1) in order to enable us to directly calculate standardized coefficients in our subsequent regressions.

The resulting *Lexicoder* scores are measured at the level of the newspaper article. To move to a unit of analysis that allows us to (a) have adequate sample sizes within our units to avoid the modeling of too much noise and (b) better match the temporal units for which we observe our various economic variables, we produce newspaper-quarter means of the tone scores.

In order to get a sense of the temporal variation in the resulting tone variables – i.e., for sam-

¹⁵We included any words that began within the first 400 characters, even if they went beyond this point, in order to avoid word fragments.

¹⁶The grid search procedure yielded $C^{Full} = 0.44$ and $C^{Lede} = 0.0$ – with the obvious superscript notation.

¹⁷ $Recall \equiv \frac{TP}{TP+FN}$, where FN is the number of false negatives.

| Newspaper | First year | Total | Article N | | |
|------------------------------|------------|-----------|--------------|---------------|---------|
| | | | Non-Business | Lede-Relevant | Per qtr |
| Atlanta Journal-Constitution | 1991 | 70,035 | 53,187 | 11,954 | 126 |
| Chicago Sun-Times | 1992 | 54,746 | 38,966 | 8,103 | 92 |
| Chicago Tribune | 1985 | 154,493 | 118,145 | 28,030 | 242 |
| Columbus Dispatch | 1992 | 32,629 | 25,884 | 9,797 | 111 |
| Dallas Morning News | 1992 | 77,026 | 56,371 | 10,852 | 126 |
| Denver Post | 1993 | 39,678 | 28,350 | 7,484 | 90 |
| Detroit Free Press | 1994 | 39,134 | 25,489 | 7,115 | 91 |
| Kansas City Star | 1994 | 57,208 | 49,990 | 20,364 | 261 |
| Los Angeles Times | 1985 | 191,357 | 141,408 | 23,788 | 205 |
| Minneapolis Star-Tribune | 1991 | 35,833 | 26,675 | 7,857 | 84 |
| New York Times | 1981 | 243,926 | 174,022 | 25,792 | 192 |
| Orange County Register | 1987 | 34,795 | 26,306 | 7,700 | 71 |
| Orlando Sentinel | 1990 | 84,578 | 70,514 | 22,545 | 235 |
| Philadelphia Inquirer | 1994 | 45,332 | 33,720 | 9,441 | 115 |
| Pittsburgh Post-Gazette | 1993 | 82,396 | 63,778 | 11,526 | 139 |
| Plain Dealer | 1992 | 50,599 | 39,212 | 10,387 | 115 |
| Providence Journal | 1994 | 44,293 | 36,720 | 11,792 | 144 |
| Salt Lake Tribune | 1994 | 28,754 | 21,371 | 7,220 | 87 |
| San Diego Union-Tribune | 1983 | 63,762 | 51,364 | 12,294 | 145 |
| San Francisco Chronicle | 1989 | 46,362 | 35,971 | 8,102 | 84 |
| San Jose Mercury News | 1994 | 51,305 | 39,492 | 11,887 | 143 |
| St Louis Post-Dispatch | 1989 | 75,532 | 58,984 | 14,177 | 138 |
| Sun-Sentinel | 1993 | 69,203 | 51,641 | 11,744 | 147 |
| Tampa Bay Times | 1987 | 69,769 | 59,035 | 13,798 | 124 |
| Tampa Tribune | 1990 | 33,474 | 28,410 | 7,655 | 97 |
| The Boston Globe | 1988 | 98,898 | 78,985 | 18,520 | 185 |
| The Houston Chronicle | 1991 | 72,068 | 52,282 | 11,439 | 127 |
| The Miami Herald | 1983 | 116,032 | 88,374 | 19,092 | 174 |
| The Oregonian | 1987 | 75,625 | 62,430 | 21,071 | 199 |
| USA Today | 1989 | 49,540 | 32,206 | 5,191 | 51 |
| Wall Street Journal | 1991 | 70,281 | 70,281 | 39,597 | 528 |
| Washington Post | 1981 | 205,422 | 145,306 | 27,393 | 228 |
| Total | 1981 | 2,464,085 | 1,884,869 | 463,707 | 153 |

Table 1: Summary of newspaper articles included in the sample. “Lede-Relevant” is pre-filtered for non-business-section articles. “Per qtr” provides the article- N for the “Lede-Relevant” column.

ples restricted to: non-business section articles (denoted “NB”); non-business section and SVM-classified as being about the economy (“NB/Econ”), and; non-business section and, on the basis of the headline-and-lede text, SVM-classified as being about the economy (“NB/Econ/Lede”) – we plot the by-quarter circulation-weighted mean of these variables through our sample period in Figure 1.¹⁸

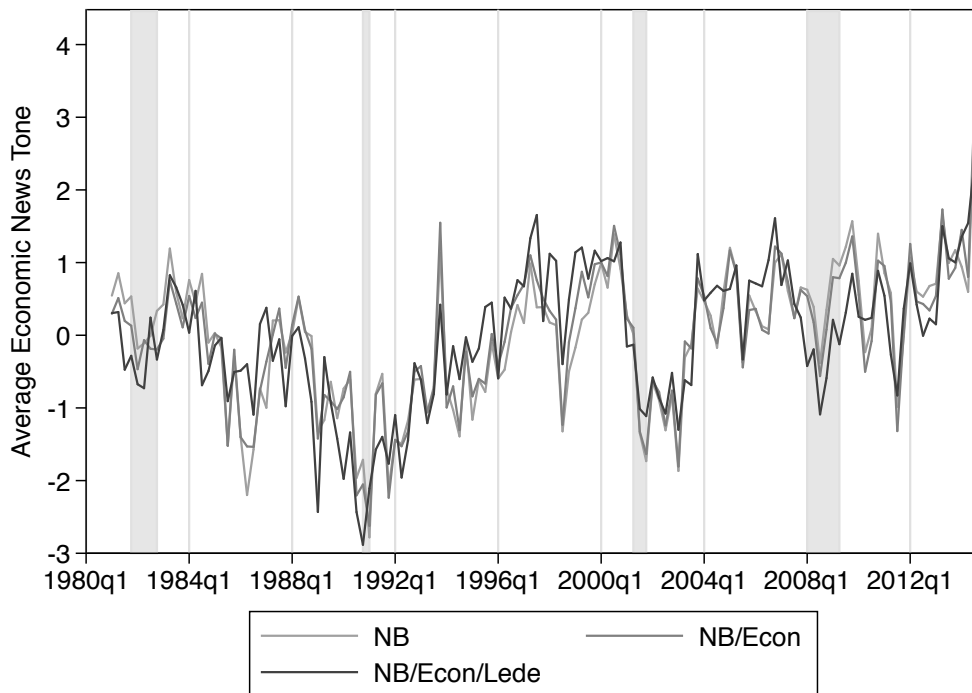


Figure 1: Time series plot of the mean of three standardized quarterly measures of the tone of newspaper reporting about the economy. Vertical shading indicates recessionary period as defined by the Federal Reserve of St. Louis’s FRED database series.

The first thing to note from Figure 1 is that the three series are highly correlated. The second thing to note is that all three of the series have face validity, in the sense that they broadly track our intuitions about macroeconomic dynamics in the United States during the sample period. There are dips in the tone scores around the periods of recession (indicated by vertical shading).¹⁹ In Section B of the Supplementary Material, we also demonstrate that our tone measure, consistent with that in Boydston et al. (2018), predicts mass-level perceptions of the

¹⁸This figure is illustrative, only. Its construction does not account for entry to and exit from the sample of various newspapers at different points in time.

¹⁹Recessionary quarters are classified by the NBER, for which we use the USRECQ FRED series.

economy, *after controlling for* core macroeconomic indicators. This result provides good reason to believe that our tone variable captures important features of the informational environment shaping citizens' economic perceptions.

In the analyses that follow, we use the “NB/Econ/Lede” series both because it is more likely to be dominated by articles that are centrally about the economy and because the headline and lede of a news article are themselves the elements most likely to be consumed by readers. In Table A3 in the Supplementary Material, moreover, we show that the “NB/Econ/Lede” series is the best predictor of mass perceptions of the economy. Moreover, Granger causality tests reported there indicate that it is much more likely that news tone is driving economic perceptions than the other way around. In the remainder of this paper, references to $Tone_{i,t}$ refer to the “NB/Econ/Lede” tone series.

5 Analysis: National Descriptive Patterns

We now turn to the core question addressed in this paper: does the tone of economic news reflect economic outcomes across all sections of society in an unbiased manner, or does it reflect the changing fortunes of some economic groups more than others? In the present section, we operationalize class bias in economic news as *the relative association between news tone and income growth rates at various points in the income distribution*. Later in the paper, we examine an alternative operationalization of class bias: the response of news tone to changes in income shares captured by different income groups. We begin, however, with tests for the most intuitive form of bias by asking whether economic news tone captures welfare changes across the income distribution or is most strongly associated with the material fortunes of more-affluent individuals.

The findings presented in this section are intended to provide descriptive, rather than causal inferences. In subsequent sections, we investigate mechanisms that might explain the associations that we document in this section. This section, however, is addressed to the correlational

question: does good (bad) economic news tend to appear in periods of broad economic gains (losses) or in periods of gains (losses) concentrated on particular income strata? Insofar as mass perceptions of the economy are influenced by news tone and votes are shaped by economic perceptions, this descriptive question is of central importance for the workings of democratic accountability for the economy.

Our goal in this section is thus not to model an underlying data-generating process but to capture the normatively consequential relationship between economic distribution and economic news. We nonetheless employ multivariate analysis in order to assess the correlation between news tone and each growth measure, conditional on the other growth measures. This allows us to estimate how closely news tone tracks income growth for one income group *above and beyond* its correlation with income growth for other groups. We also include a conservative set of covariates reflecting the structure of our data.

Our core regressors are income growth rates at various parts of the income distribution. Specifically, we use growth in pre-tax income as provided for the United States in the World Inequality Database (Alvaredo et al. 2017). These data provide information on the annual income levels (from which calculate growth rates) at many points on the U.S. national income distribution, allowing us to construct income growth rates for a large range of income groups, reflecting mean incomes for deciles, quintiles, and various subsets of the top decile of the distribution.

Notationally, we refer to growth rates of variables with δ , and first differences with Δ . The percentile ranges defining each income group are superscripted. We thus denote the growth rate of, say, the first decile of the income distribution as δInc^{P0-10} . To allow comparisons of partial correlations, all explanatory and dependent variables are standardized such that they have a zero mean and unit standard deviation.

These income growth variables are all measured annually and at the national level. However, we wish the evidence presented here to be comparable with that presented in Section 6 – where we exploit both between-newspaper variation and other variables that are available at

the quarterly (or better) resolution (as is our dependent variable). Consequently, our unit of analysis in this section is the newspaper-quarter. In order to better match the income data to our unit of analysis, we adopt a procedure akin to that of Palmer and Whitten (1999), whereby we calculate annual growth rates, assign those to the third quarter of each year, and then linearly interpolate the remaining quarterly growth rates. In Table A8 in the Supplementary Material, we show that the inferences shown in Figure 2 are unaffected if we, instead, replicate the annual growth rates four times – one for each quarter – for each year.

Our approach is then to observe which growth rates are more reliably associated with news tone. The appropriate way forward regarding estimation provokes an interesting dilemma. Our goal in this section is *not* to estimate a model of what we consider to be the data generating process (DGP), but rather to produce descriptive inferences about the extent to which various income growth measures are associated with $Tone_{i,t}$ in a multivariate framework. The issue that arises is that we wish our inferences about these partial correlations to be appropriate – i.e., the estimated standard errors need to be appropriate – but this is difficult to ensure given that we do not estimate a model of the DGP.

Moreover, the particular panel structure of our data presents further problems. That our income variables are measured at the national- rather than the newspaper-level implies that contemporaneous correlation of errors between newspapers is an important issue. Indeed, even with newspaper fixed effects (FE), residuals from models estimated by Ordinary Least Squares (OLS) were found to be heavily correlated across panels. We also find non-trivial levels of within-newspaper autocorrelation of residuals, which may reflect (deliberately) unmodelled features of the DGP on the explanatory variable side or omitted lagged dependent variables.

The contemporaneous correlation of errors rules out dynamic panel estimators like Blundell-Bond and the static estimator of Newey-West, as they assume zero correlation across panels. Consequently, our approach is to present results from two estimation strategies. The first, which will become our baseline specification for the models we estimate in Section 6, uses a heavily dynamic specification with four lags (reflecting our quarterly unit of analysis) of the

dependent variable, as well as allowing for any remaining autocorrelation in the errors with newspaper-specific AR1 errors, coupled with panel-corrected standard errors (Beck and J. N. Katz 1995) to account for contemporaneous correlation of errors.²⁰ The second, which we deploy to demonstrate the robustness of our inferences to far more minimal modeling strategies, uses a static specification with Driscoll and Kraay (1998) standard errors, which adjust for correlation across panels and autocorrelation up to a specified lag length, which we set as four. While this standard-error correction is justified asymptotically in time periods (T), Monte Carlo results also demonstrate very good performance, even for panels of $N = 20$ and $T = 25$ (Driscoll and Kraay 1998, 554). Given that we typically have $N = 32$ and $T \approx 130$, these Monte Carlo findings are reassuring.

To be more precise, our base dynamic specification is the following regression:

$$\Delta Tone_{i,t} = \beta_i + \beta_i^T \cdot Time_t + \sum_{k=1}^4 \beta^{Tone,k} \cdot Tone_{i,t-k} + \sum_{q=1}^3 \beta_q^Q \cdot Qtr_t^q + \sum_{g \in G} \beta^g \cdot \delta Inc_t^g + \epsilon_t, \quad (3)$$

where: β_i denotes newspaper fixed effects (with newspapers indexed by i); β_i^T denotes newspaper-specific time trends; Qtr_t^q denotes dummies for (three of) the four annual quarters, and; G is a set of income quantiles (e.g. $\{P0 - 10, P40 - 60\}$) that varies by estimated model as we explore the relationship between $Tone_{i,t}$ and growth in different parts of the income distribution. Meanwhile, our base static specification is as follows:

$$Tone_{i,t} = \beta_i + \beta_i^T \cdot Time_t + \sum_{q=1}^3 \beta_q^Q \cdot Qtr_t^q + \sum_{g \in G} \beta^g \cdot \delta Inc_t^g + \epsilon_t, \quad (4)$$

where the same notation applies.

We begin the estimation by including a set of income quantiles (i.e., G) such that they collectively cover the whole distribution, allowing us to observe the partial correlation between tone and growth in one part of the distribution conditional on conditional on growth in all other parts. A final modeling choice involves how many income quantiles to break the distribution into: while dividing the distribution into a larger number of quantiles might in principle provide

²⁰The length of our time series, with $mean(T_i) \approx 85$, should obviate any concern about Nickell (1981) bias arising from unit FE and the lagged dependent variable(s).

more granular findings, growth rates among narrow income brackets are more intercorrelated than are growth rates among broader brackets. Indeed, at the level of income deciles, there are many bi-variate correlations between growth rates that are greater than 0.9, suggesting that multicollinearity will generate wide standard errors on the estimated coefficients. We thus present results from models using income quintiles, in which the correlation problem is substantially mitigated.²¹

Our baseline descriptive results are presented in Figure 2, which shows separate estimates based on our dynamic and static specifications.²² While estimates vary by model specification, several patterns are worth noting. We begin by focusing on the top two estimates for each quintile, which represent models in which all five quintiles are included.

First, we find no evidence that the income growth of the poorest 40% of the population has any association with the tone of economic news. Second, we observe evidence of a positive association between income growth around the median (third quintile) and news tone. Third, we observe a negative association for the income growth of the fourth (i.e. second-richest) quintile. However, both of these results must be interpreted with caution because of a very high bivariate correlation between income growth for the third and fourth quintiles (0.95). This correlation likely explains the particularly wide confidence intervals for these two sets of estimates and makes it doubtful that the partial correlations for these two quintiles can be reliably separated from one another when both included in the model.

We thus re-estimate the associations with models that exclude the fourth quintile. In Figure 2, the third and fourth result displayed within each quintile (except the fourth) derive from these new models. We now get considerably more precise point estimates for the middle quintile that are now on the other side of and indistinguishable from zero.

Finally, across all four specifications, income growth for the top quintile displays a reliably positive association with news tone. Indeed, it is the only quintile for which this — or anything

²¹See Tables A4 and A5 in the Supplementary Material for the correlation matrices of the decile and quintile growth rate variables, respectively.

²²See Table A7 in the Supplementary Material for the full results table.

even close to it — is true. Note, too, that the top-quintile point estimates appear small only because they are plotted on a scale that must accommodate the very wide confidence intervals on other estimates. The correlations are, in fact, substantively large: depending on the specification, a standard deviation difference in income growth for the top quintile is associated with 13–33% of a standard deviation difference in news tone (instantaneously).

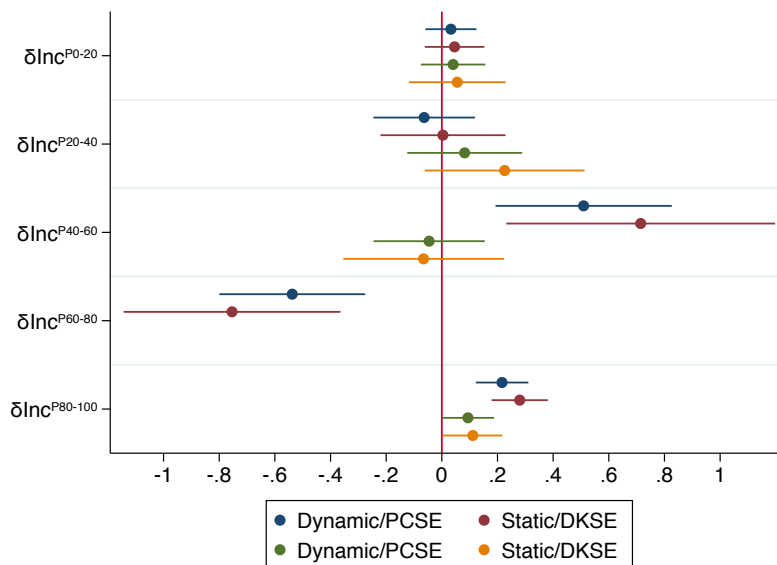


Figure 2: Descriptive inferences regarding the association between the tone of economic news reporting across newspapers ($Tone_{i,t}$) and income growth each quintile in the income distribution.

Given the extreme concentration of incomes at the *very* top of the income scale in recent decades, a key question is whether the association between top *quintile* income growth and news tone is in fact driven by income growth at the very top of the distribution, i.e., in the top-most slice of the top quintile. To address this issue, we estimate a further set of four models, for which the results are depicted in Figure 3.²³ In each of the four models, we include a different top-end income quantile: top-10%, top-1%, or top-0.1%. For these models, we drop second- and fourth-quintile income growth as a predictors since the previous results imply that they are not empirically relevant. In addition to controlling for income growth rates for bottom and middle fifths of the income distribution, we also include income growth for the ninth decile to control for the possibility that the bottom half of the top quintile is actually driving the results

²³See Table A9 in the Supplementary Material for full results.

in Figure 2.

As can be seen from Figure 3, the evidence strongly indicates that the top-quintile growth association with news tone is entirely driven by income growth within the top decile. Indeed, there is remarkable stability in the estimated top-income coefficients as we move through models employing top-10%, top-5%, top-1%, and top-0.1% income growth. Moreover, we continue to see no association between middle- or bottom-quintile income growth and news tone.

A further, striking feature of these results may not, at first, be apparent. In a normative sense, the coefficients for the different income groups should be re-scaled to reflect the relative size of the population that they correspond to. Thus, the stability of the point estimates as we move to progressively higher income parts of the distribution should be weighed against the fact that the coefficient for $P99.9 - 100$ represents an association of news tone with changes in the welfare of a population that is 1/100th the size of the population in the $P90 - 100$ group, and 1/200th the size of the population in the $P40 - 60$ or $P0 - 20$ groups. Thus, the very top-end correlations imply not just that good and bad economic news track the fortunes of an extremely affluent group, but that they track the fortunes of an extremely *small* group — while displaying no relationship to the changing welfare of citizens in the middle and at the bottom of the income distribution.

Overall, the descriptive picture is one in which voters are receiving a portrait of the national economy that is tilted strongly toward the interests of those with the highest incomes. In this light, and given the stability of the inferences regarding these top incomes, we focus in the remainder of the paper on the top-1%(i.e. $P99 - 100$) as our top-income group of interest. This avoids a large proliferation of models, while also focusing our inferences on a subset of the population that is undeniably extremely affluent.

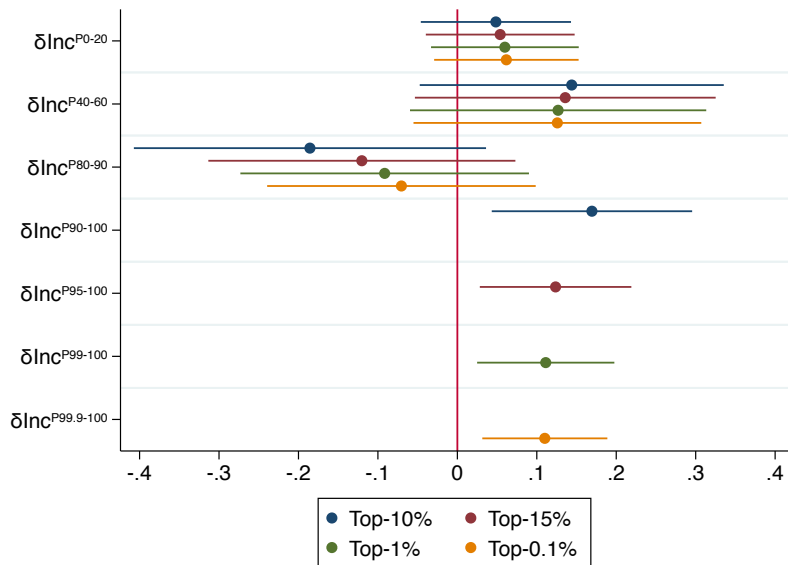


Figure 3: Descriptive inferences regarding the association between the tone of economic news reporting across newspapers ($Tone_{i,t}$) and income growth at sparse income quintiles and top-incomes.

6 Explaining Class Bias in Economic News

We turn now to explanations for the normatively troubling association between economic news tone and top-income growth. We focus first on examining empirical implications of a mechanism in which class bias arises from a journalistic focus on covering the business cycle. We next examine evidence for alternative explanations grounded in the costs of news production and owners' or reporters' distributional preferences.

6.1 Economic news as business-cycle coverage

We first examine whether the strong upward class bias in economic news derives in part from journalistic understandings of the economy in which economic performance is largely equated with movements in macroeconomic aggregates, in particular, GDP and unemployment. In Section 3.3.1, we reviewed extensive evidence that, over the last quarter century, GDP growth and low unemployment have been far more strongly positively correlated with the incomes of the very rich than with those of the non-rich and have, in turn, been accompanied by rising

income inequality. As a number of economists have argued, this growth–inequality association plausibly arises because growth over this period has itself been substantially driven by processes that yield disproportionate returns to the most affluent.

Returning to the causal model in Equation 1, we can derive a number of predictions. First, news tone should be positively correlated with inequality. Second, news tone should be correlated positively with GDP growth and negatively with unemployment. A third prediction – and one more central to the aggregate-centered journalism explanation for class-biased economic news – is that any correlation between inequality and news tone should be weaker *conditional* on the macroeconomic aggregates than it is unconditionally. In the language of Pearl (2009), conditioning on the macroeconomic aggregates should, under this causal model, “block” the path running between news tone and inequality, eliminating any correlation between the two that arises from this path (while, again, possibly preserving other sources of correlation).²⁴

We test these predictions at the national level via a set of statistical models reported in Table 2. We begin by translating the descriptive results for quantile-specific income growth rates, reported in Section 5, into a corresponding result for change in income *inequality*. To the extent that the news is more responsive to income gains and losses for the rich than to those for the non-rich, it stands to reason that positive news tone should also be positively correlated with changes in income inequality in the form of changing income shares for the very rich. We demonstrate this point empirically in Models 1 and 2. Model 1 shows, consistent with results in Section 5, that news tone responds strongly and positively to income growth for the top 1 percent, conditional on income growth in the middle and bottom quintiles, and that news tone is uncorrelated with growth at the bottom and in the middle of the income scale. Model 2 then directly estimates the association of news tone with changes in income inequality, defined here as growth in the income share captured by the top 1 percent. We observe a positive and quite precisely estimated association between news tone and change in top-end income inequality,

²⁴We allow here for the possibility that the causal model is incomplete – i.e., that there are other potential pathways connecting news tone and inequality besides the one depicted here. It is possible, for instance, that news tone responds directly to inequality (either positively or negatively) or that there are other common causes of news tone and inequality besides aggregate growth (as discussed, for instance, in Section 6.1.2. These possible linkages do not disturb the empirical predictions we derive here.

similar in size to the association between tone and top-income growth (conditional on middle- and bottom-quintile income growth), satisfying the model’s first prediction.

We test the second and third predictions in Models 3–5. In Model 3, we add current-quarter GDP growth to the equation alongside growth in top-1-percent income share. Consistent with the second prediction, we see that GDP growth is a powerful, positive predictor of news tone. Further, consistent with the third prediction, we see that conditioning on GDP growth dramatically reduces the original correlation (from Model 2) between news tone and growth in top-1-percent income share, cutting the coefficient estimate in half. In Model 4, we test the same two predictions with respect to GDP growth’s close correlate, the unemployment rate. Placing change in the unemployment rate on the right-hand side of the model, alongside growth in top-income share, we see both that unemployment change is a strong negative predictor of news tone (second prediction) and that its inclusion in the model similarly slashes the correlation between news tone and top-income share in half (third prediction). In Model 5, we include both macroeconomic indicators in the model, achieving a further reduction in the tone-inequality association.

We also note that the estimated effect of GDP growth is substantially reduced by the inclusion of unemployment in the model. We note two likely explanations. One is that unemployment coverage swamps GDP coverage because the unemployment rate is officially reported much more frequently (monthly) than the growth rate (quarterly). A second possibility is that the effect of GDP growth on news tone is partly mediated by change in unemployment. Journalists might directly attend more to the latter than the former because of its seemingly more direct relationship to material welfare.

To be clear, the model estimates cannot tell us whether journalists are reporting on either of the *particular* indicators included in our analyses. They may well be doing so to a great extent. Yet the results are also consistent with journalistic coverage of any number of close correlates of aggregate expansion and contraction, such as business or consumer confidence, retail sales, manufacturing activity, inventories, interest rates, or corporate performance. (We

provide specific evidence on indicators of corporate performance later in Section 6.1.2.) When reporters cite these auxiliary measures, they are typically doing so in an effort to characterize the overall state of the economy. Whether journalists have taken their cue from growth or unemployment figures themselves or from various “leading” or “lagging” indicators, they appear to have been tracking aggregate processes of recession and recovery that, at least for the last 25 to 30 years, have been concentrating losses and gains, respectively, at the very top of the income scale.

| | (1) | | | (2) | | | (3) | | | (4) | | | (5) | | |
|-------------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| | b | se | p | b | se | p | b | se | p | b | se | p | b | se | p |
| $\delta Inc_t^{P99-100}$ | 0.09 | 0.04 | 0.03 | | | | | | | | | | | | |
| $\Delta IncShare_t^{P99-100}$ | | | | 0.08 | 0.03 | 0.01 | 0.04 | 0.03 | 0.22 | 0.04 | 0.03 | 0.22 | 0.03 | 0.03 | 0.36 |
| δInc_t^{P0-20} | 0.07 | 0.05 | 0.15 | | | | | | | | | | | | |
| δInc_t^{P40-60} | 0.05 | 0.06 | 0.37 | | | | | | | | | | | | |
| δGDP_t | | | | | | | 0.15 | 0.06 | 0.01 | | | | 0.07 | 0.07 | 0.35 |
| $\Delta Unemp_t$ | | | | | | | | | | -0.11 | 0.04 | 0.00 | -0.09 | 0.04 | 0.03 |
| Newspaper FE | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| Newspaper Trends | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| Seasonal FE | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| 4 lags of DV | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| R^2 | 0.34 | | | 0.32 | | | 0.33 | | | 0.34 | | | 0.34 | | |
| N | 2846 | | | 2846 | | | 2846 | | | 2846 | | | 2846 | | |
| N newspapers | 32 | | | 32 | | | 32 | | | 32 | | | 32 | | |
| Mean T_i | 88.9 | | | 88.9 | | | 88.9 | | | 88.9 | | | 88.9 | | |
| Min T_i | 60 | | | 60 | | | 60 | | | 60 | | | 60 | | |
| Max T_i | 130 | | | 130 | | | 130 | | | 130 | | | 130 | | |
| Min $Year_{i,t}$ | 1982 | | | 1982 | | | 1982 | | | 1982 | | | 1982 | | |
| Max $Year_{i,t}$ | 2014 | | | 2014 | | | 2014 | | | 2014 | | | 2014 | | |
| Corr. | psar1 | | | psar1 | | | psar1 | | | psar1 | | | psar1 | | |
| AR1-p | 0.88 | | | 0.63 | | | 0.20 | | | 0.85 | | | 0.95 | | |

Table 2: Estimates of the association between the tone of economic news reporting across newspapers ($Tone_{i,t}$) and aggregate economic variables. All models estimated by OLS with Beck and J. N. Katz (1995) panel corrected standard errors.

6.1.1 State-level robustness test

As we estimate models using national-level economic indicators, one potential concern might be a form of ecological fallacy. To see the concern, consider two groups of states. Suppose that the states in Group A represent a larger share of the national economy than do the states in Group B. Suppose further that Group A experiences rapid income growth only among top-earners and that newspapers located in Group A states report negatively on that development. Meanwhile, suppose Group B states experience disproportionately strong income growth at the bottom of the income scale and that Group B newspapers report positively on this development. Finally, suppose that Group B’s newspapers weigh more heavily in our tone measure because we happen to have more Group B newspapers in the sample. In this situation, newspapers in

both groups are reporting in a manner sensitive to the interests of non-rich households. Yet we would observe in our data a national-level news bias toward the interests of the affluent: growing inequality nationally accompanied by more positive news. Compositional effects could thus lead national-level inferences astray if we operate only with aggregate economic measures.

We can address this possibility by modeling each newspaper’s economic news tone as a function of economic developments at the newspaper’s state level. We match each newspaper to the state in which it operates, and then merge state-level distributional income-growth data that have been calculated using the same methodology as employed for our national data (Sommeiller et al. 2016). While the state-level data provide good coverage of top-income quantiles, they have less granularity below the 90th percentile. We thus adjust the specifications that we used in Sections 5 and 6.1 by capturing non-rich income growth as growth in the mean income of the bottom 90 percent.²⁵

Model 1 in Table 3 gives the basic descriptive pattern at the state level. Here we are modeling news tone for each newspaper as a function of income growth among the richest 1 percent in the state and of income growth among the bottom 90 percent in the state (as well as newspaper and seasonal fixed effects, newspaper trends, and four lags of the dependent variable, as in our national-level models). We find here an association of newspaper-level news tone with income growth both among the bottom 90 percent and among the top 1 percent in the newspaper’s state, each conditional on the other. The results further suggest that income growth for the bottom 90 percent in a state may be associated with a somewhat greater change in state-level news tone than is income growth for the top 1 percent, though the standard errors do not allow us to confidently distinguish between these point estimates. The roughly similar coefficients for rich and non-rich state-level growth rates might at first glance appear normatively reassuring; but, of course, the latter group is *90 times larger* than the former group.²⁶ That the economic

²⁵We can observe overall mean income and bottom-90% mean income in this dataset. We opt for the latter to reduce collinearity with the top-income measures.

²⁶We also note that these results are not directly comparable to the national-level results in Section 5, insofar as those analyses divide the non-rich into quintiles, as permitted by the national-level data. When we group the bottom 90 percent together at the national level, we find a somewhat weaker relationship between bottom 90-percent income gains and news tone, significant at the 0.1 level, as reported in Table A14 of the Supplementary Material.

news is roughly as responsive to the fortunes of the two groups implies a dramatic upward class bias in the response to the state-level distribution of gains and losses. We can observe this bias even more simply in Model 2, where we model news tone as a function of state-level top-income shares, and observe the same strong positive association between news tone and top-end inequality at the state level that we report at the national level in Section 6.1.

In Models 3–5, we then examine whether there is evidence that a “covering the business cycle” mechanism operates at the state level. In Model 3, we enter mean income growth as a measure of aggregate growth,²⁷ alongside top-income share. We find a moderately significant positive association between mean-income growth and news tone, while the coefficient on top-income share is reduced substantially as compared to the estimate in Model 2. In Model 4, we include the first-difference of the state-level unemployment rate, observing a strong, precisely estimated negative effect on news tone and, again, a similarly reduced top-share coefficient. Finally, the pattern in Model 5 – with top-income share, unemployment, and mean income all included – is remarkably similar to the national-level pattern reported in the equivalent national-level model (Model 5, Table 2), with unemployment emerging as the dominant predictor of news tone. We also note that, unsurprisingly, the effects of the state-level aggregates on newspaper-specific tone are considerably more precisely estimated than are the effects of national-level aggregates that we saw in Table 2.

These results make clear that the class-biased patterns observed at the national level are not a compositional artifact arising from unbiased state-level dynamics. Newspapers’ economic reporting likely responds to some combination of national- and state-level economic developments, and developments at the two levels will mutually influence one another. What is clear, however, is that citizens are more likely to see good economic news as economic gains become more sharply concentrated among the very rich within their state, a pattern strikingly similar to that observed for national-level distributional outcomes. Further, the state-level evidence reinforces the national-level evidence on the role of macro-economic aggregates in driving this correlation.

²⁷State GDP is not available prior to 1997. We thus use mean adjusted gross income for each state, as calculated by the Census Bureau.

The results suggest that journalistic portraits of the state-level economy are strongly driven by growth and (even more directly) employment, with implicit class bias emerging from the inequality-inducing sources of growth.

| | (1) | | | (2) | | | (3) | | | (4) | | | (5) | | |
|-----------------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| | b | se | p | b | se | p | b | se | p | b | se | p | b | se | p |
| $\delta Inc_{s,t}^{P99-100}$ | 0.10 | 0.03 | 0.00 | | | | | | | | | | | | |
| $\Delta IncShare_{s,t}^{P99-100}$ | | | | 0.09 | 0.03 | 0.00 | 0.06 | 0.04 | 0.09 | 0.06 | 0.03 | 0.05 | 0.05 | 0.04 | 0.18 |
| $\delta Inc_{s,t}^{P0-90}$ | 0.15 | 0.05 | 0.00 | | | | | | | | | | | | |
| $\delta Inc_{s,t}^M$ | | | | | | | 0.06 | 0.03 | 0.07 | | | | 0.03 | 0.03 | 0.34 |
| $\Delta Unemp_{s,t}$ | | | | | | | | | | -0.10 | 0.03 | 0.00 | -0.09 | 0.03 | 0.00 |
| Newspaper FE | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| Newspaper Trends | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| Seasonal FE | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| 4 lags of DV | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| R^2 | 0.34 | | | 0.32 | | | 0.32 | | | 0.34 | | | 0.34 | | |
| N | 2775 | | | 2775 | | | 2515 | | | 2680 | | | 2515 | | |
| N newspapers | 32 | | | 32 | | | 31 | | | 31 | | | 31 | | |
| Mean T_i | 86.7 | | | 86.7 | | | 81.1 | | | 86.5 | | | 81.1 | | |
| Min T_i | 56 | | | 56 | | | 55 | | | 56 | | | 55 | | |
| Max T_i | 127 | | | 127 | | | 95 | | | 127 | | | 95 | | |
| Min $Year_{i,t}$ | 1982 | | | 1982 | | | 1990 | | | 1982 | | | 1990 | | |
| Max $Year_{i,t}$ | 2013 | | | 2013 | | | 2013 | | | 2013 | | | 2013 | | |
| Corr. | psar1 | | | psar1 | | | psar1 | | | psar1 | | | psar1 | | |
| AR1-p | 0.48 | | | 0.49 | | | 0.64 | | | 0.86 | | | 0.80 | | |

Table 3: Estimates of the association between the tone of economic news reporting across newspapers ($Tone_{i,t}$) and state-level predictors. All models estimated by OLS with Beck and J. N. Katz (1995) panel corrected standard errors.

6.1.2 Corporate Performance

To the extent that journalists seek to report on signs of aggregate economic expansion or contraction, they are likely to attend closely not only to macroeconomic aggregates but also to corporate performance. A thriving corporate sector is commonly seen as a key pillar of economic success, and markers of corporate performance represent lagging or leading indicators of overall expansion or contraction. In turn, corporate performance, particularly as reflected in asset values, is likely to be much more strongly correlated with the fortunes of the rich than with those of the rest of the population, given the strong upward skew in the distribution of asset ownership. The underlying logic is represented in Equation 2.

The causal logic in Equation 2 has two distinctive empirical implications: (1) corporate performance should be correlated with news tone and (2) controlling for corporate performance should reduce the size of the correlation between top-end inequality and news tone (since conditioning on corporate performance blocks a path connecting these two variables Pearl (2009)). We capture corporate performance empirically using stock-market indices, for two

reasons. First, leading stock-market indices are likely to capture the performance of those corporations whose earnings are most likely to be newsworthy, both because they are large and because they are publicly projected and reported. Moreover, as discussed in Section 3, financial markets are likely to be accorded special weight by novelty-seeking news media because they are the most frequently measured national economic phenomena.

In our primary analyses, we operationalize movements in the U.S. stock market using the New York Stock Exchange Composite Index ($NYSE_t$)²⁸, though we show results for the S&P 500 in Tables A12 and A13 in the Supplementary Material. In Table 4, we employ this measure to report tests parallel to those performed for macroeconomic aggregates in Section 6.1. For ease of reference, we provide under Model 1 the previously reported baseline national-level descriptive association between news tone and change in top-1 percent income share. In Model 2, we introduce NYSE stock market movements into the model and observe a strong, positive, and quite precisely estimated effect: a one standard-deviation increase in the size of the average stock-market gain in a quarter is associated with roughly a 14 percent improvement in news tone. Further, the parameter point-estimate for top income-share change drops from 0.08 to 0.05. These results are thus consistent with a mechanism in which financial-market movements are both a driver of news tone and generate part of the association between news tone and top-end inequality.

Given that financial market developments are likely to be correlated with growth and unemployment, we cannot assume that each provides independent explanatory purchase on the class bias in economic news. In Models 3 and 4 we add, successively, GDP growth and change in unemployment to the model. Focusing on Model 4, we see that including both macroeconomic aggregates further reduces the point estimate for the coefficient on change in top-income share; more than 60 percent of the unconditional association is now gone (while the associated standard error remains stable throughout). Meanwhile, both unemployment change and NYSE movements remain strong predictors of news tone; the coefficient on each variable is, in fact, unaffected by the inclusion of the other. In Table A12 in the Supplementary Material, we show

²⁸Constructed from Moody's NYSE Equity Indices: NYSE Composite series.

that a very similar pattern of results holds when financial market movements are captured using change in the S&P 500 index, rather than NYSE Composite. Using both measures, in fact, stock market movements emerge in the full, Model-4, specification as by far the strongest single driver of news tone at the national level (judging by standardized coefficient point estimates and relatively small standard errors).

| | (1) | | | (2) | | | (3) | | | (4) | | |
|-------------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| | b | se | p | b | se | p | b | se | p | b | se | p |
| $\Delta IncShare_t^{P99-100}$ | 0.08 | 0.03 | 0.01 | 0.05 | 0.03 | 0.03 | 0.04 | 0.03 | 0.12 | 0.03 | 0.03 | 0.18 |
| $\delta NYSE_t$ | | | | 0.14 | 0.03 | 0.00 | 0.14 | 0.03 | 0.00 | 0.14 | 0.03 | 0.00 |
| δGDP_t | | | | | | | 0.04 | 0.06 | 0.44 | -0.04 | 0.06 | 0.53 |
| $\Delta Unemp_t$ | | | | | | | | | | -0.09 | 0.03 | 0.01 |
| Newspaper FE | Yes | | | Yes | | | Yes | | | Yes | | |
| Newspaper Trends | Yes | | | Yes | | | Yes | | | Yes | | |
| Seasonal FE | Yes | | | Yes | | | Yes | | | Yes | | |
| 4 lags of DV | Yes | | | Yes | | | Yes | | | Yes | | |
| R^2 | 0.32 | | | 0.36 | | | 0.36 | | | 0.37 | | |
| N | 2846 | | | 2775 | | | 2775 | | | 2775 | | |
| N newspapers | 32 | | | 32 | | | 32 | | | 32 | | |
| Mean T_i | 88.9 | | | 86.7 | | | 86.7 | | | 86.7 | | |
| Min T_i | 60 | | | 56 | | | 56 | | | 56 | | |
| Max T_i | 130 | | | 127 | | | 127 | | | 127 | | |
| Min $Year_{i,t}$ | 1982 | | | 1982 | | | 1982 | | | 1982 | | |
| Max $Year_{i,t}$ | 2014 | | | 2013 | | | 2013 | | | 2013 | | |
| Corr. | psar1 | | | psar1 | | | psar1 | | | psar1 | | |
| AR1-p | 0.63 | | | 0.35 | | | 0.29 | | | 0.83 | | |

Table 4: Estimates of the association between the tone of economic news reporting across newspapers ($Tone_{i,t}$), change in top-1 percent income share, and growth in NYSE composite index, as well as macroeconomic aggregates, growth and change in unemployment. All models estimated by OLS with Beck and J. N. Katz (1995) panel corrected standard errors.

In a final set of estimates, displayed in Table 5, we examine whether responsiveness to financial markets might partially explain *state-level* associations between inequality and news tone. We do this by repeating the financial-market analysis but with the state-level inequality and macroeconomic predictors employed in Section 6.1.1. While the baseline state-level specification is replicated in Model 1, in Model 2 we add quarterly NYSE growth on the righthand side. A comparison of the Model 1 and Model 2 results suggests that stock-market gains and losses indeed account for part of the state-level bias, as the size of the top-share coefficient drops by a third when the financial-market indicator is added to the model. In Models 3 and 4, we add state-level aggregate measures, changes in mean adjusted personal income and unemployment, successively to the model. In the full specification, unemployment is again a substantial negative driver of news tone, with mean-income's positive effect being somewhat smaller and less-precisely estimated. Interestingly, financial market movements still emerge as by far the strongest predictor of state-specific news tone even with state-level economic predic-

tors included in the model. We note, finally, that three-quarters of the unconditional association between state-level inequality and state-level news tone disappears when stock movements and macroeconomic aggregates are included.

| | (1) | | | (2) | | | (3) | | | (4) | | |
|-----------------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| | b | se | p | b | se | p | b | se | p | b | se | p |
| $\Delta IncShare_{s,t}^{P99-100}$ | 0.09 | 0.03 | 0.00 | 0.06 | 0.03 | 0.01 | 0.03 | 0.03 | 0.36 | 0.02 | 0.03 | 0.46 |
| $\delta NYSE_t$ | | | | 0.14 | 0.03 | 0.00 | 0.14 | 0.02 | 0.00 | 0.13 | 0.02 | 0.00 |
| $\delta Inc_{s,t}^M$ | | | | | | | 0.07 | 0.03 | 0.01 | 0.05 | 0.03 | 0.07 |
| $\Delta Unemp_{s,t}$ | | | | | | | | | | -0.06 | 0.02 | 0.01 |
| Newspaper FE | Yes | | | Yes | | | Yes | | | Yes | | |
| Newspaper Trends | Yes | | | Yes | | | Yes | | | Yes | | |
| Seasonal FE | Yes | | | Yes | | | Yes | | | Yes | | |
| 4 lags of DV | Yes | | | Yes | | | Yes | | | Yes | | |
| R^2 | 0.32 | | | 0.36 | | | 0.36 | | | 0.36 | | |
| N | 2775 | | | 2775 | | | 2515 | | | 2515 | | |
| N newspapers | 32 | | | 32 | | | 31 | | | 31 | | |
| Mean T_i | 86.7 | | | 86.7 | | | 81.1 | | | 81.1 | | |
| Min T_i | 56 | | | 56 | | | 55 | | | 55 | | |
| Max T_i | 127 | | | 127 | | | 95 | | | 95 | | |
| Min $Year_{i,t}$ | 1982 | | | 1982 | | | 1990 | | | 1990 | | |
| Max $Year_{i,t}$ | 2013 | | | 2013 | | | 2013 | | | 2013 | | |
| Corr. | psarl | | | psarl | | | psarl | | | psarl | | |
| AR1-p | 0.49 | | | 0.29 | | | 0.24 | | | 0.65 | | |

Table 5: Estimates of the association between the tone of economic news reporting across newspapers ($Tone_{i,t}$), income growth at various points of the income distribution, and growth in various financial market indices. All models estimated by OLS with Beck and J. N. Katz (1995) panel corrected standard errors.

In sum, we find considerable evidence of the operation of a mechanism in which stock-market gains generate both higher concentrations of income at the top, at both the national and state levels, and more positive economic news. We emphasize, further, that we are picking up these effects strictly *outside* of business sections, where we might reasonably expect a focus on financial markets and developments favoring the most affluent.

6.1.3 Topic Salience

The analysis of mechanisms to this point has focused on implications relating to expected conditional correlations between news tone and various economic developments. We might also wonder, however, which economic developments the news *in fact* covers. Are the inferences we have drawn from the model estimates above consistent with the actual distribution of media attention across economic phenomena? We now describe the relative salience over time of specific topics in the economic news across our newspapers.

Figure 4 displays, for a key set of topics, the results of human coding of a random subsample

($N = 2000$) of our sample of economic news articles.²⁹ Each article was coded for whether or not it mentioned various types of economic issue, with coding being non-mutually exclusive. Coding rules are provided in Section E.1 of the Supplementary Material. In the Supplementary Material Section E.2) we also report results from automated topic classifiers trained on the human-coded sample, which show largely the same pattern.³⁰

The figure’s four panels report results for the four economic developments that have featured on the right-hand side of the statistical models in this paper, displaying for each the proportion of news articles over time that mention that topic. Comparing overall levels of attention, we see that both employment and corporate performance feature prominently in economic reporting, consistent with our inferences from the models. We also see that GDP is rarely a direct topic of economic coverage. As noted earlier, this could be because it is reported relatively infrequently or because its effects on news tone are largely mediated by unemployment, which is itself a more direct focus of journalistic attention. Finally, we see that inequality – defined as any mention of the distribution of, or disparities in, material resources or of poverty – also receives very little attention. The patterns here lend further support for a view in which journalists seek to capture the overall state of the macroeconomy, paying little heed to the matter of *who* loses or gains as the economy expands and contracts.

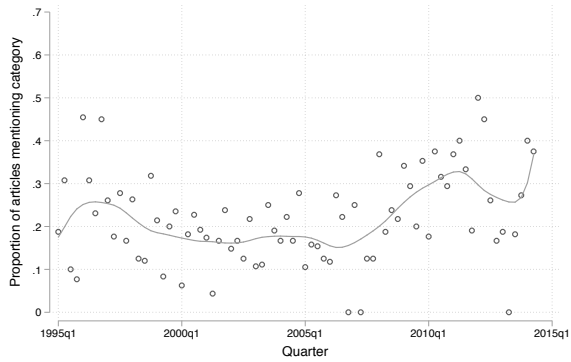
6.2 Alternative Mechanisms

A modest amendment to the mental-model mechanism might focus more on the costs of news production than on pervasive and deep-seated understandings of the economy. Growth-oriented reporting might emerge from editors’ and reporters’ need to economize on time and other resources. Just as Dunaway and Lawrence (2015, 45) argue that “game frame” campaign reporting is less costly than issue-oriented reporting,³¹ it may be easier and cheaper for news

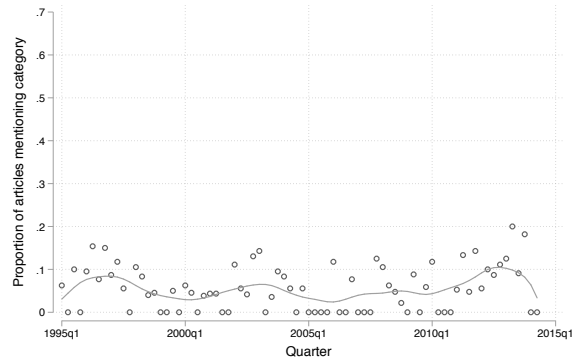
²⁹XXX[Inter-coder reliability figures to come.]

³⁰We emphasize the human-coded results because of relatively poor precision and recall scores for the topic classifiers for inequality and GDP growth, likely arising from the low frequency of these topics in the human-coded sample.

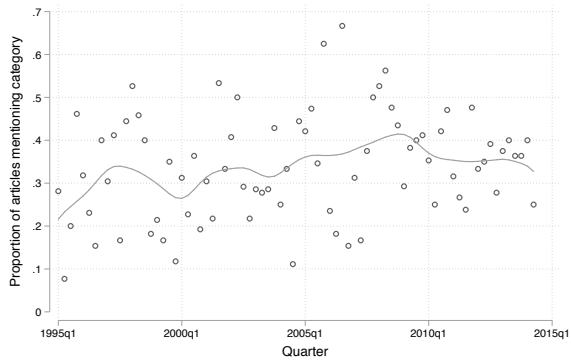
³¹Dunaway (2008) and Dunaway and Lawrence (2015) also argue that stronger profit-seeking imperatives in public companies generate stronger pressures to produce news that meets audience demand, but we focus here



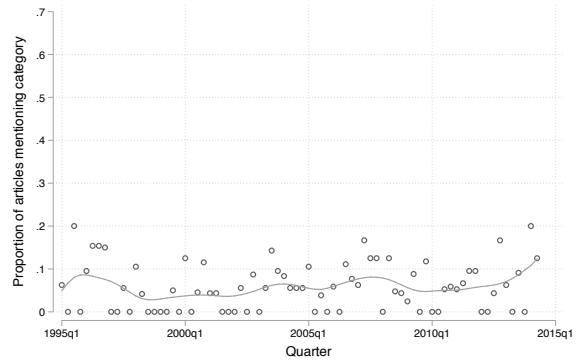
(a) Employment



(b) GDP



(c) Any Corporate



(d) Inequality

Figure 4: Scatter plots of the proportion of newspaper articles mentioning various topics, as categorized by a human coder, by quarter. Data is weighted by newspaper circulation. Lowess curves are shown to smooth noise in the series.

rooms to track aggregate developments than to dig in to distributional dynamics unfolding beneath the surface. Reporters may, thus, operate on a “covering the business cycle” model not because of its strong postwar track record or deep cognitive embeddedness, but because it is an efficient shortcut to characterizing a multi-dimensional economic reality.

We can test for this possibility by exploiting variation in the strength of economizing pressures both across newspapers in our sample and over time. Dunaway (2008) and Dunaway and Lawrence (2015) argue that news organizations that are owned by publicly traded corporations – under pressure to meet quarterly earnings targets and boost share values – face stronger short-run profit-seeking imperatives than outlets that are privately held. Moreover, they find that newspapers owned by public companies produce more “game frame” and less substantive coverage of issues than the privately held papers. Along similar lines, if class-biased reporting emerges from a focus on aggregates as a cost-cutting news-production model, then we should expect this bias to be stronger for newspapers owned by publicly traded companies than for privately held companies. We should further expect the bias, and the conditioning effect of ownership, to be stronger after 2000, when the sector as a whole saw a reversal of fortune as print revenues began to plunge.

We report the results of this test in Table 6.³²

In Models 1 and 2, we show national-level results for the 1982–2014 period and for the period of falling print revenues (2001–2014), respectively. In Models 3 and 4, we show the same for state-level inequality. Across the four models, we see little evidence that upwardly biased news tone is concentrated among newspapers owner by public companies, with just a hint of an interaction apparent in Model 2. While the public-private distinction may not fully capture the presence of profit-maximization pressures, these results provide little support for the notion that class-biased news emerges from cost-cutting journalistic methods.

Alternatively, as discussed in Section 2, skewed patterns of economic reporting might derive

on the implications for cost-cutting.

³²We began with data shared by Johanna Dunaway from Dunaway and Lawrence (2015) and extended it across newspapers and over time. Coding procedures are described in Supplementary Appendix Section F.

| | (1) | | | (2) | | | (3) | | | (4) | | |
|--|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| | b | se | p | b | se | p | b | se | p | b | se | p |
| $\Delta IncShare_{s,t}^{P99-100}$ | 0.07 | 0.03 | 0.05 | 0.04 | 0.03 | 0.16 | | | | | | |
| $\Delta IncShare_{s,t}^{P99-100}$ | | | | | | | 0.10 | 0.03 | 0.01 | 0.07 | 0.04 | 0.04 |
| Private | 0.00 | . | . | 0.00 | . | . | 0.00 | . | . | 0.00 | . | . |
| Public | 0.02 | 0.08 | 0.85 | 0.25 | 0.09 | 0.00 | 0.00 | 0.09 | 0.96 | 0.29 | 0.09 | 0.00 |
| Private $\times \Delta IncShare_t^{P99-100}$ | 0.00 | . | . | 0.00 | . | . | | | | | | |
| Public $\times \Delta IncShare_t^{P99-100}$ | 0.03 | 0.03 | 0.24 | 0.04 | 0.03 | 0.14 | | | | | | |
| Private $\times \Delta IncShare_{s,t}^{P99-100}$ | | | | | | | 0.00 | . | . | 0.00 | . | . |
| Public $\times \Delta IncShare_{s,t}^{P99-100}$ | | | | | | | -0.01 | 0.03 | 0.69 | 0.03 | 0.03 | 0.43 |
| Newspaper FE | Yes | | | Yes | | | Yes | | | Yes | | |
| Newspaper Trends | Yes | | | Yes | | | Yes | | | Yes | | |
| Seasonal FE | Yes | | | Yes | | | Yes | | | Yes | | |
| 4 lags of DV | Yes | | | Yes | | | Yes | | | Yes | | |
| R^2 | 0.32 | | | 0.36 | | | 0.32 | | | 0.37 | | |
| N | 2824 | | | 1604 | | | 2775 | | | 1555 | | |
| N newspapers | 32 | | | 32 | | | 32 | | | 32 | | |
| Mean T_i | 88.2 | | | 50.1 | | | 86.7 | | | 48.6 | | |
| Min T_i | 58 | | | 23 | | | 56 | | | 21 | | |
| Max T_i | 129 | | | 55 | | | 127 | | | 51 | | |
| Min $Year_{i,t}$ | 1982 | | | 2001 | | | 1982 | | | 2001 | | |
| Max $Year_{i,t}$ | 2014 | | | 2014 | | | 2013 | | | 2013 | | |
| Corr. | psar1 | | | psar1 | | | psar1 | | | psar1 | | |
| AR1-p | 0.63 | | | 0.00 | | | 0.52 | | | 0.00 | | |

Table 6: Estimates of the association between the tone of economic news reporting across newspapers ($Tone_{i,t}$) and the change in top-1% income share at national (models 1 and 2) and state (models 3 and 4) level, with moderation by ownership-type for each newspaper based on data (updated to 2014) from Dunaway (2008). Models 1 and 3 estimated on all available observations. Models 2 and 4 estimated on all available observations after 2000. All models estimated by OLS with Beck and J. N. Katz (1995) panel corrected standard errors.

from more explicit interest in or attentiveness to the welfare of the rich, whether arising from the socioeconomic composition of the journalistic profession or from the distributional interests of wealthy owners. We lack micro-level measures of the distributional preferences of either owners or reporters that would allow for direct tests of these mechanisms. A reasonable proxy for those preferences, however, might be found in the measure of newspaper “slant” developed by Gentzkow and Shapiro (2010). Gentzkow and Shapiro (2010) estimate the similarity between the language used by a news outlet and the language employed by Republican as compared to Democratic lawmakers as captured in the Congressional Record. To the extent that the news reflects owners’, editors’, or reporters’ distributional preferences – whatever the source of those preferences – those preferences should also be reflected in partisan alignments, given the two parties’ widely differing stances on distributional issues. (A large share of the most partisan phrases from the Congressional Record in Gentzkow and Shapiro’s sample relate to economic issues like Social Security, the estate tax, and the budget.) Put differently, if class-biased news derives from less-egalitarian motives or attitudes among those who direct or produce the news, that class bias should be stronger among more Republican-aligned newspapers than among less Democratic-aligned newspapers.

We test this proposition by estimating models interacting each newspaper’s partisan slant with change in inequality (top-1% income share).³³ The results are reported in Table 7.³⁴ $Slant_i$ is coded so that higher values indicate closer alignment with Republicans, so the predicted interaction would be positive. Models 1 and 3 report results for national-level and state-level inequality, respectively, and indicate that Republican-leaning newspapers are no more likely to deliver class-biased economic news than are Democratic-leaning outlets. Since Gentzkow and Shapiro (2010)’s $Slant$ measure constitutes a snapshot from 2005, we repeat the analysis for a tighter period around this year (2001–2014) in Models 2 and 4, for national- and state-level inequality. We again find no support for a preference-based mechanism.³⁵

| | (1) | | | (2) | | | (3) | | | (4) | | |
|--|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| | b | se | p | b | se | p | b | se | p | b | se | p |
| $\Delta IncShare_{s,t}^{P99-100}$ | 0.08 | 0.03 | 0.01 | 0.06 | 0.03 | 0.05 | | | | | | |
| $\Delta IncShare_{s,t}^{P99-100} \times Slant_i$ | | | | | | | 0.09 | 0.03 | 0.00 | 0.09 | 0.03 | 0.01 |
| $\Delta IncShare_{s,t}^{P99-100} \times Slant_i$ | -0.00 | 0.01 | 0.76 | -0.01 | 0.01 | 0.30 | | | | | | |
| $\Delta IncShare_{s,t}^{P99-100} \times Slant_i$ | | | | | | | -0.00 | 0.01 | 0.83 | -0.01 | 0.01 | 0.34 |
| Newspaper FE | Yes | | | Yes | | | Yes | | | Yes | | |
| Newspaper Trends | Yes | | | Yes | | | Yes | | | Yes | | |
| Seasonal FE | Yes | | | Yes | | | Yes | | | Yes | | |
| 4 lags of DV | Yes | | | Yes | | | Yes | | | Yes | | |
| R^2 | 0.32 | | | 0.36 | | | 0.32 | | | 0.37 | | |
| N | 2767 | | | 1571 | | | 2700 | | | 1504 | | |
| N newspapers | 31 | | | 31 | | | 31 | | | 31 | | |
| Mean T_i | 89.3 | | | 50.7 | | | 87.1 | | | 48.5 | | |
| Min T_i | 60 | | | 25 | | | 56 | | | 21 | | |
| Max T_i | 130 | | | 55 | | | 127 | | | 51 | | |
| Min $Year_{i,t}$ | 1982 | | | 2001 | | | 1982 | | | 2001 | | |
| Max $Year_{i,t}$ | 2014 | | | 2014 | | | 2013 | | | 2013 | | |
| Corr. | psar1 | | | psar1 | | | psar1 | | | psar1 | | |
| AR1-p | 0.66 | | | 0.00 | | | 0.54 | | | 0.00 | | |

Table 7: Estimates of the association between the tone of economic news reporting across newspapers ($Tone_{i,t}$) and the change in top-1% income share at national (models 1 and 2) and state (models 3 and 4) level, with moderation by newspaper slant based on data from Gentzkow and Shapiro (2010). Models 1 and 3 estimated on all available observations. Models 2 and 4 estimated on all available observations after 2000. All models estimated by OLS with Beck and J. N. Katz (1995) panel corrected standard errors.

³³ $Slant_i$ is not time-indexed because it is measured only in 2005.

³⁴Gentzkow and Shapiro (2010) provide no slant measure for the *San Jose Mercury News*, an outlet in our sample. Thus, all models including the $Slant_i$ variable omit this newspaper from the analysis.

³⁵It is also worth noting that Gentzkow and Shapiro (2010) find evidence that partisan slant in news content is driven more strongly by reader ideology than by owners’ or reporters’ ideology. The results in Table 7, however, also cut against the possibility that class-biased news is driven by readers’ distributional interests or preferences as these would then also be expected to show up in a newspaper’s overall partisan orientation.

7 Conclusion

Understanding the political sources of economic inequality in the U.S. has become a top priority for students of American politics. The present paper contributes to this research effort through a focus on the role of the media as a purveyor of economic information and, thus, as an influence on voters' capacity to discipline governments for economic performances with varying distributional consequences. In principle, a government that presides over increasing inequality at the top ought to be punished by the electorate. The reality, however, is that economic inequality has exploded in recent years.

The analysis presented here – drawing on the output of a large and geographically broad sample of high-circulation news outlets – suggests that a class-biased informational environment, shaped by skewed economic news, may help (in a perverse sense) to reconcile nominal political equality with rapidly mounting economic inequality. We find that, over the past three decades, economic inequality and the tone of economic news in the United States are *positively correlated*. More specifically, as the very richest Americans have captured a larger share of personal incomes, coverage of the economy in the country's leading newspapers has become more positive in its evaluative implications. Conversely, as the distribution of income has become relatively more equal, the tone of economic news has become more negative. Put simply, as the rich have gotten (relatively) richer, the economic news has gotten better.

Ironically, our analysis suggests that class-biased economic news arises not from a conscious bias toward the welfare of the most affluent, but from journalists' efforts to capture broad developments in the economy through a focus on aggregate growth. Indeed, the association between income inequality and economic news tone largely evaporates once we account for the correlation between economic tone and aggregate indicators, particularly the unemployment rate. We argue that the pattern reflects the dominance among journalists of a particular mental model of the economy, one that equates the health of the national economy with the business cycle and that is simply not attentive to distributional considerations. Importantly, we do not assume journalists are indifferent to distributional questions; rather, we reason

that the aggregate-growth-centered mental model likely dominates precisely because it has *historically* sufficed to capture the changing welfare of most Americans. As the correlation between aggregate growth and average incomes has weakened, however, the mental model has become increasingly inadequate as a means of evaluating economic developments as they apply to a wide spectrum of Americans.

We buttress our interpretation with evidence of class-biased economic news and aggregate-growth-centered economic reporting at the state level. We show, consistent with our argument, that emphasis on indicators of corporate performance (especially those correlated with stock market indices) also helps to account for the link between income inequality and economic news tone. We track the salience of economic topics to reveal that coverage of corporate performance and, especially, employment dominates, while change in GDP and inequality are much less visible. Finally, we present evidence that class-biased economic news operates quite generically across the media organizations we study: the tone of economic news follows the fortunes of the very rich in newspapers varying considerably in ownership structure and partisan slant. These findings reinforce our view that class-biased economic news reflects a basic and deep-seated understanding of the economy shared by American journalists, not simply a cheap shortcut for time-pressured journalists in especially profit-centered newsrooms, or an ideological preference imposed by owners and editors in especially conservative news organizations.

Findings from Parker and Vissing-Jorgensen (2010) also suggests that the relationships we uncover in the United States might also unfold in other countries, though to varying degrees. To the extent that disproportionately high top-end cyclicalities are driven by skill-biased technological change, we would expect it to occur more broadly in contexts in which the “race” between technology and education has tended to be won by technology, generating growing wage differentials between the more- and less-skilled workers. Parker and Vissing-Jorgensen (2010) find a general pattern across 10 countries in which growing top 1% income shares are associated with more strongly increasing cyclicalities of top-1% incomes. Thus, top-incomes became similarly and strongly more cyclical in the U.S., Canada, Portugal, and India over the last few decades, while their cyclicalities held steady or fell in Sweden, Italy, Japan, France,

Ireland, and Singapore. If economic reporting is widely grounded in a focus on macroeconomic aggregates, this mental model ought to generate a stronger class bias in economic reporting in the first set of countries than in the second. Moreover, the Parker and Vissing-Jorgensen (2010) pattern suggests that – because top-end cyclical and wage differentials have common drivers – a “covering the business cycle” mechanism will yield a *stronger* pro-rich skew in the very places where class-biased reporting will be most misleading to non-rich citizens – i.e., where the fortunes of the very rich have diverged most from the fortunes of the rest.

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