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ECONOMIC NEWS THROUGH THE MAGNIFYING GLASS

How the media cover economic boom and bust

Arjen van Dalen, Claes de Vreese, and Erik Albæk

One of the normative functions of economic news is surveillance, making monitorial citizens aware of significant economic developments. In this light, it is important to look at the way economic news covers periods of recession and economic boom. Previous studies have focused on how the media cover monthly developments of the economy rather than how coverage varies over the course of the economic cycle. Based on parallels between self-reinforcing news waves or media hypes, on the one hand, and coverage of recession and economic boom, on the other, we argue that the media amplify periods of prolonged economic growth or contraction by making the economy more visible and reporting with an overly positive or negative tone. A time-series analysis of the relation between economic developments and the automatically coded tone and visibility of economic news in Danish newspapers (1996–2012) shows that the media functioned as a magnifying glass. During recession, the economy became more negative and visible than economic developments would predict. During economic boom, economic news became more positive, but not more visible. The media adjusted the tone downwards before the economy entered recession. These results are assessed in light of the surveillance function.

KEYWORDS automated content analysis; economic news; media hypes; monitorial citizen; negativity bias; surveillance function; tone; visibility

Introduction

Television news and newspapers are key sources of information about economic developments, in particular the state of the national macro-economy (Mutz 1992). Economic coverage can affect individual citizens' economic perceptions (Boomgaarden et al. 2011; Goidel et al. 2010; Hetsroni et al. 2014) as well as consumer confidence on the aggregate level (Hester and Gibson 2003; Hollanders and Vliegenthart 2011; Soroka 2006). This places a large responsibility on economic journalists and business reporters. Previous studies of economic news have shown considerable fluctuation in the attention to economic developments depending on the state of the economy (e.g. Fogarty 2005; Harrington 1989; Soroka 2012; Wu, McCracken, and Saito 2004). When the economy declines, economic news becomes more visible and more negative. When the economy improves, visibility and tone are not affected (Harrington 1989; Soroka 2012).

Such studies have provided valuable insights into the way economic news reacts to changes of economic indicators, mostly on a month-to-month basis. Nevertheless, we have less systematic knowledge about how the relation between economic indicators and

economic news varies over different stages of the economic cycle. At times, media coverage shows sharp spikes in negative or positive coverage (Doms and Morin 2004). During these periods, economic news deviates from normal coverage patterns. Doms and Morin (2004, 18) have made a call to study such negative or positive peaks in economic coverage. Not taking peaks of positive or negative coverage into account limits our understanding of the mediating role of the media in the economy, since media's influence on economic perceptions can be particularly strong in periods of intensified negative or positive coverage (Wu et al. 2002).

Outside the domain of the economy, media sociology and journalism research has studied periods of intensified media coverage in the context of self-reinforcing news waves and media hypes (e.g. Boydston, Hardy, and Walgrave 2014; Vasterman 2005; Wien and Elmelund-Præstekær 2009). Based on parallels between these periods of intensified media coverage and coverage of recessions and economic booms, we argue that the media amplify periods of prolonged economic growth or contraction by making the economy more visible and reporting in an overly negative or positive tone.

This argument is tested with a time-series analysis of the relation between monthly economic indicators and the tone of coverage of the national macro-economy in three Danish quality newspapers between 1996 and 2012. According to Blood and Philips (1995), analyses of such long time periods are needed to study the conditionalities of economic coverage and test when dynamics change. During the period under study, Denmark went through two periods of economic growth and decline, including the economic boom between 2003 and 2008 and the subsequent economic decline. Following recommendations from Stryker et al. (2006) as well as Young and Soroka (2012), the visibility and tone of economic news were measured in an automated content analysis based on search strings and dictionaries, which were validated with hand-coded material.

Before presenting a review of previous studies of macro-economic coverage and the argument that the media magnify periods of economic growth or contraction, the paper first discusses the surveillance function of economic news, which sets a normative standard for how the media should cover economic developments to inform monitorial citizens. In the discussion section, the results will be assessed in light of this surveillance function.

Economic News for the Monitorial Citizen

What do citizens need to know about the state of the economy, or in other words which information should macro-economic news provide? Sanders (2000) argues that the average citizen does not need to know the exact level of unemployment or the precise interest rate, but only needs to be aware of major developments and where the economy is heading. Being continuously up-to-date about unemployment figures or the price index would require too much mental effort compared to the benefits it gives in everyday life. Instead people can keep the mental transaction costs low and rely on cues and mental shortcuts to be aware of economic trends. Similarly, Schudson (1998) argues that people can function as monitorial rather than fully informed citizens. Instead of continuously following all developments closely, monitorial citizens keep an eye on their environment and look for cues about important developments that require their attention.

The mass media are an important source of information for the monitorial citizen. This idea goes back to Lasswell (1948), who argued that the media should fulfill a surveillance function. It is not the journalists' task to continuously cover each aspect of society, but

rather to pay attention to significant developments. In the domain of politics, Zaller (2003) argues that the media serve the monitorial citizen best when they function as a burglar alarm, rather than as a police patrol. As a police patrol, the media would systematically cover the whole political environment and report about political developments in “sober, detailed, and comprehensive coverage” (Zaller 2003, 114). As a burglar alarm, the media should focus on specific political developments when these require the attention of the audience.

According to Ju (2008) and Goidel and Langley (1995), economic news has a similar alarm function: “In the absence of a fire alarm, media coverage of the economy is fairly routine. When something is, or appears to be wrong, however, the economy demands front page, and generally, negative media attention” (Goidel and Langley 1995, 325).

The tone and visibility of economic news are two important cues, on which monitorial citizens can rely to keep an eye on the general state of the economy and to be alerted about important developments. The *tone* of economic coverage refers to a favorable or unfavorable evaluation of the state and future of the national economy in the news. When the news about the economy becomes more negative, the public pays more attention (Soroka 2014). Similarly, the *visibility* of the economy in the news is an important indicator of the importance of economic developments. When more articles are written about the economy and economic news moves from the dedicated business pages to the front page, this is a cue for the monitorial citizen that the economy requires their consideration.

In order to serve the monitorial citizen well, the media should avoid sounding the alarm all the time (Bennett 2003). Economic news should grab readers’ attention with negative and visible coverage when economic developments are serious. If economic news were always negative, it does not provide the audience with cues about the state of the economy, nor will the attention from the audience be triggered when it is needed (Zaller 2003, 121).

Of course, facilitating surveillance for monitorial citizens is only one of several standards which can be used to assess economic news or the business press more broadly. Others have, for example, criticized the financial press for not serving as a *watchdog* or not providing *balanced* coverage in the period leading up to a financial crisis (e.g. Mercille 2014; Starkman 2014). In this paper we follow Goidel and Langley (1995) and Ju (2008) and focus on the surveillance function of macro-economic news.

News and Economic Developments: Change and Asymmetry

Previous research has shown that the media indeed cover economic developments more like a burglar alarm than a police patrol. The attention to and tone of economic news varies depending on the economic situation. First, economic news reflects *change* in economic developments rather than the absolute state of the economy. When the economy is doing well, this is not newsworthy *per se* (De Boef and Kellstedt 2004, 640). On the other hand, how the economy is developing and where it is heading are newsworthy (Martenson 1998). Second, economic news reacts *asymmetrically* to economic developments. News becomes more negative when the economy declines, but not more positive when the economy improves (Blood and Philips 1995; Goidel and Langley 1995; Soroka 2006). Harrington (1989) showed that American networks give more attention to negative news than to positive news. Soroka (2006) showed that newspaper coverage of the economy in the United Kingdom reacted to negative, but not to positive developments. Such a

negativity bias was confirmed for newspaper coverage in South Korea (Ju 2008) and in the United States (Fogarty 1995; Hester and Gibson 2003). One notable exception is reported by Casey and Owen (2013, 312), who found no asymmetric responsiveness in a model where several economic indicators were included simultaneously.¹

While the change and asymmetry effect has been confirmed in several studies which focus on the tone of economic news, fewer studies look at whether the visibility of economic news (including positive, negative, and neutral stories) is responsive to (negative) change in economic indicators. Harrington (1989), Fogarty (2005), and Soroka, Stecula, and Wlezien (2014) all found that the visibility of economic news reflects changes in economic indicators, but with notable variation. Harrington (1989) showed that US television news paid more attention to the economy when unemployment increased and Gross National Product deteriorated, but only during non-election years. Fogarty's (2005) study of economic coverage on the front page of the *New York Times* showed that there were more stories about the economy when unemployment changed, but not when the Index of Coincident Indicators changed. This is in line with Soroka, Stecula, and Wlezien (2014), who showed that journalists are future oriented. The volume of economic news is responsive to change in the Index of Leading Indicators, which indicates where the economy is heading, but not to change in Index of Coincident Indicators, which indicates the current state of the economy.

Previous studies have explained these patterns in macro-economic coverage by pointing to professional norms, the personal predispositions of journalists, audience interests, and organizational influences. Negativity is an important news value and it is the media's role to hold governments to account for negative economic developments (Casey and Owen 2013, 294). Economic journalists might personally be more aware of negative economic change as they are naturally inclined to surveillance of their environment (Ju 2008, 238). Psychological research has shown that individuals pay more attention to negative than to positive developments. Soroka (2006, 374) argues that this principle leads journalists to place more emphasis on negative developments, "not just based on their own (asymmetric) interests, but also on the (asymmetric) interests of their news-consuming audience". According to Alsem et al. (2008), competition between news organizations leads them to overemphasize negative economic developments.

Combined, these media internal and external influences provide explanations for the focus on change and negativity in the coverage of regular economic developments. However, at times the tone of economic news deviates from normal patterns of coverage (Doms and Morin 2004; Wu et al. 2002). Studying economic news between the early 1970s and 2003, Doms and Morin (2004) conclude that the news at times reports in overly negative or positive tones about the economy. This cannot be explained by the journalistic focus on change and negativity alone. We turn to the literature on media hypes and news waves to better understand these processes.

News and the Economic Cycle: Magnifying Economic Boom and Bust

Journalism research in areas other than the economy has given insight into why media coverage intensifies in certain periods. Studies of the coverage of, for example, the threat of street violence have shown that journalists at times open the gates and focus on specific societal problems (Fishman 1978). Likewise, research on climate change coverage has identified sharp peaks in media attention (e.g. Schäfer, Ivanova, and

Schmidt 2013). Similar mechanisms may increase attention to the economy and lead to an overly negative or positive tone of economic news, depending on the economic cycle.

One of the mechanisms driving these periods of intensive coverage is the emergence of a dominant news theme or frame, which provides a common interpretation or labeling under which diverse events can be summarized. When journalists cover a complicated topic, they orient themselves towards their “competitor-colleagues” to reduce ambiguity. This can lead to the development of one dominant journalistic interpretation, which is shared across different outlets. Known as pack journalism, this phenomenon is strengthened by increasing competition among media outlets and journalists’ fear of missing the important stories of the day (Frank 2003). Once such a dominant news theme emerges, it “leads to a high degree of uniformity in the news selection and a pressure on every news desk to join the pack” (Vasterman 2005, 514). As a consequence, the threshold to report about events that fit the dominant news theme is lowered, and the media gates are opened to report similar stories. When the media gates at the same time shut out stories that do not fit the dominant perspective, the result is continuous reinforcement of the dominant frame. Framing studies have shown that such dominant news themes (or “organizing devices used to construct news stories”; Shah et al. 2002, 341) are hard to change once they become mainstream among journalists and societal actors (Huxford 2012; McCarthy and Dolfsma 2009).

“Recession” or “crisis” are examples of such common news themes that can trigger self-reinforcing spirals of coverage about the economy. Due to the complexity of the economic system as well as the availability of a wide variety of sometimes contradictory economic indicators, the state of the economy is often ambiguous. The themes of “recession” or “crisis” give both journalists and their audience a common interpretation, which helps to simplify economic reality. Huxford (2012, 350) argues that during the economic downturn in 2000, journalists diminished the economic complexity by “corralling the multitude of economic states and indicators within the label ‘recession’, and then treating that as a single entity”. Later, McCarthy and Dolfsma (2009) showed that crisis-related terms in *The Economist* increased sharply in 2007 and 2008. Kleinnijenhuis, Schultz, and Oegema (2015) showed that the frame complexity decreased during the start of the crisis in 2007 and 2008, which could indicate that a dominant frame emerged. Once such a dominant frame is established, it can lead to more stories about the negative state of the economy, which spread from the financial section of the newspaper to other sections. The crisis frame lowers the threshold for negative stories, but raises it for stories with a more optimistic outlook. This may result in more economic coverage with an overly negative tone.

During periods of economic boom, the same mechanisms can magnify the positive state of the economy in media coverage. “Economic boom” or “economic growth” may become common themes to which positive economic news is connected. Stories that temper economic optimism might be difficult to place within the common interpretation and have less chance of being covered. During the internet bubble at the end of the 1990s, the media reported overly optimistically about the state of the economy (Roush 2006). Mercille (2014) argues that during the Irish housing bubble, critics of the economic situation had limited access to the media, as their message did not fit the “Celtic Tiger discourse”, which dominated Irish economic coverage.

Such amplification processes are not only the result of media-internal routines. Sources play an important role as well. Vasterman (2005) argues that the way sources

define events can trigger intense coverage, while Wien and Elmelund-Præstekær (2009) argue that sources can prolong periods of intensive coverage. Business journalists and generalists who report about the economy rely heavily on economic experts and analysts who act as primary definers and shape the journalists' interpretations of the economic situations (Doyle 2006; Guerrero 2009; Thompson 2013). These analysts and experts might misperceive the state of the economy during an economic boom (Helleiner 2011) or they may have an interest in spinning economic news in a certain way, like down-talking threats when the economy is doing well (Guerrero 2009). This self-reinforcing process in economic coverage stems not only from source influence on journalists, since the reverse is possible too: at times the relation between economic information and markets can become self-referential. When this is the case the news not only reflects but also reinforces consensus in the market (e.g. Thompson 2013).²

In sum, we expect that the magnifying processes which have earlier been observed in the visibility of societal problems such as street violence or crime also affect macro-economic news during times of economic boom and bust. We formulate separate hypotheses for how the tone and visibility during recession and economic boom will deviate from regular patterns of economic coverage.

H1: The tone of economic news is more negative during periods of economic recession.

H2: The tone of economic news is more positive during periods of economic boom.

H3: Economic news is more visible during periods of economic recession.

H4: Economic news is more visible during periods of economic boom.

Design, Methods and Data

The hypotheses are tested in a time-series analysis combining monthly aggregate data of the visibility and tone of economy news with indicators of economic developments in Denmark between August 1996 and December 2012 ($N = 197$).³ During this period, the Danish economy went through two periods of economic boom and bust. Based on change in Gross Domestic Product data (Statistics Denmark 2015) and change in Leading Indicators (see Figure 1), the first boom period was identified as taking place between January 1999 and June 2000. This was followed by a period of bust between January 2001 and March 2002. The economy grew between July 2003 and June 2006, followed by a period of decline between January 2008 and June 2009.

Aggregate time-series analysis is commonly used to study the relation between economic development and economic news (e.g. De Boef and Kellstedt 2004; Harrington 1989; Soroka 2006). Time-series analysis makes it possible to study how dynamics vary over different periods and how they are influenced by external events (Vliegenthart 2013).

The dependent variables are the monthly aggregated visibility and tone of economic news about the Danish macro-economy. We study economic coverage in broadsheet newspapers, which is the most commonly studied economic news source. Most previous studies of the tone in economic news were conducted in an Anglo-American context, where the financial markets and macro-economy have long held an important place on the news agenda (Roush 2006; Starkman 2014). Since the 1990s, business news, including news

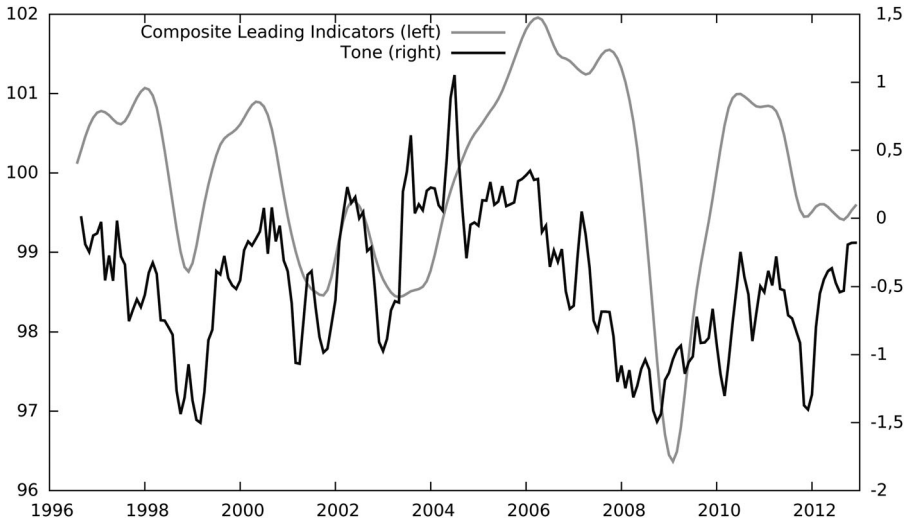


FIGURE 1

Economic developments and the tone of economic news in three Danish newspapers between August 1996 and December 2012. The scale for the CLI can be found on the right. The scale for the tone of economic news can be found on the left. The three-month moving average of tone is displayed

about the macro-economy, has also become an integral part of the Danish newspaper agenda, with special newspaper sections devoted to the worlds of finance and economics and more attention to the economy on front pages (Kjaer and Langer 2005). Contrary to the United States and the United Kingdom where broadsheet newspapers are mainly read by an elite audience, Danish broadsheets have a much broader audience (Hallin and Mancini 2004, 22, 96). Since the political leaning of newspapers may influence economic coverage (Larcinese, Puglisi, and Snyder 2011), three broadsheet newspapers with different political leanings were included in the analysis: *Berlingske*, *Politiken*, and *Jyllands Posten*.

The visibility and tone of economic news in these newspapers were measured with dictionary-based automated content analysis (for similar approaches, see Doms and Morin 2004; Hollanders and Vliegenthart 2011; Soroka 2012). A count of the number of articles per month in the three newspapers that discuss the national macro-economy was used as an indicator for the visibility of economic news (for a similar approach, see Soroka, Stecula, and Wlezien 2014). Economic news was operationalized as articles referring directly to the state of the national economy and articles reporting on the main indicators and sectors of the economy to describe the state of the economy. A population search string was developed and validated to identify these articles (see Appendix A). In the second step, the monthly aggregate *tone* of these articles was calculated, based on translated dictionaries consisting of 1789 terms indicating a negative and 293 terms indicating a positive tone in financial news (Loughran and McDonald 2011). The number of positive terms is considerably lower than the number of negative terms, since it is harder to identify words that only have a positive meaning in a financial context (Loughran and McDonald 2011, 45). In line with De Boef and Kellstedt (2004) and Goidel and Langley (1995), we subtracted the

TABLE 1

Descriptive statistics of dependent and independent variables, Denmark, August 1996 to December 2012

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
Tone of economic news	197	-2.10	1.41	-0.48	0.61
Visibility of economic news	197	14	93	39.99	15.68
CLI	197	96.37	101.96	99.98	1.19
Δ CLI	196	-0.58	0.48	-0.001	0.18

share of negative terms from the share of positive terms to calculate the tone.⁴ The monthly tone is aggregated across the three newspapers, since factor analysis showed that the monthly tone for these three newspapers loads on one factor. In theory the tone measure can range from -100 (when the news consists of only negative terms) to +100 (only positive terms). In practice the aggregate tone has a mean of -0.48 and a standard deviation of 0.61 (see Table 1).

As a validity check we compared the results of the automated tone coding with hand-coded economic news articles, following Young and Soroka (2012). This gave satisfactory results (see Appendix A).

The Composite Leading Indicators series (CLI) is used as an indicator for economic developments and serves as the independent variable in this study.⁵ The CLI for Denmark is an aggregated measure of the following indicators of the national economy: (1) total volume of retail sales, (2) new passenger car registration, (3) employment figures, (4) production figures, (5) official discount rates, (6) deflated money supply, (7) petrol exports, and (8) consumer confidence. The same measure has been used as an independent variable in previous studies of economic news (e.g. Blood and Philips 1995; Soroka 2014). CLI gives an indication of the future development of the economy. This indicator is used since Soroka, Stecula, and Wlezien (2014) have shown that media coverage is more responsive to indicators of the economic future than indicators of the past or current state of the economy. Descriptives of CLI and the change in CLI are found in Table 1.

Economic facts are not easily discernible. Just like economic journalists (see Thompson 2013), researchers also face the challenge of observing developments in the “real” economy. We acknowledge that the indicator we use is only a proxy of economic “reality” and is itself a construction, as studies in quantification rhetoric have shown (e.g. Rae and Drury 1993). We partly address this by testing our hypotheses with several different economic indicators, which yield consistent results (see below). We tested whether the Composite Economic Indicators were affected by the visibility and tone of economic news. No such effect was found. This gives support for our choice to use economic developments as independent and tone and visibility of economic news as dependent variables.

Results

Tone

Figure 1 shows how the Danish economy (represented by the gray line) and the tone of economic news (black line) developed between August 1996 and December 2012.

Between January 1999 and June 2000 the Danish economy boomed. This period has come to be known as the dot-com hype. In late 2000 the bubble burst, and the Danish economy declined. In June 2003, the Danish economy entered several years of economic expansion. This period of sustained growth was followed by a period of economic contraction and stagnation from January 2008 onwards. The black line shows the average tone in Danish economic news. The tone of economic news and the CLI are positively and significantly correlated ($r = 0.28$, $p < 0.05$), which suggests that economic news and economic developments are related. This can be seen clearly in 2003. The start of the period of economic growth coincided with a positive peak in the tone of the news in June 2003, when the Danish press wrote about “surprisingly positive sales numbers”⁶ and “surplus [on the balance of payment] against all odds”.⁷ At the end of 2007, the tone of economic news decreased sharply. Although the tone of economic news later improved a bit, it remained negative until the end of 2012.

Table 2 shows the results of time-series analysis studying the relation between the tone of economic news and CLI in more detail. A detailed description of the time-series analysis is found in Appendix B. The tone of economic news is first of all determined by the tone in the previous months.⁸ When the tone was negative in the previous months it is highly likely that it will also be negative this month. The tone of economic news does not reflect levels of CLI. Positive economic developments have no significant influence on the tone of economic news either, but negative developments have a significant effect: in other words, how well the economy is doing or whether it improves does not affect the

TABLE 2
Explaining the tone of economic news

	Model 1	Model 2	Model 3
Constant	-0.57 (3.33)	-0.31 (0.07)**	-0.21 (0.08)**
Tone t-1	0.26 (0.07)**	0.20 (0.07)**	0.20 (0.07)**
Tone t-2	0.26 (0.07)**	0.20 (0.07)**	0.20 (0.07)**
Tone t-3	0.11 (0.07)*		
CLI	0.01 (0.03)		
Positive Δ CLI	-0.33 (0.41)		
Negative Δ CLI	1.05 (0.34)**	0.52 (0.34)†	0.89 (0.30)**
January 1999 to June 2000		-0.03 (0.12)	-0.13 (0.14)
January 2001 to March 2002		-0.01 (0.13)	-0.08 (0.14)
July 2003 to June 2006		0.44 (0.11)**	
January 2008 to June 2009		-0.29 (0.15)*	
July 2003 to April 2007			0.28 (0.10)**
May 2007 to December 2012			-0.21 (0.10)*
Adjusted R^2	0.39	0.43	0.46
AIC	272.13	262.32	261.90
HQC	281.39	272.92	272.50
SBC	295.00	288.50	288.09
N	194	195	195
Breusch–Godfrey	0.76 (p. 39)	0.01 (p. 94)	0.01 (p. 90)
Ljung–Box Q	0.02 (p. 89)	0.01 (p. 98)	0.01 (p. 97)

Values are unstandardized beta-coefficients with standard errors in parentheses.
† $p < 0.1$, * $p < 0.05$, ** $p < 0.01$ (one-sided t -test).

tone of economic news. What matters is whether the economy is declining. When the economy declines, this is reflected in a more negative tone. These findings are in line with previous research described above. Thus, a model that only includes negative change in CLI is used as a baseline model which represents normal patterns of economic coverage.

As a first step in our analysis of whether economic coverage deviates from normal coverage during economic boom or bust, we conducted structural break tests which can identify turning points in the development of the tone of economic news. Such a turning point was found in July 2003 (Chow test $F(5, 116) = 3.34, p < 0.001$), coinciding with the start of the extended period of economic growth. Another turning point was found in May 2007 (Chow test $F(5, 184) = 2.32, p < 0.05$). Based on Figure 1, May 2007 seems to indicate the change between a period of overly positive and a period of overly negative tone of economic news. This is early in comparison to the contraction of the real economy (see Discussion). There were no structural breaks in the data marking the start or end of the growth and downturn periods around the change of the millennium. This indicates that economic news was business as usual during this period. Based on structural break tests, it seems that the tone of economic news only deviated from normal coverage during the second boom and bust period.

In Model 2 we test whether the tone of economic news was significantly different during the periods of economic boom and bust than during other periods. Neither the economic growth around the millennium nor the subsequent decline had a significant effect on the tone of economic news. Thus, there was no magnification in the tone of economic news during these periods. Between 2003 and 2007, economic news was more positive in tone than would be expected if media coverage only reflected actual negative changes in the economy. As expected, the tone was significantly more negative during the economic decline between January 2008 and June 2009. In Model 3, the recession period after 2007 is represented with a shift dummy for May 2007 to December 2012. May 2007 was the month that the dynamics of the data changed, according to the structural break test. Until December 2012, the Danish economy went in and out of recession, while the CLI values did not reach the same levels as before the downturn that started at the end of 2007. Akaike Information Criteria (AIC), Hannan–Quinn Information Criteria (HQC) and Schwarz’s Bayesian Information Criteria (SBC) show that Model 3 fits better to the data than Model 2. Model 3 confirms that there was no magnification around the turn of the millennium, while during the period of economic expansion the media magnified the positive state of the economy. Thus, H2 is supported for the second boom period only. After May 2007, the negative state of the economy is magnified, supporting H1. Based on the structural break tests and analysis in Models 2 and 3 we conclude that the tone of economic news was only magnified for the boom–bust periods between 2003 and 2012.⁹ The tone changed from overtly positive to overtly negative in May 2007 and remained negative beyond 2009 when the worst economic decline was over.

Visibility

Figure 2 compares development of the Danish leading economic indicators (represented by the gray line) to the visibility of news about the national economy in Danish newspapers (black line). Until 2008, there were between 20 and 40 articles per month which explicitly deal with the state or development of the Danish macro economy. After

that, when the Danish economy entered the Long Recession, economic news became twice as visible as during the previous years. Further analysis (not shown) revealed that at the same time economic news was no longer limited to the business pages, but was to a larger extent also covered in the first section of the newspaper and on the front page. After 2009, the visibility of economic news remained high.¹⁰

Table 3 studies the relation between economic developments and the visibility of economic news in more depth. Like the tone of economic news, visibility reacts to decreases in the CLI, but not to increases or the absolute level of the CLI (Model 4). On average, each of the three newspapers responds to a one point decrease in economic conditions with six more articles about economic news per month. Thus, economic news not only becomes more negative in tone but also more visible when the economy decreases.

If the magnifying effect also applies to the visibility of economic news, the economy should be significantly more visible during periods of economic decline. However, that was not the case during the first period of decline (January 2001 to March 2002), nor between January 2008 and June 2009 (Model 5). Still, Figure 2 shows an increase in the visibility of economic news in the last four years of the study period. This is confirmed in a structural break test, which shows a change in the dynamics of the data on October 2008 (Chow test $F(5, 181) = 4.51, p < 0.001$). When a dummy is included for the following period (Model 6), this indeed shows a significant effect. We conclude that economic news became more visible between 2008 and 2012 than economic indicators would predict. H3, arguing that economic recessions are magnified by making economic news more visible, is thus supported for the period November 2008 until December 2012.

Finally, economic news did not magnify the positive state of the economy around the turn of the millennium or in 2003–2006. Thus H4 is not supported.

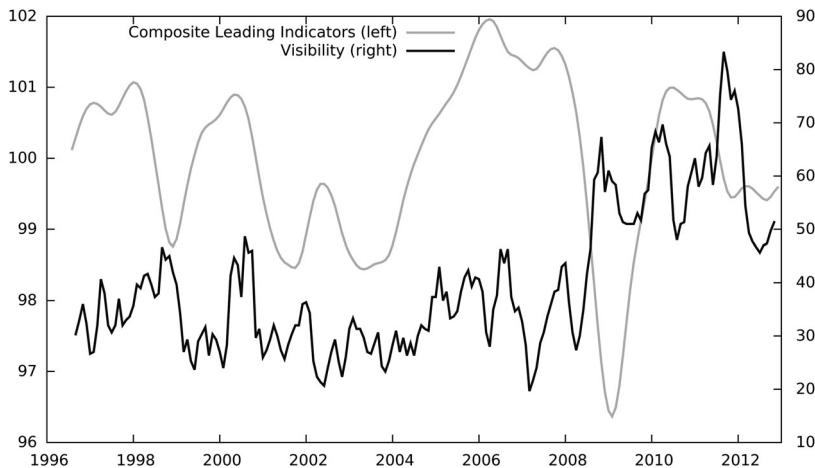


FIGURE 2

Economic developments and the visibility of economic news in three Danish newspapers between August 1996 and December 2012. The scale for the CLI can be found on the right. The scale for the visibility of economic news can be found on the left. The three-month moving average of visibility is displayed

TABLE 3
Explaining the visibility of economic news

	Model 4	Model 5	Model 6
Constant	-47.31 (72.41)	6.08 (3.22)*	16.45 (4.04)**
Visibility t-1	0.28 (0.07)**	0.28 (0.07)**	0.17 (0.08)*
Visibility t-2	0.16 (0.07)*	0.16 (0.07)*	0.07 (0.07)
Visibility t-3	0.28 (0.07)**	0.27 (0.07)**	0.18 (0.08)**
Visibility t-4	0.13 (0.07)*	0.13 (0.07)*	0.04 (0.07)
CLI	0.52 (0.72)		
Positive Δ CLI	9.12 (9.13)		
Negative Δ CLI	-18.45 (7.52)**	-15.44 (8.12)*	-21.08 (6.87)**
January 1999 to June 2000		-1.12 (2.96)	0.47 (2.88)
January 2001 to March 2002		-2.52 (3.13)	-1.75 (2.99)
July 2003 to June 2006		-0.25 (2.31)	1.65 (2.27)
January 2008 to June 2009		-1.29 (3.27)	
November 2008 to December 2012			13.91 (3.55)**
Adjusted R^2	0.53	0.53	0.56
AIC	1473.48	1477.81	1462.41
HQC	1484.05	1491.03	1475.62
SBC	1499.58	1510.44	1495.04
N	193	193	193
Breusch–Godfrey	0.03 (p. 85)	0.08 (p. 78)	0.74 (p. 39)
Ljung–Box Q	0.01 (p. 98)	0.01 (p. 97)	0.01 (p. 91)

Values are unstandardized beta-coefficients with standard errors in parentheses.

* $p < 0.05$, ** $p < 0.01$ (one-sided t -test).

Discussion

This study of economic news in Denmark between 1996 and 2012 has shown that the media function as a magnifying glass in times of economic boom and bust. In a period of economic boom the media intensified the positive tone beyond what was expected based on economic developments. During a period of economic contraction the economic coverage became more negative in tone and more visible. This magnification was only present during the Long Recession starting in 2007 and the preceding boom period.

The results showed that the media did not only magnify the tone during an extended period of negative developments, but also during a period of extended growth. Previous studies in the United States, the United Kingdom, and South Korea have shown that economic coverage responds asymmetrically to economic developments and shows a negativity bias (Ju 2008; Soroka 2006, 2012), arguing that the media not only emphasize negative developments, but also downplay positive developments (Fogarty 2005). Our paper confirms that from month to month, journalists indeed only react to negative changes and not to positive changes. This is desirable from the perspective of the surveillance function of economic news, since negative developments require attention from the inattentive audience. However, a period of *prolonged* economic boom is reflected in the tone of economic news. Still, there is also asymmetry in the magnification of economic boom and bust. Although economic news became more positive in tone during the boom period, it did not become more visible. When the economic news magnified the negative state of the economy, on the other hand, it also became more visible. This should be seen as positive in the light of the surveillance function, since there is more

need to raise the awareness of inattentive audiences during economic downturn than when the economy is doing well. The tipping points identifying the start and end of the magnification periods were close to the tipping points in the macro-economy. This shows that the media did not ring the alarm all the time, but raised the attention for the economy when it was needed.

The media were even early to adjust the tone of economic coverage in the wake of the economic crisis. The time-series analysis showed a structural break in the data for May 2007, after which media coverage became significantly more negative. Kleinnijenhuis et al. (2013) also showed that the media expressed early warnings before the start of the economic crisis. Fogarty (2005, 169) argues that the media are “quick to point out when the economy is doing poorly”. Our research shows that the media are even quick to point out negative predictions about economic developments before economic indicators show a clear decrease, presumably based on early warnings by economic experts. This is desirable from the normative perspective of the surveillance function. However, the media did not ring the fire alarm loudly until November 2008. For over a year the negative tone remained confined to a small number of articles, mostly on the business pages. Without an increase in visibility and headlines on the front page, it is questionable whether the inattentive audience will notice the change in tone of economic news. The periods of economic up- and downturn around 2000 were not magnified in the news. Arguably these periods were less intense than the later period of growth and recession, but still the media could have raised more attention for these developments. This raises the normative question of how severe an economic recession should be in order to require the attention of the inattentive audience.

In sum, despite some points of criticism, in general, economic coverage of economic boom and recession lived up to the surveillance function as described at the beginning of this paper. Assessments of the performance of the business press might have been less positive if other interpretations of the surveillance function, or other standards like the watchdog standard, had been applied. Our data only allow assessment of whether the media lived up to the surveillance function by providing cues about the state and development of the macro-economy. Magnifying the tone and visibility of economic news during recession does not necessarily mean that possible causes of the crisis are examined. Also, our study does not answer the question of whether this coverage actually helped monitorial citizens to form correct perceptions of the macro-economic climate. One unintended side-effect of the surveillance function may be an amplification of fear and uncertainty (e.g. Beck 2004). Further conclusions about the media’s influence on economic perceptions and consumer confidence during recessions are beyond the scope of our study and should be the topic of other research. Future research could look more in depth into periods of change from overtly positive to overtly negative coverage and study why magnification occurs during some booms and busts and not during others.

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NOTES

1. The focus on negativity seems to be limited to the coverage of macro-economic news and does not apply to financial news (Hetsroni et al. 2014). Studies on the reporting about financial markets have found overtly positive coverage (e.g. Starkman 2014).
2. This does not necessarily imply that economic news can independently influence economic markets and create market bubbles. Empirical evidence for such an effect of economic news is mixed (Lee 2014, 717).
3. The time series start in August 1996, the first month that all three newspapers included in the analysis were available in the newspaper database Infomedia.
4. The aggregate tone per month = (number of positive terms – number of negative terms)/total number of words × 100.
5. The data were downloaded from the website of the Organisation for Economic Co-operation and Development (OECD), <http://www.oecd.org/std/leading-indicators> (accessed September 19, 2013). In the analysis, the amplitude-adjusted CLI is used, which the OECD describes as “the most straightforward way to present the CLI”.
6. “Optimisme i butikkerne” [“Optimism in the Shops”], *Politiken*, July 11, 2003.
7. “Ledende artikel: Eksportsucces” [“Editorial: Export Success”], *Berlingske*, July 17, 2003.
8. Including three lags of the dependent variable gives the most parsimonious model without autocorrelation based on the Akaike Information Criterion.
9. As a robustness check, the analysis was repeated with different economic indicators. The hypotheses were supported when level of unemployment, consumer confidence, business confidence or the price index were included as indicators of the economy instead of the CLI. Finally, we repeated the analysis for the three newspapers separately, which led to the same results for *Politiken* and *Jyllands-Posten*. For *Berlingske*, the economic boom between 2003 and 2007 was not magnified in the tone.
10. There is no significant correlation between the state of the economy and the visibility of economic news ($r = -0.09$, ns). Tone and volume of economic news are closely and inversely related ($r = -0.38$, $p < 0.001$).

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Appendix A

Validation of Automated Content Analysis

We automatically analyzed *news about the Danish macro-economy*. News about the economy is defined by the subject covered rather than the section of the newspaper in which it is printed or the journalists writing it. *News about the Danish macro-economy* is distinct from business journalism, which deals with activities of individual companies or financial results, or financial news and market news, which deals with the stock exchange and financial markets, e.g. mergers and acquisitions, stocks, bonds, currencies, commodities, futures, funds, dividends. Our analysis was limited to the coverage of the *national* economy, since it is compared to indicators of the Danish economy. Articles about the European economy, global economy, or US economy are only relevant if the article includes references to the consequences for the Danish economy. An article about the local economy or the economy in certain parts of the country is only deemed relevant if it explicitly mentions the relation with the economy of Denmark as a whole.

In a first step towards the development of a search string identifying relevant articles, an open search/extensive search string was used to find a broad set of articles that included all relevant articles (but also many irrelevant ones). This search string includes all search terms explicitly mentioned in 12 studies of economic news (Blood and Philips 1995; De Boef and Kellstedt 2004; Doms and Morin 2004; Fan 1993; Hester and Gibson 2003; Hollanders and Vliegthart 2011; Ju 2008; Larcinese, Puglisi, and Snyder 2011; Nadeau et al. 1999; Shah et al. 1999; Soroka 2012; Wu et al. 2002). Based on several test searches with these search terms, a narrower search string was established through an iterative process (see Stryker et al. 2006). This resulted in the following search string:

((econ* OR conjunt*) AND (Danish OR Denmark) in headline, subheading or first paragraph) OR ((econ* OR conjunt*) AND (Danish OR Denmark) in whole article AND (deflation, "price drop", inflation, recession, crisis, depression, downturn, decline, shrink, improvement, upswing, grow*, employment, "consumer spending", "consumer confidence", "housing market", "disposable income", competitiveness, (creditwor*NOT bank) ("balance of trade" AND (deficit, surplus)) in heading, subheading or first paragraph) OR (housing* in heading, subheading or first paragraph AND "mortgage statistics" in whole article).

More negative terms (such as deflation, recession, crisis) than positive terms are included in the search string, but it does not have a negativity bias. Most articles are not found by these terms but by the general terms "Denmark" and "economy". In fact, more articles are found by the positive than by the negative terms.

As a first validity check, the yearly number of articles in *Berlingske*, *Jyllands Posten*, and *Politiken* identified by this search string was compared to the yearly attention to the economy in Danish radio news between 1996 and 2003. Green-Pedersen and Mortensen (2013) coded attention to different topics in the national radio news between 1984 and 2003. Attention to the economy in the Danish national radio news is significantly correlated with the attention in *Berlingske*, *Jyllands Posten*, and *Politiken*.

In the second validation step, the search string was tested for *Jyllands Posten* and *Politiken* in the period March 7–13, 2013. Based on the results of this search, "precision" (percentage of found articles that are indeed about the national economy) and "recall" (percentage of relevant articles published during this period identified by the search

string) were calculated, following Stryker et al. (2006). The search string had a recall of 74 percent and an *initial precision* of 70 percent. We downloaded all articles identified by the search string. Once these articles were downloaded, each headline was checked to exclude irrelevant texts. After that the final precision was calculated by looking at the first paragraph of 100 downloaded articles published in *Jyllands Posten*, six were not relevant, leaving a *final precision* of 94 percent.

The monthly number of articles about economic news in *Berlingske*, *Jyllands Posten*, and *Politiken* load on one factor and form a reliable scale (Cronbach's alpha = 0.79). Based on this, we combined the visibility in the three newspapers in one measure.

The monthly aggregate *tone* of these articles was calculated based on translated dictionaries (Loughran and McDonald 2011). To validate the tone coding, we followed Young and Soroka (2012) by comparing hand coding and automated coding for a representative sample of news items about the Danish economy during 2013. We divided these articles into sets of articles, which according to human coders were either negative about the economic climate (74 articles), neutral (116 articles), or positive (42 articles). Intercoder reliability between the coders was 0.73 (Krippendorff's alpha). As a test of the validity of the dictionary-based coding, we automatically coded the tone of the articles in each of these three groups. The automated content analysis differentiates between negative (automated coded tone score: -1.66), neutral (-0.67), and positive articles (0.01) at the aggregate level. Differences in automatically coded tone between the groups of articles were significant at $p < 0.1$.

The mean tone score for the neutral articles is not 0, but -0.67 , which is likely related to the negative terms being overrepresented compared to positive terms in the tone dictionaries. It is not uncommon for tone measures using word lists that the mean score for neutral articles is not 0 (see Young and Soroka 2012, 218). Since the goal of the analyses is to compare tone across months and explain movements over time, the raw scores are not of much importance. Nevertheless, to increase the interpretability of the data, we corrected for the overall low scores by adding 0.67 to the tone score.

Appendix B

Modelling Strategy Time-series Analysis

Before testing whether economic news becomes more visible and negative during economic recession and more positive during economic boom, a base-line model was established. To verify that economic news indeed is responsive to negative change in economic indicators, the level of the CLI as well as positive change and negative change in CLI are included in an autoregressive distributed lag model where the aggregate tone or visibility of economic news is determined by its past and the absolute state or change in the economy during the current month. All variables are stationary according to the Augmented Dickey–Fuller test (CLI -3.99 , tone -4.01 , visibility -2.82). The number of lags of the dependent variable was determined by the AIC, which is used to find the most parsimonious model. In addition, the final models have no autocorrelation and no multicollinearity between the lagged variables.

The magnifying effect is tested in three steps. First, a Quandt–Andrews test is conducted to see whether a structural break can be identified in the data. Second, we include shift dummies for the periods of economic boom and economic downturn to see whether the media indeed magnified the economic situation in visibility and tone.

The magnification hypothesis is tested by looking at whether these dummies are significant and whether including them improves the fit of the model. Finally, we test the magnifying effect with alternatively defined periods of economic boom and bust (based on the structural breaks in the data).

The tested models can be represented with the following equations:

$$\begin{aligned} \text{Tone} = & \alpha_1 + \text{Tone}_{t-1,k} + \text{Economic Indicators} + \text{neg}\Delta\text{Economic Indicators} \\ & + \text{pos}\Delta\text{Economic Indicators} + \text{Hause1} + \text{Baise1} + \text{Hause2} + \text{Baise2} + \varepsilon_1 \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Visibility} = & \alpha_1 + \text{Visibility}_{t-1,k} + \text{Economic Indicators} + \text{neg}\Delta\text{Economic Indicators} \\ & + \text{pos}\Delta\text{Economic Indicators} + \text{Hause1} + \text{Baise1} + \text{Hause2} + \text{Baise2} + \varepsilon_1 \end{aligned} \quad (2)$$

Alternatively specified models where the lagged independent variables or several lags of the independent variables were included led to the same conclusions.