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THE IMPACT OF NEWSPAPERS ON CONSUMER CONFIDENCE: DOES SPIN BIAS EXIST?*

By Karel-Jan Alsem¹, Steven Brakman¹, Lex Hoogduin² and Gerard Kuper¹

Abstract

It is sometimes argued that news reports in the media suffer from biased reporting. Mullainathan and Shleifer (2002, 2004) argue that there are two types of media bias. One bias, called ideology, reflects a news outlet's desire to affect reader opinions in a particular direction. The second bias, referred to as 'spin' or 'slanting', reflects the outlet's attempt to simply create a memorable story. Competition between outlets can eliminate the effect of ideological bias, but increases the incentive to spin or slant stories.

We examine whether we find some evidence of spin in Dutch newspaper reporting on the state of the economy. If newspapers are indeed able to create memorable stories this should, according to our hypothesis, affect the opinion of readers with respect to the state of the economy. Sentiments about the actual state of the economy could be magnified by spin. As a result, consumer confidence – a variable that routinely measures the opinion on the state of the economy – can be expected to be affected not only by economic fundamentals, but also by the way these fundamentals are reported. We construct a variable that reflects the way consumers perceive economic news reported in newspapers. We find that this variable indeed has a significant impact on consumer confidence, which is short-lived.

JEL code: E20, E21, E30

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1. INTRODUCTION

Mullainathan and Shleifer (2002, 2004) distinguish between two types of biased newspaper reporting. Ideological bias is caused by differences in the ideology of newspapers.

Competition between media can eliminate the effect of ideological bias. Ideological biases cancel out in the aggregate of all stories available to readers. The truth is “in the middle”.

The second source of bias, referred to as spin or slanting, reflects a newspaper’s attempt to create a memorable story (we use the term spin from now on). Newspapers compete with each other (and with alternative sources of information) for public attention in order to survive in the media market. This implies that they are in the business of writing stories that capture the attention of potential readers. They aim for interesting stories that competitors do not have. A successful newspaper shows what is and what is not interesting to read; it not only reports news, but, to some extent, also defines news. If it succeeds in presenting the news in an attractive manner, potential readers are encouraged to use a specific newspaper as the main source of information. Exaggeration is one way to attract the reader’s attention. However, that is literally not the end of the story. Competing newspapers often pick up a story reported by another newspaper and write follow-up stories. These follow-up stories are only interesting to readers, if they add something to the original story to make it memorable. In the process, the facts or non-facts are presented in a forceful way and spin bias is the result. Different from ideological bias, spin bias is not eliminated in the market or even reduced by competition, but reinforced: the newspaper with the most memorable stories, sells the most copies.

Competition between newspapers creates exaggeration – or spin - of stories and/or facts in order to make them memorable. Once the stories are stuck in the minds of readers we assume that this affects their opinion. Our objective is to test whether such a bias can be identified in reports on the state of the economy in Dutch newspapers. As such we aim to test the theory of Mullainathan and Shleifer for a large segment of the Dutch media market.

We assume that competition in the Dutch daily newspaper market, which seems to be fierce, stimulates newspapers to exaggerate their stories in order to become memorable to readers. Consumers read such reports and consumer confidence, which is a measure for consumers’ assessment of the state of the economy, may be affected. Consumer confidence is of course not only affected by spin but also by the actual state of the economy, which is reflected by

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3 objective economic data. Our hypothesis is that consumer sentiments are determined by what
4 consumers read in the papers. If spin exists, consumers – in the aggregate - have a biased
5 picture of the state of the economy. The perceived business cycle by consumers thus shows
6 larger amplitude than the actual business cycle or, more in general, perceived economic
7 variables are more volatile than actually is the case. Spin can thus be interpreted as a
8 magnifying force with respect to consumer sentiments about actual facts on the state of the
9 economy. We test the spin hypothesis for consumer confidence in two ways.
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17 First, we examine whether consumer confidence is more volatile than producer confidence.
18 The latter is not influenced by sentiments, since it is measured by objective economic
19 variables, like the order position and changes in stocks. Second, we develop a measure of how
20 consumers perceive the state of the economy reading newspapers and estimate whether this
21 measure has a larger impact on consumer confidence than it does on producer confidence. If
22 this is the case, we take this as evidence of the existence of spin bias. At this point it is
23 important to indicate that we do not look into the problem whether or not changes in
24 consumer confidence have an effect on the real economy, but only if consumer confidence
25 itself is affected by news. The relation between consumer confidence and the real economy is
26 still not completely understood, and appears to be weak (see Jansen 2003, Ludvigson, 2004).
27 On the basis of this literature one can safely conclude that producer and consumer confidence
28 are influenced by different variables. This strengthens our assumption that producer
29 confidence can be used as a benchmark relative to consumer confidence and that they can be
30 treated as different variables.
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44 This article is structured as follows. In section 2 the measurement of consumer confidence and
45 the way we estimate consumers' perception of the state of the economy from newspaper
46 reports (from now called *MEDIA*) are discussed. Section 3 looks at the question if volatility of
47 consumer confidence is larger than that of producer confidence and whether *MEDIA* has a
48 significant impact on consumer confidence relative to producer confidence. Section 4
49 employs VAR analysis to disentangle the interaction between *MEDIA*, consumer- and
50 producer confidence and, in a second estimate, a stock market index. Section 5 concludes.
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2. MEASUREMENT OF CONFIDENCE AND *MEDIA*

Consumer- and producer confidence are routinely measured by Statistics Netherlands (CBS). Consumer confidence reflects (changes) in public opinion about the state of the economy. A panel of (approximately) 1000 consumers have to answer questions like: do you expect the economic climate to improve or not; do you expect that your financial situation will improve in the near future; do you expect to make a large purchase in the near future? Questions like these are specifically asked to find out whether or not public opinion about the economy has changed. Why opinion might have changed is not part of the questionnaire. The frequency is monthly.³

Producer confidence is also published by the CBS. This variable is a combination of three questions posed to firms in the CBS panel. These questions relate to: the current stock of orders in the next three months, the expected orders in the next three months, and how they interpret the stock of finished products. The variable is less of a psychological nature than consumer confidence and as such is a more objective reflection of the state of the economy. Newspaper reporting presumably does not immediately influence this variable.

CONSTRUCTING *MEDIA*

The data about economic news was collected by asking experts to judge a large set of newspapers. Experts were used since we need an objective measure of economic news. This section describes how these expert data were collected.

Choice of media

We want to investigate whether or not media reporting about the state of the economy affects consumer confidence. Economic news is spread through different media: TV, radio, newspapers, magazines, Internet etc. In this study we choose to use national newspapers as our main source, because newspapers offer day-to-day news, have a high reach, and are relatively easy to present to a panel of experts.

Since we have (60) monthly data on economic variables, we also need monthly observations on economic news. We choose one fixed day per month, the first Saturday, as the observation

³ See Jansen (2003).

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3 date for *MEDIA*. A fixed day per month avoids time biases as to the relation to producer and
4 consumer confidence, and they are also collected in the first 10 days of the month. In
5 principle more data points could be collected. However, this would lead to a heavy (time)
6 burden for the experts. The pre-tests showed that the time load on the experts rapidly
7 increases with more questions or more pages that had to be answered or judged. A potential
8 drawback in choosing a single day is that monthly observations are affected by what is
9 reported on a specific day. On the other hand it might be expected that very interesting
10 (economic) news will also receive attention on other days, including the day of observation.
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19 Newspapers differ in the way they write about (economic) news. In order to reduce possible
20 bias, two newspapers aimed at different target groups were used in the study: a large, popular
21 morning newspaper (De Telegraaf) and a somewhat smaller evening newspaper, more
22 directed at higher social classes (NRC-Handelsblad). De Telegraaf is market leader with a
23 market share, in paid circulation of national newspapers, of 43% and a reach of 21% in Dutch
24 population of 13 years and older (Mediafeitenboekje, 2003). Market share of NRC in
25 circulation of national newspapers is 15% and reach is 4%. De Telegraaf is known not to shy
26 away from relatively large letter types to present the news; the NRC-Handelsblad is more
27 modest in this respect. It might be expected that these two newspapers together provide a
28 good impression of economic news reporting in the media.
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39 From each of the two newspapers 60 were used: the newspaper of the first Saturday of each
40 month in the period January 1998 through December 2002. From these newspapers the front
41 page and the main economic page were copied, which results in four pages per day: the front
42 page and economic page of De Telegraaf and NRC Handelsblad. The pages were copied (half
43 size of the original) from microfilms containing the original newspapers. So, in the end we
44 had 60 sets of 4 pages. These sets were used for the data collection. The collection took place
45 in 2004. So the assessment of economic news is done afterwards. This is done since no
46 alternative data are available. This could have two disadvantages. First, with hindsight some
47 facts might be judged differently than if these facts are judged in 'real' time.
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49 Second, the current mood might affect the interpretation of historical facts. However, the
50 latter bias affects all observations and does not affect the fluctuations in the time series.
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Pre-tests

Before presenting the data to the panel of experts we performed a number of pre-tests. We (subsequently) asked three Faculty members of the Economics Department (University of Groningen) to perform the task. During these pre-tests we improved the way of presenting the pages, reduced the number of questions and pages (in order to reduce the time burden of the panel), and most importantly adjusted the text of the measurement scale. We dropped, for example, the following question that was put forward to the experts: *In these newspapers the economic news receives much attention.* This question is a biased measure in the sense that only the economic pages were shown to the panel. For our purposes it is crucial that we measure the way economic news is reported in the newspaper and not mimic measurement of consumer confidence.

Measurement scale

Ultimately the experts were asked to give an overall view of the four pages (reading in detail was said not to be necessary) and then assess each set of pages on the following two dimensions, using the widely used Likert scale (completely disagree, disagree, neutral, agree, completely agree, subsequently coded as 1 to 5):

- The news coverage in these newspapers is such that I judge the economic situation in our country to be positive. (Give your opinion relatively to what you assume to be a normal economic situation).

The question measures the ‘economic mood’ of the newspapers and we are ultimately only interested to know what the overall impression of the experts was.

The 60 page samples of 4 pages each were presented in chronological order. This may lead to cumulative effects of the news presented: for example, if two subsequent observations present some indication of slightly negative economic developments, a third negative news item may lead to the conclusion of a judge that the economy is slowing down. These kind of cumulative effects, however, also appear in real life.

Data collection and reliability

Experts were used to perform the task of giving a rating about economic news in the newspapers. An ‘expert’ is a person who can be expected to perform a given task in a reliable

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3 way. Ideally one hopes that all experts will give about the same rating. The use of experts in
4 assessing communication is widely used (see e.g. Woltman Elpers et al., 2003). Furthermore,
5 the economic pages of newspapers are of special interest to our panel, although their opinion
6 might differ from a panel not necessarily interested in economic news.
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10 The experts in our study were graduate students in Economics from a Dutch university. The
11 minimal number of experts to be used depends on the difficulty of the task and the degree of
12 consensus experts show in their opinions.
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14 We selected 20 students (10 male and 10 female) for the task and analysed afterwards if there
15 is consensus among the experts. If there is no consensus the method of data collection and/or
16 number of experts should be changed.
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22 The degree to which experts show consensus in their assessments is a measure of the
23 consistency and reliability of their task. A measure of consensus among experts is the
24 Cronbach's alpha (or coefficient alpha). This is the correlation between the experts. A value
25 of alpha larger than 0.6 is considered to indicate sufficient internal consistency or reliability
26 (Malhotra, 2003, p. 268). In our case the value of alpha is 0.77, and indicates a sufficient
27 agreement between the 20 judges on their assessment of the economic mood in the
28 newspapers of the sample.⁴ This value of alpha also points out that it is not necessary to use
29 additional experts. The mean of the scores in each month is used as the *MEDIA* variable in
30 this study.
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40 **3. DOES SPIN BIAS EXIST?: A FIRST LOOK**

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42 Figure 1 shows the time series for consumer- and producer confidence, called *CC* and *PC*,
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60 ⁴ So, sample size is less relevant here than in most other (market) research using respondents since in the latter case a large sample size actually has to outweigh differences in answers between respondents.

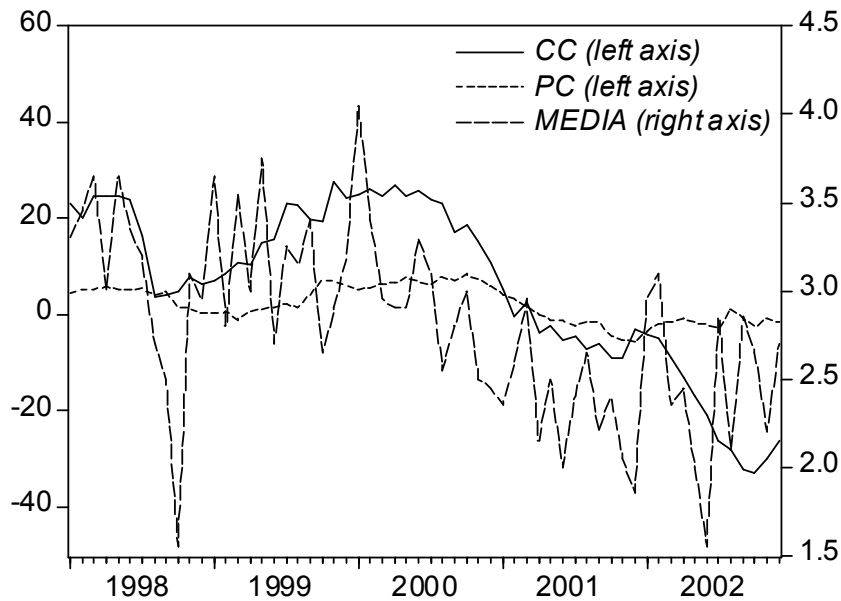


Figure 1 – Consumer confidence (CC), producer confidence (PC) and MEDIA

In the period under review the economy was initially booming, with very rapidly rising stock market and housing prices indicating an explosive development. In the course of 2000 the economy went into recession. These developments provided sufficient background for story telling and spin bias to occur. This period, therefore, seems *a priori* very appropriate for testing the spin bias hypothesis.

Figure 1 also depicts *MEDIA*. The variable is more volatile than both other variables and shows a seesaw pattern. This indicates that *MEDIA* has low persistence and that last month's news has not much impact on the assessment of the state of the economy in the current month. This is not surprising and in line with the view that yesterday's news is already forgotten today.

At the same time, the last years of the boom and the following recession are reflected in the assessments of the newspaper reports on the state of the economy. Before 2000 *MEDIA* is almost always higher than average, and after 2000 with a few exceptions lower than average. This is reasonable.

There are three observations, however, that require separate discussion. The first is a deep, but very short-lived trough in October 1998. This may be due to the Russian financial crisis. The

second one is an above average assessment of the state of the economy in January and February 2002. It is not simple to relate this peak to a certain event. It may be a reflection of the feeling that the worst of the recession was over. In the same period and already somewhat earlier, producer confidence also recovered. Consumer confidence, however, deteriorated over the same period. In June of 2002, there was another deep trough, which may very well be related to the political turmoil in the Netherlands at the time. One new political party (LPF) had seen its support grow very rapidly and in May its leader was assassinated, just before the elections in May. At the same time it became clear that in the following four years the budget deficit would come out much higher than desired without large additional budget cuts. In public, politicians were painting a gloomy picture of the outlook for the Dutch economy. All in all, the general development of *MEDIA* seems in line with what one would expect (experiments with dummies for these events do not change the results described below).

There appears to be a systematic relation between consumer- and producer confidence. Table 1 shows that indeed these variables are highly correlated.

Table 1 - Simple correlation coefficients.

	<i>CC</i>	<i>PC</i>	<i>MEDIA</i>
Consumer confidence (<i>CC</i>)	1.00		
Producer confidence (<i>PC</i>)	0.78	1.00	
<i>MEDIA</i>	0.60	0.44	1.00

MEDIA is also to some extent correlated to consumer- and producer confidence, more to consumer than producer confidence, as expected.

Consumer confidence is far more volatile than producer confidence. The standard deviation of consumer confidence is more than four times as large as the standard deviation of producer confidence (17.5 and 3.8 respectively). This is consistent with the magnifying interpretation of the spin-bias hypothesis. Consumer and producer confidence are both determined by similar economic variables, but it is likely that consumer confidence is more liable to being affected by exaggerated media reports than producer confidence. Therefore, one expects consumer confidence to be more volatile.

Our next step is to use straightforward regression analysis. Before we can properly do so, we first need to know the time series properties of the data. Both producer and consumer confidence turn out to be integrated of order 1, denoted as $I(1)$, that is the series are stationary after first differencing⁵. One might expect the confidence variables to be stationary over a complete business cycle. However, the period 1998-2002 is probably not a complete business cycle.

1998 and 1999 were good years, but the next three years the economy was in recession. Therefore, unfavourable economic conditions are somewhat over represented in the sample. This is also clear from the average value of *MEDIA* of 2.79, which is lower than the “neutral” average of 3. Of the 60 observations 22 have a value of 3 or higher. The difference between consumer and producer confidence is also $I(1)$. *MEDIA* on the other hand is a stationary variable. Therefore, we estimate whether changes in the difference between consumer and producer confidence are significantly related to changes in *MEDIA*. Table 2 shows the results.

Table 2 - Simple regression results using ordinary least squares for the period February 1998 until December 2002.

Model: $\Delta(CC_t - PC_t) = \beta_1 + \beta_2 \Delta MEDIA_t + \varepsilon_t$

Variable	Coefficient	<i>t</i> -value	(<i>p</i> -value)
Constant	-0.714	-1.513	(0.136)
$\Delta MEDIA$	1.593	1.917	(0.060)
Observations	59		
Adjusted R^2	0.044		
Standard error of regression	3.625		
Durbin-Watson	1.681		

MEDIA is almost, but not quite, significantly positive at the 5%-level of significance. At the 10%-level *MEDIA* is significantly positive. Therefore, we have found some, but not very strong, evidence of spin bias in this regression.

⁵ The augmented Dickey-Fuller test statistics on levels including trend and intercept are -1.159, -1.669 and -6.232 for *CC*, *PC* and *MEDIA* respectively. The 5% significance level is -3.489. The augmented Dickey-Fuller test statistics on first differences including trend and intercept are -3.940 and -7.536 for *CC* and *PC* respectively. The 5%-significance level is -2.914.

4. DOES SPIN BIAS EXIST?: A CLOSER LOOK

In the regression of the previous section we have implicitly assumed that media is an exogenous variable. However, *MEDIA* may have been affected by producer or consumer confidence. In writing their stories, journalists may have been influenced by the general mood among consumers and producers. Moreover, the confidence variables themselves might be related. This implies that all variables might be endogenous. This leads us to estimate a simultaneous system. Since there is not much theory about consumer and producer confidence, the most obvious choice is a specification and estimation of a VAR-model, which has the advantage that we can simply use ordinary least squares as estimation method. We start by a VAR with consumer- and producer confidence, but also look at a VAR that also includes a stock market index. The latter variable is often used as an explanatory variable for consumer confidence.

As we have seen (see footnote 4) testing for unit roots reveals that we cannot reject the null-hypothesis of a unit root for consumer confidence and producer confidence.

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5 The Johansen co-integration test indicates that these variables do not drift apart in the long
6 run.⁶ This means that a stable long-run relationship between consumer confidence and
7 producer confidence exists. This implies that we can model the VAR in levels and perform
8 impulse-response analyses.
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11 A VAR with p lags is given in matrix notation as:

$$12 \mathbf{y}_t = \mathbf{A}_0 + \mathbf{A}_1 \mathbf{y}_{t-1} + \dots + \mathbf{A}_p \mathbf{y}_{t-p} + \boldsymbol{\varepsilon}_t$$

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19 Where \mathbf{y}_t is a $n \times 1$ vector of endogenous variables, \mathbf{A}_0 is a $n \times 1$ vector of intercept terms,
20 $\mathbf{A}_1, \dots, \mathbf{A}_p$ are $n \times n$ matrices of coefficients that relate lagged variables to current variables, and
21 $\boldsymbol{\varepsilon}_t$ is a $n \times 1$ vector of error terms. Here $n=3$ and $\mathbf{y}_t = (CC_t, PC_t, MEDIA_t)'$.
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27 Testing for the optimal lag length using information criteria by Akaike, Schwarz and Hannan-
28 Quinn all suggest a lag length of 1. This seems plausible. Table 3 reports the results of our
29 unrestricted VAR (1), including a trend.
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⁶ Assuming no deterministic trend and one lag of the first differenced terms, both the trace test and the max-eigenvalue test indicate one cointegrating equation at the 5%-significance level between CC and PC . The cointegrating equation is: $CC=4.837 PC$, with the cointegrating coefficient having a standard error of .698.

Table 3 - Unrestricted VAR(1) estimates for the period February 1998 until December 2002, t -values between brackets.

Model: $y_t = A_0 + A_1 y_{t-1} + \varepsilon_t$

where $y_t = (CC, PC, MEDIA)'$

	<i>CC</i>	<i>PC</i>	<i>MEDIA</i>
<i>CC</i> (-1)	0.997 (16.554)	0.041 (2.023)	0.011 (1.463)
<i>PC</i> (-1)	-0.230 (-1.141)	0.791 (11.750)	-0.013 (-0.552)
<i>MEDIA</i> (-1)	-0.313 (-0.272)	0.961 (2.502)	0.106 (0.756)
Constant	2.430 (0.639)	-3.228 (-2.545)	2.738 (5.942)
Trend	-0.062 (-1.380)	0.021 (1.380)	-0.009 (-1.716)
Observations	59	59	59
Adjusted R^2	0.956	0.904	0.320
Standard error of regression	3.681	1.228	0.446
F -statistic	314.260	127.249	7.837
Akaike AIC	5.525	3.330	1.305

On the basis of this VAR (1) we can analyse shocks to this system. We apply a one standard deviation shock to *MEDIA* and analyse the response of consumer confidence (*CC*) and producer confidence (*PC*).⁷

⁷ The Cholesky ordering in the impulse-response analysis is *MEDIA*, *CC* and *PC*. This implies that *MEDIA* is not affected by *CC* and *PC*, and that *CC* is affected only by *MEDIA* and not by *PC*. *PC* on the other hand is affected by both *MEDIA* and *CC*. Generalized impulses, or alternative orderings, generate the same effects as shown in figure 2. Furthermore, we also experimented by including the standard deviation of *MEDIA* explicitly in the model. This extra variable was not significant and does not effect the results. This is consistent with the fact that the Cronbach alpha is sufficiently high.

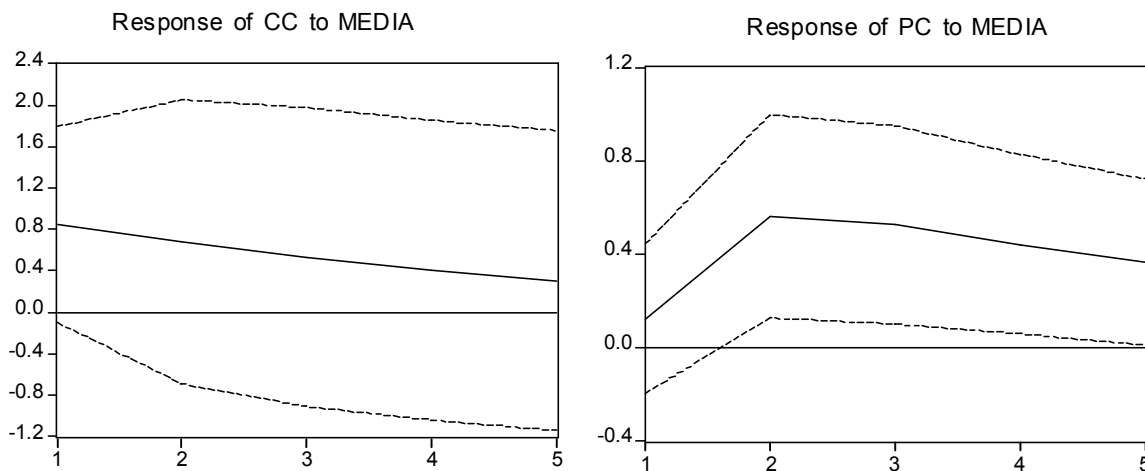
Response to Cholesky One S.D. Innovations ± 2 S.E.

Figure 2 - Response of consumer confidence (*CC*) and producer confidence (*PC*) of a one standard deviation shock to *MEDIA* (dotted lines are two standard response deviations which serve as confidence intervals).

Figure 2 shows that *MEDIA* has a significant short-run effect on consumer confidence, but not on producer confidence. *MEDIA* is at the 10% significance level, the short-run effect of *MEDIA* on consumer confidence is about significant.⁸ In the longer run the media impact on consumer confidence disappears. This is not surprising, since nothing is as old as yesterday's newspaper. In the longer run actual movements in the economy, as mainly reflected in producer confidence, affect each other. This can be understood because the media follow long-run movements in the economy and as such are closely related to producer confidence.

Other variables might, of course also, affect *CC* or *PC*. Jansen and Nahuis (2003) have found a strong effect of stock market indices on *CC*. We now also introduce a stock market index (*AEX*) to the VAR and again perform impulse-response analyses.⁹

⁸ The 10% significance level implies plus/minus 1.6 standard error bands about the impulse responses.

⁹ In this VAR the Cholesky ordering in the impulse-response analysis is *AEX*, *MEDIA*, *CC* and *PC*. The optimal number of lags remains one. We also experimented with unemployment as an additional variable. In a qualitative sense this gives similar results compared to those with respect to the *AEX*.

Table 4 – Unrestricted VAR(1) estimates for the period February 1998 until December 2002, t-values between brackets

$$\text{Model: } \mathbf{y}_t = \mathbf{A}_0 + \mathbf{A}_1 \mathbf{y}_{t-1} + \boldsymbol{\varepsilon}_t$$

where $\mathbf{y}_t = (CC, PC, MEDIA, AEX)'$

	<i>AEX</i>	<i>MEDIA</i>	<i>CC</i>	<i>PC</i>
<i>AEX</i> (-1)	0.638 (8.921)	-0.003 (-2.435)	-0.008 (-0.886)	-0.003 (-0.870)
<i>MEDIA</i> (-1)	-15.068 (-1.680)	0.055 (0.407)	-0.471 (-0.404)	0.909 (2.334)
<i>CC</i> (-1)	3.191 (5.033)	0.027 (2.778)	1.047 (12.694)	0.057 (2.070)
<i>PC</i> (-1)	-1.038 (-0.660)	-0.005 (-0.203)	-0.203 (-0.992)	0.800 (11.721)
Constant	183.827 (4.294)	3.883 (6.023)	6.030 (1.083)	-2.048 (-1.102)
Trend	1.172 (2.674)	0.001 (0.076)	-0.031 (-0.545)	0.031 (1.621)
Observations	59	59	59	59
Adj. R-squared	0.904	0.377	0.956	0.897
S.E. equation	28.358	0.427	3.688	1.231
F-statistic	110.636	8.028	250.565	101.494
Akaike AIC	9.624	1.233	5.544	3.350

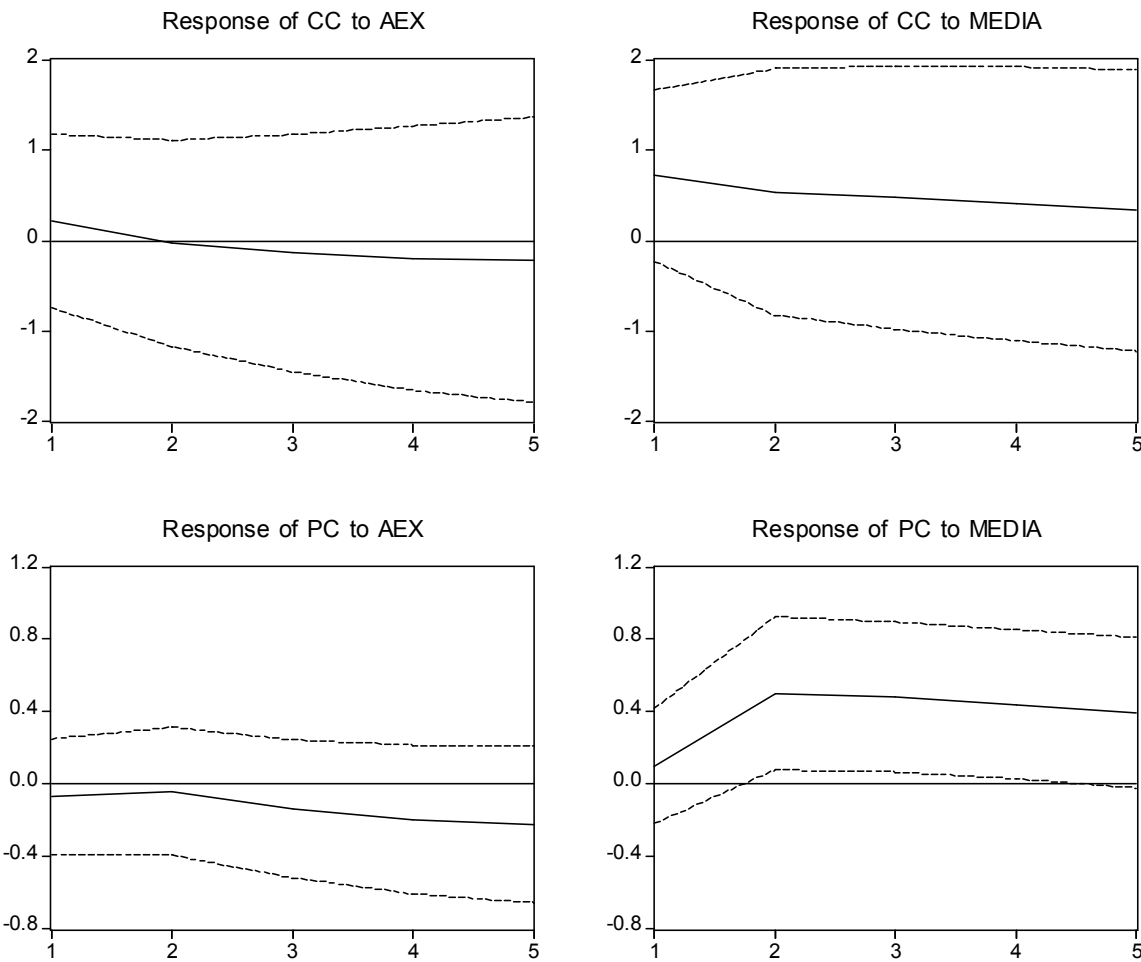
Response to Cholesky One S.D. Innovations ± 2 S.E.

Figure 3 –Response of consumer confidence (CC) and producer confidence (PC) of a one standard deviation shock of stock market index (AEX) and MEDIA

As is clear from figure 3, including the AEX makes no noticeable difference in terms of impulse-response analyses. *MEDIA* continues to have a short-run significant impact on consumer confidence, but does not influence producer confidence in the short run. In the long run, however, *MEDIA* is only related to producer confidence and not to consumer confidence. The stock market index, AEX, does not have a significant impact on both consumer- and producer confidence. The short-term effect of Media confirms our hypothesis with respect to the magnifying effect of Media. The long-term effect seems inconsistent with the hypothesis. However, it can be expected that in the longer run MEDIA affects consumer spending and thus also PP.

5. CONCLUSION AND EVALUATION

Competition forces newspapers to write memorable stories. One way of writing memorable stories is to spin the facts. Once such spinned stories get stuck in the minds of readers, it might be expected that the opinion of readers on the state of the economy is affected by such stories: sentiments about actual changes in the economy are magnified by newspaper reports. Our hypothesis is as follows: consumer confidence is not only affected by the actual state of the economy, but also by spin. By using a VAR-model we are able to separate these effects from each other.

We have found some evidence for spin bias in Dutch newspapers' articles on the state of the economy in the period 1998 until 2003. In line with this hypothesis consumer confidence is more volatile than producer confidence. This is, however, a rather weak test. The higher volatility of consumer confidence may be caused by other factors than the existence of spin bias.

Subsequently, we estimated a VAR system with producer confidence, consumer confidence and media as variables. On the basis of this system we conducted impulse-response analyses with changes in *MEDIA* being the impulse. Changes in *MEDIA* have a significant, but short-lived effect on consumer confidence and no immediate effect on producer confidence. This is consistent with our hypothesis of spin bias, since such bias is not expected to have an impact on producer confidence, because the latter is only composed of objective variables.

Finally, adding a stock market index to our VAR does not change the conclusions about the impact of *MEDIA* on producer and producer confidence.

As always there is room for further research. We found evidence for a magnifying effect of *MEDIA* on consumer confidence. Consistent with our hypothesis, we take this as evidence for the existence of spin. However, this does not rule out other possible explanations of this effect. For example, the mere fact that a story is written down – even without any spin whatsoever - in a newspaper might have an effect in the minds of readers, compared to stories that are, for example, orally distributed (although the selection of stories can in itself be an element of spin). Furthermore, whether or not stories contain spin could be analysed in a different manner. For example, a text analysis of a specific newspaper story compared to actual facts of that story could reveal exaggeration of the facts. The disadvantage of such a

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3 method is that it is a story-by-story approach that cannot easily be generalized. Finally, we
4 only examined newspapers. Is the effect we find special for newspapers only, or does it also
5 hold for other media, like radio or TV reporting? These qualifications are all very much topics
6 for future research.
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For Peer Review

APPENDIX

***MEDIA* - Monthly data for the period 1998-2002.**

PERIOD	<i>MEDIA</i>	PERIOD	<i>MEDIA</i>
1998:01	3.300000	2000:07	3.100000
1998:02	3.450000	2000:08	2.550000
1998:03	3.650000	2000:09	2.800000
1998:04	3.000000	2000:10	3.000000
1998:05	3.650000	2000:11	2.500000
1998:06	3.350000	2000:12	2.450000
1998:07	3.200000	2001:01	2.350000
1998:08	2.700000	2001:02	2.600000
1998:09	2.500000	2001:03	2.950000
1998:10	1.550000	2001:04	2.150000
1998:11	3.100000	2001:05	2.500000
1998:12	2.950000	2001:06	2.000000
1999:01	3.650000	2001:07	2.400000
1999:02	2.800000	2001:08	2.650000
1999:03	3.550000	2001:09	2.200000
1999:04	3.000000	2001:10	2.400000
1999:05	3.750000	2001:11	2.050000
1999:06	2.700000	2001:12	1.850000
1999:07	3.250000	2002:01	2.950000
1999:08	3.150000	2002:02	3.100000
1999:09	3.400000	2002:03	2.350000
1999:10	2.650000	2002:04	2.450000
1999:11	2.900000	2002:05	2.000000
1999:12	3.200000	2002:06	1.550000
2000:01	4.050000	2002:07	2.850000
2000:02	3.400000	2002:08	2.100000
2000:03	2.950000	2002:09	2.850000
2000:04	2.900000	2002:10	2.650000
2000:05	2.900000	2002:11	2.200000
2000:06	3.300000	2002:12	2.700000

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