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Stability of risk attitudes and media coverage of economic news

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ABSTRACT

This paper investigates the impact of exogenous changes in the economic environment on individuals' risk attitudes. We combine data on media coverage of economic news with information on the self-stated willingness to take risks from the German Socioeconomic Panel Study. The average daily frequency of economic news reports is measured for different time frames preceding the date of the risk attitude elicitation. We find that while a short term increase in good news is positively related to the willingness to take risks, the relation is negative if we consider a long term increase. An increase in negative economic news coverage is negatively related to individuals' willingness to take risks, irrespective of the time frame. A positive (negative) correlation between bad (good) news coverage and individuals' worries about the economic state suggests that changes in risk perception may partly mediate the relation between news coverage and risk attitudes.

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1. Introduction

In economic theory it is often assumed that risk preferences are stable personal characteristics. Many empirical studies however find evidence for within-individual variation in risk attitudes¹ over time and show that changes in risk attitudes are related to changes in personal economic circumstances or demographics (see e.g. Andersen et al., 2008, Cho et al., 2013, Jung and Treibich, 2015) and changes in the macroeconomic environment (e.g. Bucciol and Miniaci, 2018, Sahm, 2012). The latter are of particular interest for investigating the systematic variation in risk attitudes, since in contrast to observable personal changes they are likely to be exogenous. Macroeconomic indexes, however, often capture long time spans (e.g. GDP). If their measurement is provided only in a yearly or quarterly fashion, matching them to individual data that is measured throughout the year results in either an additional lag of up to a complete period for some individuals, or leads to events being captured that have not yet taken place at the moment of the interview. Additionally, even measures that are more fine-tuned (e.g. stock market indexes) are suboptimal in that they are often relevant only to a selective subgroup of the society or generally hard to grasp. Therefore, individuals may not experience all changes in the macroeconomic environment that are captured by those measures.

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¹ We distinguish between latent risk preferences and measured risk preferences, which we refer to as risk attitudes.

Utilizing data on media coverage to create a precise measure for the perceived economic environment of an individual allows to overcome the timing and information problems of the conventional measures. The media reaches a broad audience and information on relevant events are promptly broadcasted.²

The focus of this paper is on the link between changes in media coverage of economic news and within person changes in self-stated risk attitudes. More broadly, we investigate whether changes in the economic environment can explain systematic changes in individual risk attitudes. Economic news are not only a particularly interesting and diverse measure for the perceived economic environment, but they also allow to make a distinction between long lasting and short term changes in the experienced environment. This allows to shed some light on the mechanism that mediates the relation between risk attitudes and news coverage. The media continuously relays information about economic events in a multitude of areas. In contrast to changes in news coverage of other subject areas that are difficult to evaluate or do not attract broad interest, changes in the economy affect virtually everyone. An increase in the amount of bad economic news can be interpreted as a worsening of the economic situation that is experienced by the individuals. While several studies focus on how risk attitudes are affected by rare extreme events that are negative by nature like the financial crisis (e.g. Guiso et al., 2013), natural catastrophes (e.g. Hanaoka et al., 2017) or the loss of a child (e.g. Bucciol and Zarrì, 2015), economic news have the advantages that they allow to capture more than one event, they can have a negative as well as positive valuation and individuals are continuously exposed to them.

In contrast to conventional economic indexes, news thus capture more detailed information about the economy that is conveyed on a daily base. They therefore constitute a continuous and overarching measure for perceived changes in the economy. Empirical evidence suggests that the media may influence individuals' formation of risk beliefs (see Wahlberg and Sjöberg, 2000). In an economic context Garz (2012), e.g., finds that individuals' perception of job security decreases in years with an increase of news coverage about labor market policy.³ Thus, following the news allows individuals to infer and regularly update their beliefs about own risk exposure, e.g. concerning income and unemployment.

Previous studies investigate the determinants of risk attitudes using cross sectional data. They show that the spectrum of how people deal with risk is broad and that considerable heterogeneity in risk attitudes among individuals exists (see e.g. Barsky et al., 1997, or Dohmen et al., 2011). Individual attributes are frequently investigated as influencing factors. Empirically confirmed findings are that the willingness to take risks is negatively correlated with being female and positively with income, wealth, height and education (see Donkers et al., 2001, Hartog et al., 2002, Dohmen et al., 2011).

Personal experience is another factor identified to play a role for individuals' risk attitudes. Malmendier and Nagel (2011) find that individuals who experienced periods of low stock market returns report a lower willingness to take financial risk, are less likely to participate in the stock market and have lower expectations about stock market returns. Their estimations show that the influence of recent experiences is stronger than the influence of distant experiences.

Due to their cross-sectional nature, the preceding studies are however not suited to study within-individual variation in risk attitudes over time. A few recent studies apply panel data analysis to investigate what factors are related to this variation. One line of research investigates the effects of changes in individuals' personal circumstances. Longitudinal surveys from several countries have been used to study the relation between risk attitudes and income, unemployment, self-employment and health (Cho et al., 2013; Hetschko and Preuss, 2015; Jung and Treibich, 2015; Brachert et al., 2017).

There are also a few papers that investigate how risk attitudes are related to changes in the general economic conditions. Using different risk attitude measures of the Dutch Household Survey, Bucciol and Miniaci (2018) find that individuals are generally more willing to take risk in periods of economic growth and less so in periods of recessions. Dohmen et al. (2016) investigate the impact of the economic development as measured by yearly GDP on the willingness to take risks in the Ukraine and Germany. They find a significant positive correlation between the regional GDP growth rate and the self-stated willingness to take risks in both countries. In Sahm (2012) economic conditions are measured on a monthly base by the Index of Consumer Sentiment which is then combined with the risk attitude measure from the Health and Retirement Study. Risk tolerance is found to be significantly positively related to the Index of Consumer Sentiment.

For our analysis we combine daily economic news data from the media research institute Media Tenor with survey data from seven waves of the German Socioeconomic Panel (SOEP) on individuals' self-stated willingness to take risks. For each recorded news item we have information on its valuation, as it is coded as being either good, bad or ambiguous news. The precision of the media data allows us to tailor the news measures to the date of the SOEP interview on which the risk attitudes are assessed. Forming a moving average of daily economic news reports in the year, the month, the week and the 2 days preceding the risk attitude elicitation we investigate whether short and long lasting exogenous changes have effects on individuals' self-stated risk attitudes.

Our analysis reveals that a part of the within-individual variation in risk attitudes over time can be explained by changes in media coverage of economic news. Making use of the panel structure of our data we estimate the impact of bad and good economic news on the willingness to take risks. We find that a short term increase in good news is associated with a higher willingness to take risks, while a long term increase is associated with a lower willingness to take risks. Negative news are associated with lower willingness to take risks irrespective of the time frame. We further find that negative (positive) news

² While it is unlikely that individual risk attitudes have an impact on the national news, we can not completely exclude that a third, independent event (such as a sporting event) leads to an aggregate change of the risk attitudes in the population, which influences the real economy and by that also the news (see (Dohmen et al., 2006) for such an example).

³ Generally, it is found that the media has an influence on several social and economic outcomes (for an overview see DellaVigna and La Ferrara, 2015).

coverage is related to an increase (decrease) in perceived risk, which we proxy by individuals' worries about job security, the economic development and the economic situation. Comparing and using the long-term news measure in combination with the conventional GDP and the German stock market index (DAX) measures for macroeconomic changes to explain variation in risk attitudes yields that news explain changes in risk attitudes better and that they have additional explanatory power on top of the other measures. These findings speak for the precision of the news data in capturing changes in the economic environment that are in fact experienced.

The remainder of this paper is structured as follows. Section 2 introduces our data and explains the choice of the main variables. In Section 3 we introduce the empirical strategy and discuss the results. Section 4 concludes the paper.

2. Data description

To address the question whether within-individual variation of risk attitudes is systematically related to economic news coverage, we combine information from the German Socio-Economic Panel (SOEP)⁴ and information on daily economic news coverage provided by the media research institute Media Tenor.

2.1. Risk attitudes and risk perception

The SOEP is a large longitudinal representative panel data set (for details see Schupp and Wagner, 2002, Wagner et al., 1993 and Wagner et al., 2007). In the year 2004 a survey question on risk attitudes has been introduced and was part of the survey in 7 waves during the time interval 2004–2012.⁵ The respondents are asked to assess their willingness to take risks on a 11 point scale, from 'not at all willing to take risks' to 'very willing to take risks'. The survey question is experimentally validated and found to be a good predictor for a number of risky decisions (see Dohmen et al., 2011). For the years that are included in our analysis, the standard deviation of self-stated risk attitudes across individuals amounts to 2.29 while the within-individual standard deviation is 1.41. Given the relatively high within-individual variation, an investigation of whether changes are systematic or pure measurement error suggests itself.⁶

In order to obtain more insights about the mechanism that determines the relation between news coverage and risk attitudes, we make use of an item in the SOEP that elicits to what extent respondents are concerned about various issues. The areas that are relevant for our analysis are the respondent's sentiments on their own economic situation and job security as well as the general economic development. The respondents answer on a three points Likert scale with the choices "not concerned at all", "somewhat concerned" or "very concerned". We use these questions on worries as proxies for individuals' risk perception in the different areas.⁷

The SOEP further contains a variety of personal and household information that previous studies considered to be related to risk attitudes. In our analysis we include control variables for whether a child below age sixteen is part of the household (e.g. Dohmen et al., 2011, Dohmen et al., 2016), the employment status (e.g. Sahm, 2012), household income (adjusted by the consumer price index (CPI) and the size of the household) (e.g. Hartog et al., 2002), marriage status (e.g. Dohmen et al., 2011, Dohmen et al., 2016) and health status (e.g. Sahm, 2012).⁸ Tables A.2 and A.3 in the appendix provide detailed information on the data that we use for our main analysis, as well as additional background information that is constant over time (such as gender or year of birth) and that can therefore only enter fixed effects regressions through interactions.

2.2. News coverage

The news coverage data are provided by the media research institute Media Tenor. The institute analyzes TV news reports as well as newspaper and magazine articles on a diverse range of topics by applying media content analysis. The evaluation is done by professionally trained analysts who identify and categorize each report according to a set of criteria, among others its content and valuation.⁹

⁴ German Socio-Economic Panel (SOEP), data of the years 1984–2012, version 29, doi: 10.5684/soep.v29.

⁵ The risk question was also asked in the years following 2012, but since we have media data only until 2012 we do not consider information of later waves of the SOEP.

⁶ Analyzing the effect of news coverage on risk attitudes in domains that are unrelated to an economic context is an interesting next step for future research. Respondents of the SOEP were asked about their domain specific risk attitudes in the years 2004 and 2009. The questions apply the same wording and scale as the general risk question, but are more specific with respect to the risk taking context. The domain-specific analysis is currently not feasible yet with the SOEP data, as two waves are not sufficient to draw meaningful conclusions. The correlation between the general risk attitude measure and the measures in the context of financial risk taking and risk taking in the job are highly correlated with 0.4971 and 0.5661, respectively.

⁷ Percentage component bar diagrams for both, individuals' risk attitudes and their risk perception, are displayed in Tables S3 and S4 in the supplementary material.

⁸ The data appendix, Section A.1, provides more detailed information on the construction of control variables, such as the income variable. It additionally contains information on the concept and the construction of the personality measures, the Big 5 variables.

⁹ See <http://www.mediatenor.com> for more information on the data provider.

Our analysis focuses on news coverage of economic topics in the following leading German newscasts and newspapers: ARD Tagesschau, ARD Tagesthemen, RTL Aktuell, ZDF heute, ZDF heute journal and Bild-Zeitung.¹⁰ According to Zubayr and Gerhard (2017) the market shares of the different newscasts were 34.6%, 11.5%, 14.3%, 17.1% and 14.4% in 2016 respectively, including all television transmitters that broadcast the particular newscast. Furthermore, the authors point out that the average audience reach is pretty stable over time despite the increased number of alternative news sources especially in the internet. Similarly, the audience reach of the Bild-Zeitung was 14.3% according to ma 2016 Pressemedien II.¹¹ All news sources have an online portal also that allows to access the news content throughout the day.

We make use of the information on the daily number of news reports in the topic group ‘economic situation/economic policies’, to which we will from now on refer to as ‘economics’.¹² The media data set covers daily reports between January 1, 2003 and August 31, 2012. Media Tenor further provides information on the valuation of the report. The valuation indicates whether the discussed economic topic is in a bad, good or in an ambiguous context. A judgmental representation (bad, good) is existent if the topic is mentioned (i) in an implicit positive or negative context (e.g. an increase in the unemployment rate, the financial loss of a company, the election loss of a party) or (ii) if circumstances are reported in words that have a clear positive or negative meaning according to general understanding (e.g. good, excellent, fatal, hopeless). Only clearly identifiable valuations are coded as bad or good. If both, good and bad valuations, coexist, the overall valuation depends on which of the two predominates. If they balance out or if the news do not have a clear judgment the report is coded as ambiguous.

2.3. Combined data set

While the news coverage information is available on a daily basis, we also know the date of the SOEP interview for each participant. We can thus link the two data sets on the exact date. We construct moving averages of the daily number of economic news reports during the year (364 days), the month (28 days), the week (7 days) and the 2 days preceding the day of the SOEP interview and conduct our analysis for each of the different sets of news measures. We can thus investigate long-term developments in economic news as well as immediate changes that occurred just before the risk attitude elicitation. Table A.5 in Appendix A.2 provides information on observation numbers, means and standard deviations of all measures for negative, ambiguous and positive news in our regression sample. Overall, the average number of good news reports is relatively small. For the yearly news measure the average of good news reports is 2.58, whereas ambiguous and bad news are more frequent, with an average daily number of 4.71 and 4.44 news reports respectively. Also the variance of good news reports is lower with 0.48 than those of ambiguous and negative reports (0.63 and 0.78, respectively). For the monthly news measure qualitatively the same differences are observed. However, the variance of ambiguous and bad news is even higher than for the yearly news measures (1.02 and 1.11 respectively), while the variance of good news is very similar for both measures (0.51 for the yearly news measure). In 2009 with the beginning of the financial crisis, the average bad economic news coverage increased. The number of bad news is high in that particular year with a monthly average of 6.15 reports per day. Also the yearly measure has the highest averages in 2009 and 2010.

Fig. 1 shows the variation in the number of economic news reports over time. The two graphs on the top row provide information on the yearly news measures. The left panel displays aggregate news coverage and the right panel divides the news according to their valuation. The second row shows graphs for the monthly news measures.¹³ The yearly (monthly) news measure has an average aggregated news coverage of approximately 9.82 (9.89) reports per day and a standard deviation of 1.24 (2.05).¹⁴ Fig. 1 suggests that changes in bad news coverage co-evolve with changes in ambiguous news coverage. Indeed we find that the two measures are highly correlated (with correlation coefficients of 0.54 for yearly and 0.45 for monthly news).¹⁵ Economic events are likely to be followed by a variety of news that give general information related to the event. Bad news about the Volkswagen emission scandal e.g. may be followed by the news that a CEO of the company is fired. While the latter would be ambiguous news, individuals may memorize it as a bad news report since they relate it to the negative main story. Given the high relative proportion of bad news, we can assume that a predominant fraction of them is in fact associated with negative events. Further, psychological research suggests that negative information is often processed more extensively and memorized better as compared to good information (e.g., Baumeister et al., 2001).

¹⁰ For more detailed information on the different news platforms see their respective websites: <http://intern.tagesschau.de/sendungen/tagesschau/>; <http://intern.tagesschau.de/sendungen/tagesthemen/>; <http://www.rtl.de/cms/news/rtl-aktuell.html>; <http://www.heute.de/>; <http://www.zdf.de/heute-journal/heute-journal-5989562.html>; <http://www.bild.de/>. We exclude the news coverage data of the weekly journals Focus and Spiegel as the exact day on which individuals are exposed to the journal content is unknown.

¹¹ <https://www.ma-reichweiten.de/>, Accessed on August 25, 2017.

¹² Each news report is further classified into subtopics of economics. One report can be classified as several of the subtopics, but for each report one main topic is defined. In order to avoid a biased representation on news coverage due to multiple classification we focus on those observations that are evaluated to be the main topic of the underlying news report. An overview of all subtopics in economics and the according daily average number of reports and their valuation are reported in Table A.1 in the appendix.

¹³ For the graphs for the week and 2 days measures see Fig. S1 in the supplementary material.

¹⁴ These values are based on the complete Media Tenor data set for the time period 2003 to 2012, as is shown in Fig. 1. If we take our regression sample instead (as reported in Table A.5) where some days are represented several times and others not at all, we get a daily average of 10.11 (9.90) news items with a standard deviation of 1.20 (2.04).

¹⁵ In comparison the correlation between ambiguous and good news are -0.03 for yearly and 0.04 for monthly news.

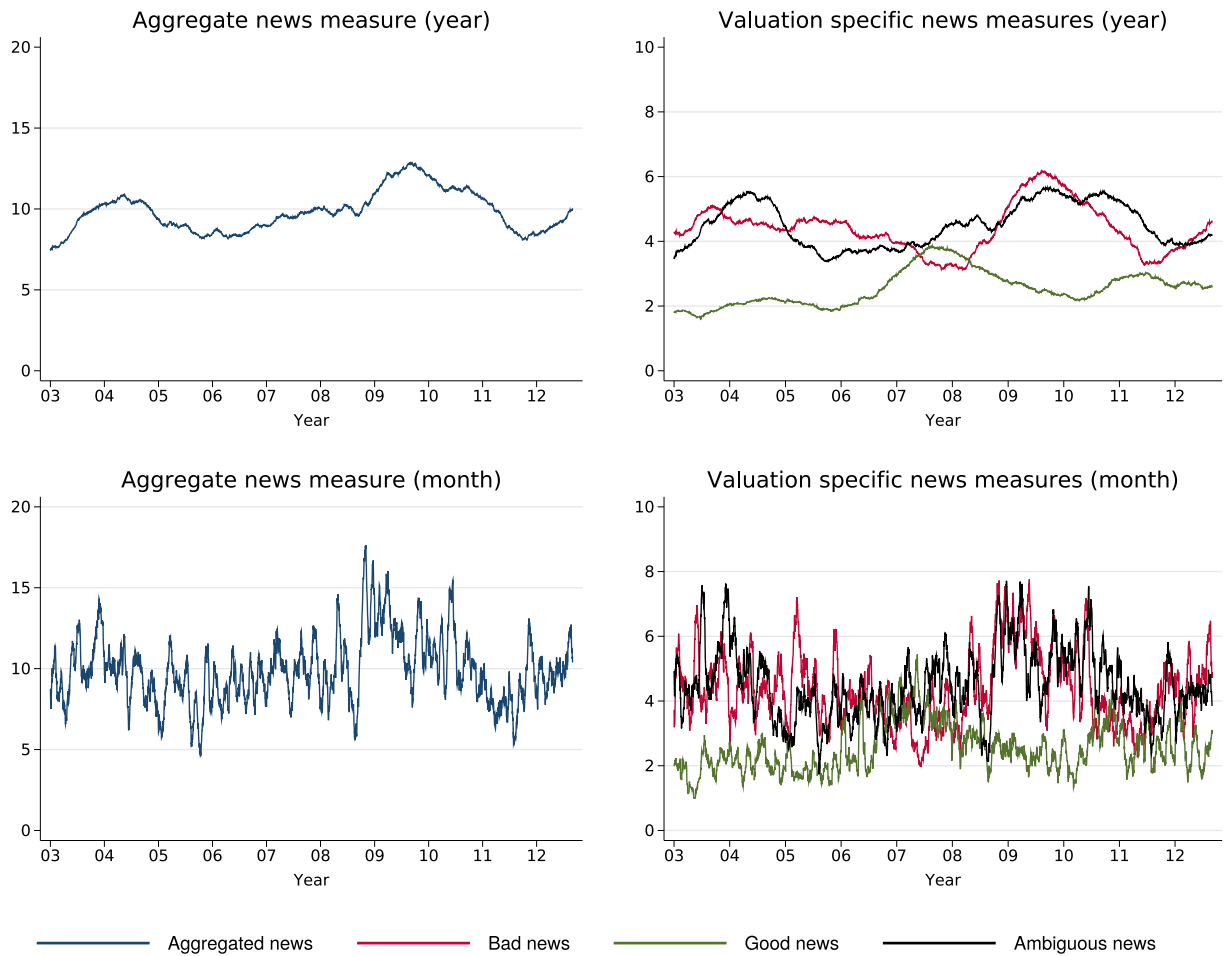


Fig. 1. News - year measure and month measure. Note: Daily number of news reports averaged over two different time-spans. Data for the years 2003–2012 from Media Tenor.

Ambiguous news reports in our data set may include both, good and bad news. If bad news are more salient, the news reports may in fact be perceived as predominantly bad, even if valuations balance out. We therefore merge ambiguous and bad news into one bad news measure. Note, however, that the following results also hold if the two measures are separated.

3. Results

3.1. News coverage and risk attitudes

In our main analysis we investigate the impact of good and bad news ($\text{News}_{t^*}^T$) on the development of individuals' risk attitudes (risk_{it}). The subscript t captures the year of the survey and the subscript t^* stands for the more exact time index, the year and day of the interview. We consider four different time horizons, denoted by the superscript T , over which the news are aggregated: one year (Y), one month (M), one week (W) and two days (D). The vector X_{it} includes control variables, that is information on personal changes in life (household composition, marital status, employment status, household income and subjective health), as well as information on the timing of the interview (indicators for the year and the month of the SOEP interview). We estimate the FE model described in Eq. (1), where u_i denotes an individual fixed effect and ϵ_{it} stands for a time variant idiosyncratic error term.¹⁶

$$\text{risk}_{it} = \alpha + \beta' \text{News}_{t^*}^T + \delta' X_{it} + u_i + \epsilon_{it} \quad \text{for } T = Y, M, W, D \quad (1)$$

Table 1
Risk attitudes – news on willingness to take risks (FE).

News measure variables	(1) Risk	(2) Year risk	(3) Month risk	(4) Week risk	(5) 2 days risk
Bad news		−0.256*** (0.004)	−0.136*** (0.003)	−0.079*** (0.002)	−0.044*** (0.001)
Good news		−0.375*** (0.013)	−0.009 (0.011)	0.009 (0.006)	0.024*** (0.004)
1 if children in HH	−0.052* (0.028)	−0.058** (0.028)	−0.057** (0.028)	−0.056** (0.028)	−0.051* (0.028)
1 if unemployed	0.043 (0.035)	0.034 (0.034)	0.048 (0.034)	0.047 (0.035)	0.049 (0.035)
Lag ln HH inc	0.028 (0.024)	−0.005 (0.024)	−0.000 (0.024)	0.009 (0.024)	0.015 (0.024)
1 if married	−0.096** (0.042)	−0.107** (0.042)	−0.102** (0.042)	−0.096** (0.042)	−0.096** (0.042)
1 if divorced	0.015 (0.068)	0.005 (0.067)	0.010 (0.067)	0.015 (0.067)	0.019 (0.067)
Self-stated health	0.096*** (0.010)	0.095*** (0.010)	0.094*** (0.010)	0.095*** (0.010)	0.096*** (0.010)
Month	−0.000 (0.005)	0.001 (0.005)	0.001 (0.005)	−0.002 (0.005)	−0.003 (0.005)
Year	−0.028*** (0.002)	−0.007*** (0.003)	−0.035*** (0.002)	−0.034*** (0.002)	−0.032*** (0.002)
Constant	60.023*** (4.746)	21.805*** (5.045)	75.242*** (4.790)	72.166*** (4.771)	69.163*** (4.767)
Observations	120,160	120,160	120,160	120,160	120,160
Number of pid	30,855	30,855	30,855	30,855	30,855
Within R-squared	0.004	0.041	0.032	0.021	0.013

Note: Fixed effects regressions. Robust standard errors in parentheses, * significant at 10%; **significant at 5%; ***significant at 1%.

Table 1 summarizes the estimation results.¹⁷ In column (1) we regress the risk attitude measure only on personal changes to get a baseline for understanding how much additional within-individual variance can be explained by adding changes in news coverage.

We find that adults become significantly less willing to take risks if there are children below age sixteen living in the same household. This result can either mean that adults become more willing to take risks when a child gets older and passes the sixteen years threshold or leaves the household at young age or it could mean that they become less willing to take risks when a child is born. Also when getting married individuals are less willing to take risks than if they are not married. We do not find a significant relation for changes in and out of unemployment or in household income and individual risk attitudes. Finally, changes in reported health are significantly related to within-individual changes in risk attitudes, with better health being associated with a higher willingness to take risks. Note that many of the personal changes that we control for are endogenous as they are either directly chosen by the individual (e.g. getting married) or influenced by earlier decisions of the individual (e.g. those who choose to work on a job with a higher unemployment risk are more likely to become unemployed). Thus, the coefficients should not be interpreted in any way other than simple correlations.

The control for the timing of the interview within a wave is to deal with heterogeneity in individuals' SOEP interview availability. Individuals who are very busy could be harder to reach by the interviewer and thus be interviewed later in the calendar year. The negative year trend captures age effects.¹⁸ The sign and the approximate size of the personal change coefficients are robust to the inclusion of the different news variables.

In column (2) we add the year news measures for bad and good reports to the analysis, in column (3) the month measures, in column (4) the one week measures and in column (5) the 2 days measures. We find that an increase in the average number of bad economic news reports is negatively related to the willingness to take risks, irrespective of the considered time frame. An increase in the average number of good news in the short term is positively related to the willingness to take risks, while the effect vanishes and eventually turns negative the longer the time frame. A possible explanation for this result could be that in the long run the positive nature of news loses salience and that the association with a previous negative event predominates individuals' memory. Positive events that took place a few days before the risk attitude elicitation may induce a momentary good mood. This short term mood effect, however, may vanish the more far away the event

¹⁶ The Hausman test reveals that using fixed effects is the appropriate analytical approach rather than using random effects, irrespective of the time frame of the news measures.

¹⁷ Using an ordered response model does not qualitatively change our results. Table S6 in the supplementary material displays the results based on an ordered logit model with fixed effects, using the BUC method proposed in Baetschmann et al. (2015).

¹⁸ See Dohmen et al. (2017) for a discussion of age and cohort effects. They show that individuals do become more risk averse over time.

lies in the past. Naturally, the larger the time frame that the positive news measure captures, the more weight is attached to past positive events. For those events, however, individuals may mainly remember the often negative context in which the report was embedded (e.g. from a report on a decrease in the unemployment rate individuals keep the awareness that there is unemployment).

Our main results are supported by an additional analysis that takes into account the relative amount of good and bad news. We interact good and bad news to allow for nonlinearities in the composition of news. Fig. A.2 in the appendix illustrates the interaction effects of good and bad news. The respective regression outputs are available in Table S1 in the supplementary material. The interaction effect between the yearly news measures is negative and significant, while both news measures have positive coefficients. Within the range of news that we observe, an additional news item is always negatively related to the willingness to take risks, regardless of its valuation. For more temporary changes in news the direction of the effect does depend on the valuation as long as there are relatively few negative news: While negative news are always negatively related to willingness to take risks, the effect of an additional positive news item is positive if the amount of negative news items is low, but turns negative after a threshold value of negative news – e.g. more than 15 negative items over the span of the last two days – is surpassed.

Several empirical studies suggest that risk attitudes are influenced by individuals' emotional state the moment the attitudes are assessed.¹⁹ In our context bad (good) economic news may trigger (alleviate) immediate feelings of anxiety or fear and in turn influence individuals' risk attitudes. While we do observe significant relations between the short term news measures and the willingness to take risks as depicted in Table 1, we also observe that the news measures for the longer time spans perform considerably better in terms of explained variance. The longer the considered time span, the higher the within R squared of the model (0.013 using the 2 days measure versus 0.041 using the year measure). While we can not disentangle to what extent our findings are driven by short and long term changes in individuals' emotional state or by changes in individuals' economic risk perception, we conclude that both, temporary and over time accumulated changes in news affect the willingness to take risks. These effects constitute a small but systematic part of the variance in individual risk attitudes over time. Our results are robust to the inclusion of a dummy variable for 2009, the year of the financial crisis, as well as the exclusion of that year.

3.2. Risk perception

In this section we further investigate how individuals' self-stated risk perception is influenced by news coverage. We use yearly measures of individuals' worries about the economic development, their own economic situation and their job security as proxies for perceived economic risk exposure. The scale of the worries questions ranges from 1 “not worried at all” to 3 “very worried”. Given the ordinal nature of the data we apply an ordered logit model with fixed effects to estimate how changes in economic news coverage are related to within-individual changes in their worries.²⁰ Table 2 shows the regressions of the three worries on our news measures separately for all different time frames and controlling for personal and time variables.

We find that irrespective of the time frame, bad news are positively related to all three types of worries. That means the more bad news individuals encounter, the more worried they are about the economy in general and about their own economic situation respectively. The relations between good news and economic worries are negative, i.e. more good news relate to less worries. While for the year and the 2 days measure the relation is statistically significant for all types of worries, for the month and the week news measure it is only significant for the worries about the economic development.

Table A.7 in the appendix shows the full regression table for the year measure. Concerning the personal changes we find that robustly over all regression specifications, becoming unemployed, a decrease in household income and a decrease in subjective health are related to an increase in individuals' worries. Further, being in a household with a child below the age of sixteen is positively related with an increase in the worries about the own economic situation. With the exception of a few coefficients that loose significance, the results are robust to substituting the year news measures with the measures for the shorter time frames (see Tables A.8–A.10).

The results presented in this section indicate that economic news do indeed influence individuals' self-stated worries and thus their risk perceptions. Additionally, we find that all three worries are significantly negatively related to the willingness to take risks, controlling for personal changes and the year and month of the interview (see Table A.6 in the appendix). Our results thus suggest that economic risk perception could be one possible channel through which economic news influence

¹⁹ Raghunathan and Pham (1999) and Guiso et al. (2013) show in lab experiments that treatments that induce an anxious mood reduce the willingness to take risk of the participants. Cohn et al. (2015) conduct an experiment in which they prime subjects with a financial bust versus a boom scenario. They find a significantly lower willingness to take risks for the negatively primed participants in a subsequent experiment and identify fear as the key channel through which this relation is established. Lerner and Keltner (2000, 2001) find that dispositional fear, which predicts state fear, is also positively related to the risk assessment of causes of death and negatively related to risk taking behavior when deciding about the abatement of a deadly disease. Furthermore, several mood proxies like e.g. the weather (Kliger and Levy, 2003) or the end of popular TV series (Lepori, 2015), that come along with an immediate emotional reaction are found to be related to risk taking behavior.

²⁰ Baetschmann et al. (2015) discuss the incidental parameters problem in maximum likelihood models with individual fixed effects and suggest consistent and efficient estimators for ordered logit models. We apply the “blow up and cluster” (BUC) approach that they introduce.

Table 2
Risk perception – news on worries (FE).

Variables	(1) W: econdev	(2) W: ownecon	(3) W: jobsecurity
Year: bad news	0.192*** (0.006)	0.044*** (0.006)	0.061*** (0.009)
Year: good news	−0.769*** (0.015)	−0.115*** (0.015)	−0.125*** (0.022)
Pseudo R-squared	0.116	0.026	0.051
Month: bad news	0.180*** (0.004)	0.060*** (0.004)	0.071*** (0.005)
Month: good news	−0.460*** (0.010)	−0.004 (0.009)	−0.016 (0.013)
Pseudo R-squared	0.105	0.026	0.051
Week: bad news	0.112*** (0.003)	0.033*** (0.003)	0.039*** (0.004)
Week: good news	−0.272*** (0.007)	−0.003 (0.007)	−0.014 (0.009)
Pseudo R-squared	0.086	0.025	0.050
2 days: bad news	0.070*** (0.002)	0.017*** (0.002)	0.020*** (0.003)
2 days: good news	−0.159*** (0.004)	−0.012** (0.004)	−0.020*** (0.006)
Pseudo R-squared	0.073	0.024	0.049
Observations	126,840	118,627	60,093
Number of pid	18,561	17,482	9976

Note: Ordered logit with fixed effects, using the BUC method proposed in Baetschmann et al. (2015). Column(1): Worries about the economic development; Column(2): Worries about the own economic situation; Column(3) Worries about jobsecurity. We control for information on personal changes in life, i.e. household composition, marital status, employment status, household income and subjective health of the individual, as well as the year and month of the interview. Standard errors in parentheses, * significant at 10%; **significant at 5%; ***significant at 1%.

individuals' willingness to take risks. The negative relation between the one year good news measure and the worries, however, suggests that also other mechanisms are at work.²¹

3.3. Explanatory value of news

We now conduct a horse race between conventional measures of exogenous economic changes, i.e. the national and regional gross domestic product (GDP) and the German stock market index (DAX), and our news measures. The GDP only allows to relate coarse quarterly or yearly averages to the risk attitude measure. The DAX captures a smaller part of the economic development than the GDP, but is available on a daily base except for the weekends.²² In the following analysis we use the news measures that are defined over a year, as they best explain changes over time, and compare them to similar measures that are based on GDP and DAX data.

Table 3 is informative with respect to the added value that news have on top of the conventional value. In all four columns we control for personal changes, year and month of the interview, as well as for personal fixed effects. GDP growth (y,r) denotes the yearly regional GDP growth to the year before the year of the risk elicitation. GDP growth (q,n) denotes the moving averages in the quarterly national GDP growth up to the quarter before the timing of the SOEP interview.²³ DAX closing captures the closing prices during the year before the risk attitude elicitation scaled in thousands of Euros. The variable “years: news” stands for the average of aggregate news reports per day over the past year. Table A.4 in the Appendix provides means and standard deviations for the different measures.

Column (1) shows the regression of the general risk attitude on the news measures. Columns (2) and (3) instead include one of the two GDP growth measures. An increase in those measures relates to an increase in the willingness to take risk, meaning that in times of economic upswings people are more willing to take risks. Likewise, column (4) reports the regression results for the DAX measure, which is also positively related to the willingness to take risks. These effects are in line with the interpretation of our media coverage data. While the within R^2 for the models that include one of the

²¹ The discrepancy in the long-term effects of positive news between the willingness to take risks and worries could result from subjects being more likely to recall past positive events when directly asked about their economic worries, as compared to what they unconsciously recall when they indicate their willingness to take risks.

²² We use statistics on the changes in GDP for all German regions provided by the Federal and State Statistical Offices and adjust GDP for inflation (see Appendix A.3 for further details). The data for the German stock market index DAX are provided by the online platform Yahoo Finance Germany.

²³ Table S2 in the supplementary material shows that quarterly GDP growth is negatively (positively) related to bad (good) economic news coverage.

Table 3

Risk attitude – news and GDP on willingness to take risks (FE).

Variables	(1) Risk	(2) Risk	(3) Risk	(4) Risk	(5) Risk
Year: bad news	−0.256*** (0.004)				−0.220*** (0.006)
Year: good news	−0.375*** (0.013)				−0.148*** (0.029)
GDP growth (y,r)		0.070*** (0.002)			
GDP growth (q,n)			0.273*** (0.006)		0.141*** (0.006)
DAX closing (y)				0.058*** (0.006)	−0.102*** (0.016)
Constant	21.805*** (5.045)	49.172*** (4.745)	56.108*** (4.733)	96.958*** (5.872)	−11.760 (7.601)
Observations	120,160	120,160	120,160	120,160	120,160
Number of pid	30,855	30,855	30,855	30,855	30,855
Within R-squared	0.041	0.024	0.030	0.005	0.046

Note: Fixed effects regressions. We control for information on personal changes in life, i.e. household composition, marital status, employment status, household income and subjective health of the individual, as well as the year and month of the interview. Robust standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

conventional measures are between 0.005–0.030, the within *R* squared is highest when the news measure is included with 0.041.²⁴ In column (5) we combine the DAX measure and the more precise GDP growth measure (*q,n*) together with the news measure. The coefficient for the latter is still highly statistically significant which shows that the economic news measure has additional explanatory power.

Our findings may reflect the higher precision of the news measure with respect to timing, captured topics and exposure. The media data allows to adjust the year moving averages of news reports to the date of the SOEP interview. Further, news typically capture more than just information about GDP or DAX price fluctuations, as can be seen in the overview of economic subtopics that is displayed in Table A.1. Relevant changes in the economic situation can therefore be captured in more detail by economic news reports as compared to the conventional financial or macroeconomic measures. Finally, while individuals might not be aware of all the factors which comprise the GDP, they are able to observe all the events that are published or broadcasted in the media. Thus, the news measure does better in capturing what individuals really experience.

While we can not control for actual news consumption, the news sources are sufficiently diverse to assume that people are likely exposed to one of them. Individuals might however consume different types of media and thus receive heterogeneous information. The consumption pattern and at the same time also the strength of individuals' adjustment in risk attitudes to the information they receive may be related to their observable characteristics. In order to investigate differences in the association of news with individuals' risk attitudes we interact the news measures with a range of demographic characteristics as well as personality traits: gender, age, years of education, living in west Germany, the BIG5 personality traits. The results for these regressions can be found in the supplementary material (Tables S2–S5). We find that while there are small differences in the extent to which news and risk attitudes are related by differences in characteristics, the general trend is the same across all different types of individuals. This finding suggests that our main results are robust to heterogeneity in consumption and adjustment.

4. Conclusion

Self-stated risk attitudes vary over time along with the experiences that individuals make. The media captures a – largely exogenous – part of the environment that individuals are exposed to. In this paper we use media data to examine how the within-individual variation of risk attitudes over time relates to long as well as short term changes in the economic environment. Using panel data from the SOEP and the media research institute Media Tenor, we find that self-stated risk attitudes vary systematically with the amount of economic news coverage.

We find that negative news are always associated with lower willingness to take risks, irrespective of the time frame over which the news measure is defined. For good news, however, an increase in coverage in the short run is associated with a higher willingness to take risks, while a long run increase relates to lower willingness to take risks. Our results suggest that in the long run the positive nature of the news recedes into the background, and the news' association with a previous negative event (e.g. crisis) or a negative context (e.g. unemployment) instead influences the willingness to take risks.

Changes in economic news considering the complete year before the risk attitude elicitation are found to be more important for explaining changes in risk attitudes as compared to only recent changes. We further show that an increase in

²⁴ Aggregating the DAX over a shorter time frame leads to a higher predictive power of the DAX. However, with a maximum within *R* squared of 0.031 for a one week span, it still performs worse than the news measure.

negative (positive) news coverage is related to an increase (decrease) in the perceived economic risk, which we proxy by individuals' worries about job security, the economic development and the economic situation. Changes in news are found to be better in explaining changes in risk attitudes than measures that are based on GDP and German stock market index (DAX) data.

Our results show that media coverage of economic news affects individuals' self-stated risk attitudes. While existing evidence suggests that the SOEP risk attitude measure is a reliable predictor of risky decisions (Dohmen et al., 2011), a natural and important next step would be to investigate how our findings translate into actual behavioral changes. Future research will need to clarify whether, e.g., an increase in the exposure to bad news comes along with an increase in the demand for insurance or generally a shift towards the choice of expensive low risk options instead of cheaper high risk options.

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Appendix A. Data appendix

A1. SOEP data

Risk attitudes are measured in 7 waves of the SOEP, in 2004, 2006, 2008, 2009, 2010, 2011 and 2012. The wording of the question is: "How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? – Please tick a box on the scale, where the value 0 means not at all willing to take risks and the value 10 means very willing to take risks."

Our proxy for risk perception, worries, is based on yearly repeated questions in the SOEP about the respondents' concerns. We chose the 3 concerns that are related to economics and that are available for the complete time span of our sample. The wording of the question is: "What is your attitude towards the following areas are you concerned about them?" "General economic development", "Your own economic situation" and "If you are employed: Your job security". The answer is given in 3 options: "Very concerned", "Somewhat concerned" and "Not concerned at all".

Among other control variables we include lagged household income in the main regression. We construct adjusted household income as CPI adjusted, log of the household income, after adjusting it for the household size by dividing the total household income by the square root of the number of household members. We use the CPI provided by the German Federal Statistical Office Destatis; the base year is 2010.

The Big5 personality traits are elicited twice in the SOEP, in 2005 and 2009. The captured personality traits are openness, conscientiousness, extraversion, agreeableness, and neuroticism. The Big Five domains were assessed using the BFI-S psychology questionnaire, a 15-item subset of the NEO-FFI version (see [Gerlitz and Schupp, 2005](#)). For the assessment of each personality trait individuals indicate on a seven-point scale to what extent they agree with three statements. Averaging over the three responses yields the score for the particular trait. For each individual we take the average over time of the available information.

A2. Media tenor data

[Table A.1](#) shows the average number of economic news in the different subtopics, separated by valuation and in aggregation.

A3. GDP

Statistics on the changes in GDP per citizen for all German regions for the years 2003 to 2013 are provided by the Federal and State Statistical Offices. The yearly measure is interlinked and adjusted for inflation. [Fig. A.1](#) shows the GDP change measure for each year between 2003 and 2012 in aggregation for all sixteen regions. Evidently, as with the economic news measures, the harshest decrease can be observed in 2009, the year of the financial crisis.

A4. Additional descriptive and analysis tables and figures

Table A1
Subtopics.

Subtopics	Average daily news coverage		
	Bad	Ambiguous	Good
National budget	1.91	1.73	1.26
Business cycle	1.76	1.50	1.56
Economic climate	1.09	0.85	1.21
Economic situation of firms	0.65	0.63	0.58
Mining	0.07	0.10	0.03
Agriculture	0.25	0.32	0.07
Markets	0.05	0.04	0.02
Labor costs	0.59	0.65	0.28
Labor market	1.99	2.04	1.63
Tax policy	1.41	1.76	0.88
Consumer protection	0.45	0.71	0.24
Economic demand	0.57	0.54	0.85
Economic policy	1.30	1.62	0.96
National HH policy comparison	0.13	0.12	0.08
Industrial location	1.10	1.11	0.91
Aggregated economic news	4.22	4.22	2.42

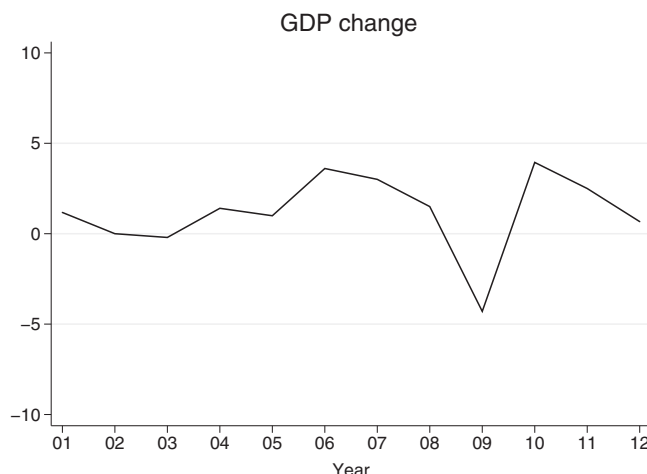


Fig. A1. Changes in inflation adjusted GDP 2001–2012. Note: Data for Germany from Destatis.

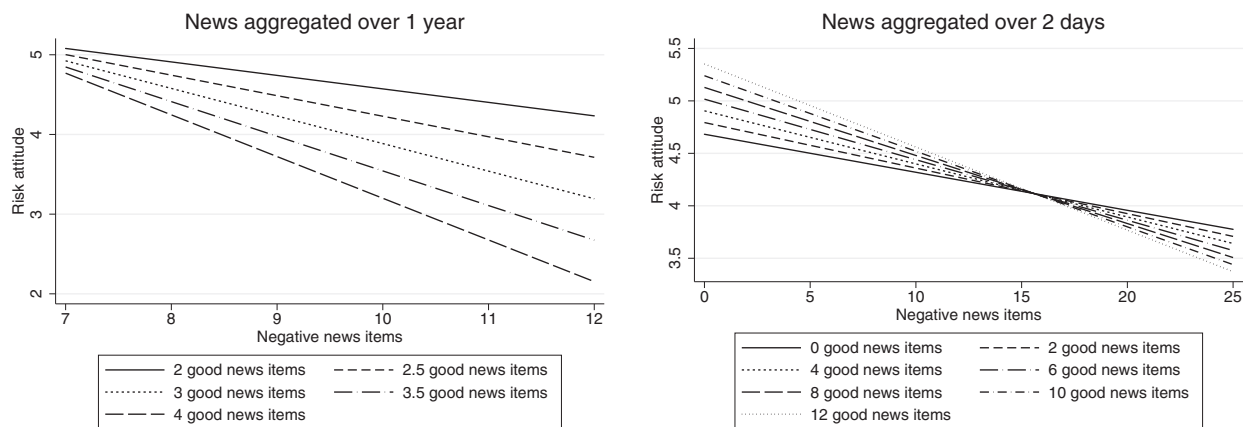


Fig. A2. Interactoeognitive news. Note: The correlation between GDP growth and bad news is -0.2697 , for ambiguous news it is -0.1348 and for good news it is 0.0444 .

Table A2

Descriptives – risk and control variables.

Variable	Observations	Subjects	Mean	sd Overall	sd Within	Min	Max
<i>General risk sample: (Table 1)</i>							
Risk attitudes	120,160	30,855	4.41	2.29	1.41	0	10
Kids	120,160	30,855	0.26	0.44	0.18	0	1
1 if unemployed	120,160	30,855	0.06	0.24	0.15	0	1
Lag ln HH inc	120,160	30,855	7.39	0.51	0.20	3.67	10.93
1 if married	120,160	30,855	0.63	0.48	0.15	0	1
1 if divorced	120,160	30,855	0.08	0.27	0.10	0	1
Self-stated health	120,160	30,855	3.33	0.95	0.51	1	5
Month	120,160	30,855	3.27	1.75	1.02	1	12
Year	120,160	30,855	2008.38	2.66	2.23	2004	2012
<i>Worries sample: (Table 2)</i>							
W: ownecon	157,755	31,301	1.95	0.70	0.43	1	3
W: jobsecurity	89,266	21,013	1.68	0.71	0.44	1	3
W: econ dev	157,782	31,298	2.27	0.63	0.46	1	3

Note: Descriptive statistics on our different samples. The general risk sample captures maximally 7 waves, while the worries sample spans over 10 waves. The control variables are all based on our main sample.

Table A3

Descriptives – demographics and personality traits.

Variable	Mean	sd	Min	Max	Subjects
Female	0.52	0.50	0	1	30,855
Birth year	1959.14	18.37	1905	1994	30,855
Education	12.21	2.71	7	18	29,383
Big5 O	4.44	1.15	1	7	24,771
Big5 C	5.84	0.89	1	7	24,757
Big5 E	4.80	1.08	1	7	24,827
Big5 A	5.40	0.91	1	7	24,829
Big5 N	3.90	1.14	1	7	24,837

Note: Descriptive statistics on our main sample. The Big 5 were elicited in 2005 and 2009. For individuals that took part in the elicitation in both years we form the average of the two values.

Table A4

Descriptives – alternative measures.

Variable	Obs	Mean	Std. Dev.	Min	Max
Year: news	120,160	10.11	1.20	8.12	12.86
GDP growth (y, r)	120,160	1.36	3.01	-10.10	7.00
GDP growth (q, n)	120,160	0.26	0.87	-3.48	1.56
Dax closing (y)	120,160	5.63	1.27	3.20	7.53

Note: Descriptive statistics for alternative measures of the economic environment, 2003–2012.

Table A5

Descriptives – news by year.

2 days measure									
Year	Obs	Bad news		Ambiguous news		Good news		Aggregate	
		daily mean	sd	daily mean	sd	daily mean	sd	daily mean	sd
2004	19,640	4.25	1.80	5.41	1.85	1.80	1.16	10.40	3.03
2006	18,047	4.24	2.11	3.56	1.53	2.08	1.50	8.64	3.80
2008	17,867	3.97	1.95	4.19	2.03	2.64	1.77	9.62	4.42
2009	16,637	6.20	2.25	5.91	2.27	2.09	1.16	13.34	4.27
2010	16,943	4.59	2.55	5.42	2.16	1.96	1.39	12.03	4.59
2011	14,344	3.03	1.64	4.10	1.93	2.00	1.39	7.86	3.34
2012	16,682	4.04	2.05	4.07	1.60	2.39	1.33	9.16	3.54
All	120,160	4.35	2.24	4.68	2.10	2.14	1.43	10.04	4.22

(continued on next page)

Table A5 (continued)

Week measure										
Year	Obs	Bad news		Ambiguous news		Good news		Aggregate		
		daily mean	sd	daily mean	sd	daily mean	sd	daily mean	sd	
2004	19,640	4.22	1.17	5.42	1.35	2.00	0.65	10.34	1.94	
2006	18,047	4.20	1.10	3.58	0.88	2.35	1.00	8.40	2.09	
2008	17,867	3.84	1.44	4.21	1.34	2.60	0.92	9.36	2.99	
2009	16,637	6.10	1.25	6.00	1.37	2.39	0.56	13.35	2.23	
2010	16,943	4.57	1.87	5.41	1.37	2.15	0.88	10.91	3.11	
2011	14,344	3.11	0.88	4.15	1.08	2.21	0.84	7.77	1.84	
2012	16,682	4.02	1.45	4.12	0.88	2.53	0.92	9.21	1.74	
All	120,160	4.31	1.58	4.71	1.47	2.32	0.86	9.94	2.88	
Month measure										
Year	Obs	Bad news		Ambiguous news		Good news		Aggregate		
		daily mean	sd	daily mean	sd	daily mean	sd	daily mean	sd	
2004	19,640	4.09	0.67	5.42	0.67	2.14	0.29	10.14	0.73	
2006	18,047	4.15	0.27	3.55	0.47	2.31	0.47	8.30	0.91	
2008	17,867	3.74	0.97	4.31	0.67	2.70	0.38	9.35	1.68	
2009	16,637	6.15	0.59	5.92	0.89	2.47	0.27	13.37	1.27	
2010	16,943	4.57	0.94	5.41	0.64	2.10	0.63	10.87	1.49	
2011	14,344	3.11	0.35	4.08	0.35	2.22	0.40	7.70	0.65	
2012	16,682	3.99	0.85	4.16	0.26	2.66	0.64	9.36	0.79	
All	120,160	4.27	1.11	4.71	1.02	2.37	0.51	9.90	2.04	
Year measure										
Year	Obs	Bad news		Ambiguous news		Good news		Aggregate		
		daily mean	sd	daily mean	sd	daily mean	sd	daily mean	sd	
2004	19,640	4.59	0.48	5.34	0.09	2.08	0.04	10.43	0.14	
2006	18,047	4.35	0.16	3.71	0.04	2.08	0.10	8.48	0.16	
2008	17,867	3.32	0.26	4.56	0.08	3.46	0.15	9.83	0.16	
2009	16,637	5.64	0.20	5.18	0.17	2.67	0.08	11.87	0.34	
2010	16,943	5.31	0.28	5.31	0.08	2.27	0.13	11.45	0.26	
2011	14,344	3.90	0.25	4.95	0.21	2.93	0.03	9.96	0.46	
2012	16,682	3.93	1.63	3.92	0.05	2.70	0.04	8.77	0.24	
All	120,160	4.44	0.78	4.71	0.63	2.58	0.48	10.11	1.20	

Note: Average daily number of news items (negative, neutral, positive and aggregate) during the month and the year preceding the interview in our main data set. Hence these averages need not coincide with the yearly news averages, since the daily averages are weighted by the number of observations for each date.

Table A6
Risk on worries including controls.

Variables	(1) Risk	(2) Risk	(3) Risk
W: econdev	-0.064*** (0.012)		
W: ownecon		-0.068*** (0.013)	
W: jobsecurity			-0.044*** (0.015)
Constant	65.576*** (4.866)	62.932*** (4.784)	75.208*** (6.502)
Observations	119,832	119,804	67,910
Number of pid	30,832	30,830	20,324
Within R-squared	0.004	0.004	0.004

Note: Fixed effects regressions. We control for information on personal changes in life, i.e. household composition, marital status, employment status, household income and subjective health of the individual, as well as the year and month of the interview. Robust standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Table A7

News on worries including controls.

Variables	(1) W: econdev	(2) W: ownecon	(3) W: jobsecurity
Year: bad news	0.192*** (0.006)	0.044*** (0.006)	0.061*** (0.009)
Year: good news	-0.769*** (0.015)	-0.115*** (0.015)	-0.125*** (0.022)
1 if children in HH	-0.001 (0.036)	0.075* (0.038)	-0.038 (0.047)
1 if unemployed	0.359*** (0.039)	0.934*** (0.040)	0.420*** (0.088)
Lag ln HH inc	-0.100*** (0.029)	-0.239*** (0.030)	-0.107* (0.043)
1 if married	0.078 (0.051)	0.034 (0.056)	-0.021 (0.074)
1 if divorced	0.116 (0.078)	-0.029 (0.084)	0.013 (0.107)
Self-stated health	-0.060*** (0.012)	-0.229*** (0.012)	-0.189*** (0.017)
Month	0.029*** (0.006)	0.017** (0.006)	-0.013 (0.008)
Year	-0.146*** (0.003)	-0.088*** (0.004)	-0.179*** (0.005)
Observations	126,840	118,627	60,093
Number of pid	18,561	17,482	9976
Pseudo R-squared	0.116	0.026	0.051

Note: Ordered logit with fixed effects, using the BUC method proposed in Baetschmann et al. (2015). Column(1): Worries about the economic development; Column(2): Worries about the own economic situation; Column(3) Worries about jobsecurity. Robust standard errors in parentheses, * significant at 10%; **significant at 5%; ***significant at 1%.

Table A8

Monthly news on worries including controls.

Variables	(1) W: econdev	(2) W: ownecon	(3) W: jobsecurity
Month: bad news	0.180*** (0.004)	0.060*** (0.004)	0.071*** (0.005)
Month: good news	-0.460*** (0.010)	-0.004 (0.009)	-0.016 (0.013)
1 if children in HH	0.018 (0.036)	0.081* (0.038)	-0.033 (0.047)
1 if unemployed	0.369*** (0.039)	0.937*** (0.040)	0.407*** (0.088)
Lag ln HH inc	-0.068* (0.029)	-0.226*** (0.030)	-0.091* (0.043)
1 if married	0.071 (0.051)	0.033 (0.056)	-0.021 (0.074)
1 if divorced	0.107 (0.077)	-0.029 (0.084)	0.016 (0.107)
Self-stated health	-0.059*** (0.012)	-0.229*** (0.012)	-0.190*** (0.017)
Month	0.023*** (0.006)	0.011 (0.006)	-0.017* (0.008)
Year	-0.187*** (0.003)	-0.095*** (0.003)	-0.187*** (0.005)
Observations	126,840	118,627	60,093
Number of pid	18,561	17,482	9976
Pseudo R-squared	0.105	0.026	0.051

Note: Ordered logit with fixed effects, using the BUC method proposed in Baetschmann et al. (2015). Column(1): Worries about the economic development; Column(2): Worries about the own economic situation; Column(3) Worries about jobsecurity. Robust standard errors in parentheses, * significant at 10%; **significant at 5%; ***significant at 1%.

Table A9
Weekly news on worries including controls.

Variables	(1) W: econdev	(2) W: ownecon	(3) W: jobsecurity
Week: bad news	0.112*** (0.003)	0.033*** (0.003)	0.039*** (0.004)
Week: good news	-0.272*** (0.007)	-0.003 (0.007)	-0.014 (0.009)
1 if children in HH	0.024 (0.035)	0.082* (0.038)	-0.035 (0.046)
1 if unemployed	0.360*** (0.038)	0.935*** (0.040)	0.413*** (0.088)
Lag ln HH inc	-0.050 (0.029)	-0.227*** (0.030)	-0.093* (0.043)
1 if married	0.054 (0.051)	0.032 (0.056)	-0.021 (0.074)
1 if divorced	0.093 (0.077)	-0.029 (0.084)	0.012 (0.107)
Self-stated health	-0.061*** (0.012)	-0.229*** (0.012)	-0.189*** (0.017)
Month	0.012* (0.006)	0.010 (0.006)	-0.020* (0.008)
Year	-0.184*** (0.003)	-0.094*** (0.003)	-0.185*** (0.005)
Observations	126,840	118,627	60,093
Number of pid	18,561	17,482	9976
Pseudo R-squared	0.086	0.025	0.050

Note: Ordered logit with fixed effects, using the BUC method proposed in Baetschmann et al. (2015). Column(1): Worries about the economic development; Column(2): Worries about the own economic situation; Column(3) Worries about jobsecurity. Robust standard errors in parentheses, * significant at 10%; **significant at 5%; ***significant at 1%.

Table A10
2 days news on worries including controls.

Variables	(1) W: econdev	(2) W: ownecon	(3) W: jobsecurity
2 days: bad news	0.070*** (0.002)	0.017*** (0.002)	0.020*** (0.003)
2 days: good news	-0.159*** (0.004)	-0.012** (0.004)	-0.020*** (0.006)
1 if children in HH	0.029 (0.035)	0.080* (0.038)	-0.037 (0.046)
1 if unemployed	0.351*** (0.038)	0.933*** (0.040)	0.417*** (0.088)
Lag ln HH inc	-0.044 (0.029)	-0.229*** (0.030)	-0.095* (0.043)
1 if married	0.043 (0.050)	0.031 (0.056)	-0.021 (0.074)
1 if divorced	0.079 (0.077)	-0.030 (0.084)	0.014 (0.107)
Self-stated health	-0.063*** (0.011)	-0.229*** (0.012)	-0.189*** (0.017)
Month	-0.007 (0.006)	0.009 (0.006)	-0.021** (0.008)
Year	-0.185*** (0.003)	-0.094*** (0.003)	-0.185*** (0.005)
Observations	126,840	118,627	60,093
Number of pid	18,561	17,482	9976
Pseudo R-squared	0.073	0.024	0.049

Note: Ordered logit with fixed effects, using the BUC method proposed in Baetschmann et al. (2015). Column(1): Worries about the economic development; Column(2): Worries about the own economic situation; Column(3) Worries about jobsecurity. Robust standard errors in parentheses, * significant at 10%; **significant at 5%; ***significant at 1%.

Supplementary material

Supplementary material associated with this article can be found, in the online version, at [10.1016/j.jebo.2018.01.013](https://doi.org/10.1016/j.jebo.2018.01.013).

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