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# The predictors of economic sophistication: Media, interpersonal communication and negative economic experiences

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## Abstract

In analogy to political sophistication, it is imperative that citizens have a certain level of *economic* sophistication, especially in times of heated debates about the economy. This study examines the impact of different influences (media, interpersonal communication and personal experiences) on learning effects about the economy. We conducted a national two-wave panel survey and a media content analysis in Denmark. Media effects were examined through integrating the results of the content analysis (in which articles were coded for the presence of the economic consequences frame) with the panel survey. Results showed that exposure to economic consequences frames in the media and interpersonal communication about the economy had a significant positive influence on learning about the economy. Having negative experiences with the economy exerts significant negative influence on learning. Interestingly, extensive interpersonal communication and negative experiences with the economy dampen media effects on learning about the economy. The study contributes to the literature on the cognitive effects of media and of interpersonal communication, as well as in media dependency theory.

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## Keywords

Economic knowledge, economic sophistication, framing, interpersonal communication, media effects, political knowledge, political sophistication, survey, content analysis

## Introduction

In all models of democracy, the sophistication of citizens occupies a central place. *Ceteris paribus*, high levels of political knowledge are associated with a healthy democratic system, and are correlated with the normative implications of media use (Strömbäck, 2005). A lively discussion exists on how media use, different news frames and interpersonal communication influence political sophistication. In this study, we extrapolate from the important work on political sophistication to the overlooked concept of *economic* sophistication. Economic sophistication is an important phenomenon, especially in times of economic turmoil, when people need to understand how rapid changes in economic figures are affecting their lives. So as to understand this concept, we are investigating several factors that influence learning about the economy.

The relevance of this concept is further highlighted when looking at studies measuring the implications of the dispersion of economic information for democracy and the ability to handle personal economics. The media are inarguably one of the most important information providers; thus, they are seen as an antecedent and driver in most political sophistication studies (Gordon and Segura, 1997; Guo and Moy, 1998; Luskin, 1990). High exposure to negative media reporting about the economy can shape overall (Hetherington, 1996) or governmental (Sheafer, 2008) economic evaluations more than the actual statistics themselves. The perceptions may in turn affect voting behaviour, also dubbed 'economic voting'. Furthermore, citizens need to take decisions that involve basic economic knowledge, like dealing with a private health insurance or a retirement plan. There is evidence that a gap exists between the general public and economic experts when it comes to economic perceptions (Blendon et al., 1997). Implications of this gap include differences in the ability to succeed in financial planning (Lusardi and Mitchell, 2008, 2011). These findings underline the importance of an informed individual that has the capacity of taking care of his or her own finances, as well as being part of an informed electorate. In addition, research has highlighted the increasing complexity of economic measures used in the media to explain the financial crisis (Manning, 2013; Tambini, 2010), something that reflects the need for a thorough examination of the effects of this coverage.

In order to examine what influences economic perceptions, we rely on Mutz's (1992) framework, according to which there are three important sources of information: the interpersonally mediated information, the mass-mediated information and personal experiences with the economy. These three influences are going to be examined as precursors of economic sophistication and this reflects the research question of the article: *Which are the causes of economic sophistication?* This research question is examined in analogy to media effect theories (framing), as well as media dependency theory among others.

The focal point of this study lies on the effect of mass-mediated information and how it contributes to *change* in economic sophistication. In other words, we are studying the

role of media in learning about the economy (positive change in economic sophistication). This was done via an integration of a media content analysis with survey data. In addition, the effect of media is examined in relation to interpersonal communication and economic experiences. We use a two-wave panel survey to examine the effects of these three sources of information on *knowledge gains* about the economy.

## **(Antecedents of) economic sophistication**

In order to draw inferences about the causes of economic sophistication, we take a starting point in the theoretical underpinnings of *political* sophistication. Political sophistication is a relevant and interesting topic in itself (Zaller, 1992), and it also has important societal implications. It has positive consequences for political participation (De Vreese and Boomgaarden, 2006; Neuman, 1986), it can affect attributions of responsibility (Rudolph, 2003) and it influences evaluations of parties and candidates and thus voting behaviour (MacDonald et al., 1995).

### *Sophistication and news framing*

According to many studies, exposure to mass-mediated information has proved to enhance political sophistication (Curran et al., 2009; Fraile, 2011; Gordon and Segura, 1997; Jebiril et al., 2013). A discussion in the literature revolves around the influence of different media on sophistication, whether exposure to ‘sensationalist’ news or ‘soft news’ has any effect in sophistication (Baum, 2003; Prior, 2003, 2005). But what is the impact of news frames on sophistication? News frames involve selection and salience; the selection of some aspects of a perceived reality and their salience in a communicating text (Entman, 1993). Research on news framing mainly discusses their effects on the attitudes and the behaviour of individuals (Cappella and Jamieson, 1996; Valentino et al., 2001). However, some studies have looked how news framing affects the cognitive function of (Jebiril et al., 2013; Price et al., 1997; Valkenburg et al., 1999).

But which frames may contribute to economic sophistication? The ‘economic consequences’ frame presents ‘an event, problem, or issue in terms of the economic consequences it will have on an individual, group, institution, region, or country’ (Valkenburg et al., 1999: 552). News media use it frequently to refer to the cost of pursuing governmental policies and it reflects the ‘preoccupation with the bottom line, profit and loss’ (Neuman, 1992: 63). According to experimental findings, exposure to economic consequences frame has an impact on readers’ thoughts on economic and financial stories (Valkenburg et al., 1999). It is considered one of the generic frames (De Vreese, 2005), and it has important news value (Graber, 1997). There is also evidence that this frame is more visible in ‘serious’ (Semetko and Valkenburg, 2000) or in specialized outlets (Kostadinova and Dimitrova, 2012), and that it helps citizens make connections between causes and effects of events (Price et al., 1997).

When it comes to the other forms of content that contributes positively to learning, we know that the *visibility* of an issue in media outlets enhances sophistication about this issue and thus, the absence of political content in some outlets is a cause for the lack of knowledge gains for some individuals (De Vreese and Boomgaarden, 2006). Therefore,

stemming from the arguments that exposure to the economic consequences frame has an impact on thoughts and recall abilities, we expect that

*H1.* The higher the exposure to the economic consequences frame in the news media, the higher the learning effects about the economy.

### *Interpersonal communication*

The importance of interpersonal communication for the dissemination of information is one of the most widely discussed concepts in the field of communication. The two-step flow of communication theory (Lazarsfeld et al., 1944) suggested that the mass media provide information to opinion leaders who then, in turn, transmit the information to their peers. Since then, numerous theories and models concerning the role of interpersonal discussion have been tested. For example, a more recent study has shown that interpersonal communication has a direct effect on political sophistication rather than being an enforcer of media messages as described by Lazarsfeld (Eveland, 2004). Several other studies argued that political talk is predicting high scores of understanding, sophistication and participation (Bennett et al., 2000; Holbert et al., 2002; Stamm et al., 2000). These scores also depend on the knowledge of the discussant of each individual (McClurg, 2006a), as well as the level of disagreement in the discussion which can demobilize citizens (McClurg, 2006b).

Differences between the impact of interpersonal and mass mediated communication have been discussed in the field, sometimes in a form of competition. Cho (2005) showed that people exposed to media were influenced by the profile of the candidate, while people who discussed more voted on the basis of party identification. In addition, interpersonal communication has been hailed as the most important variable for predicting change in attitudes (Mondak, 1995) and more important than mass media in influencing vote choice (Beck et al., 2002).

Thus, the second hypothesis, stemming from this literature, suggests that discussion is a positive predictor of economic sophistication.

*H2.* The more people talk about the economy, the higher the learning effects about the economy.

Studies have examined the moderating role of interpersonal communication on media use and media effects, and most of the times the relationship was found to be positive and significant. For example, when it comes to sophistication, the interaction was found to be positive for newspaper use but not for soft television use (Scheufele, 2002). According to this research, interpersonal communication enhanced media effects on sophistication for hard media users. Other studies found evidence that interpersonal communication has a direct influence on political attitudes, and it also reinforces media effects on electoral behaviour (Schmitt-Beck, 2003).

However, the interaction between mass media and interpersonal communication proved to be negative when looking at candidate issue stances during presidential elections (Eveland and Scheufele, 2005; Lenart, 1994). It was also argued that the interaction

on candidate issue stances was negative for some periods when key media events occur due to ‘seasonal discussants’: uninformed discussants who entered political discussions because of the timeliness of the topic (Hardy and Scheufele, 2009).

According to the findings mentioned above, we believe that exposure to interpersonal communication will *enhance* media effects, since we do not expect uninformed ‘seasonal discussants’ to interfere with the process of knowledge gains. Thus, we believe that

*H3.* The more people talk about the economy, the higher the media effects on learning about the economy.

### *Personal experiences*

Having a personal experience is an obvious source of learning about an issue. Kolb (1984) created a learning method based on making meaning from experiences, according to which an individual learns by reflecting on his experiences. As mentioned above, personal experiences are also one of the three sources of information according to Mutz (1994). Most research in political science that looks at personal experiences, examines their relation with attitudinal and behavioural variables. For example, citizens with high ‘factual and emotional’ involvement with an economic issue showed higher ability to connect the dots between an issue, and framing effects were stronger (Quiring and Weber, 2012). Other studies indicated that experiences affect economic voting (Duch et al., 2000; Kinder and Kiewiet, 1979) as well as attributions of responsibility (Arceneaux and Stein, 2006). A recent study on economic sophistication, measuring the citizens’ knowledge on economic statistics, showed that there were important gains in the public’s awareness between 2007 and 2009, immediately before and immediately after the financial crisis of 2007–2008 hit the United States (Curtin, 2010), a period in which many citizens faced direct or indirect negative experiences with the economy. Thus, we expect that

*H4.* The higher the exposure to negative economic experiences, the higher the learning effects about the economy.

When it comes to the interplay between personal experiences and media, there are conflicting views. According to media dependency theory (Ball-Rokeach and DeFleur, 1976), people rely on media for issues that they cannot obtain information from other sources such as foreign policy. Consequently, media effects will often be *weaker* for obtrusive issues where people have everyday evidence of what is going on. Zucker (1978) also found that the less direct experiences the individuals have with an issue, the more they will depend on media for awareness in this issue. These results were supported by a number of studies (Hügel et al., 1989; Soroka, 2002).

Contrary to these findings, Mutz (1994) argued that media help *enhance* the effects of personal experiences on political preferences when it comes to unemployment, although Hetherington (1996) could not replicate these results. Mutz’s argument is that mass media expose people to the similar experiences of others and it helps them learn and realize that the crime event or the firing that they faced was because of a pattern. In another

example, citizens with high involvement with an economic issue were more susceptible to framing effects (Quiring and Weber, 2012). However, our expectation for this study follows the rationale of the media dependency theory, since the studies testing this theory examine cognitive rather than attitudinal effects.

Therefore we assume that

*H5.* The higher the exposure to negative experiences with the economy, the lower the media effects on learning about the economy.

## Methods

In this study, we are interested in *change*. While many studies that are cited above are cross-sectional in nature, this study contributes to the sophistication literature by looking at learning effects over time. To address changes over time, a multi-method approach including a two-wave panel survey and a media content analysis was employed. The content analysis was used to assess the visibility of economic news stories and the presence of economic consequences framing in news outlets. The survey results were used to measure economic sophistication and to examine the effect of the independent variables, as well as to statistically control for observable effects.

### *The case*

The study was conducted in Denmark. Denmark is a country moderately hit by the economic crisis<sup>1</sup> and has a media system that is generally considered representative of the Democratic Corporatist model (Hallin and Mancini, 2004), where news readership is high (Van Dalen and Van Aelst, 2014). Denmark has also been used for studying political sophistication previously (Jebril et al., 2013).

### *Panel survey*

A two-wave web-based panel survey including a representative<sup>2</sup> sample of the Danish population was employed to assess media consumption patterns and economic sophistication questions as well as control variables. Results are based on a net sample of 1666 respondents who responded in both waves.<sup>3</sup> The remaining respondents were excluded from the survey in order to efficiently measure individual-level change in the dependent variable. Response rate was 38.2% in Wave 1 and re-contact rate was 68% in the second wave. Wave 1 took place from 19 February 2013 until the 4 March 2013 and Wave 2 between 20 May and 2 June 2013.

### *Measuring economic sophistication*

In order to measure economic sophistication, we looked at different ways political sophistication was tapped before in relevant studies. Some measure factual knowledge (Carpini, 1996), others use individual perceptions of parties' ideological placement compared to the average placement (Gordon and Segura, 1997) and others use a combination

of variables such as political interest, political knowledge, cognitive elaboration and active processing of information (Guo and Moy, 1998) or only the level of education (Gastil and Dillard, 1999). Economic sophistication was measured differently in studies too, ranging from open-ended questions on economic measures (Scott and Lewis, 2000) to student grades (Williams et al., 1992). In our study, a scale of questions assessing factual information of the economy was created (Cronbach's alpha: .61,  $M = 2.10$ ,  $SD = 1.31$ , see Appendix 1 for the measures). By doing this, we can compare our results to studies on political knowledge that employ a similar method. This method has also been argued to be the most efficient way of measurement (Zaller, 1992). The results of the economic sophistication scale in the first wave (Cronbach's alpha: .62,  $M = 2.01$ ,  $SD = 1.32$ ) were used as a lagged dependent variable. The inclusion of the same questions in both waves may seem problematic, but it was necessary because it is impossible to create questions with a similar level of difficulty. To test for possible panel effects, we used a fresh sample of 406 respondents and their assessment of political sophistication was not statistically different from the one in the second wave ( $M = 2.00$ ,  $SD = 1.33$ ).<sup>4</sup>

### *Independent variables*

The assessment of the frequency of discussion about the economy was made by asking respondents how often they discuss the economy with others. Negative experiences with the economy were measured by creating a formative index based on four questions asking whether they had direct or indirect negative experiences with the economy (Cronbach's alpha = .55,  $M = 1.81$ ,  $SD = 1.49$ ).<sup>5</sup> Media exposure was measured by asking respondents how many days they consume news from a specific media outlet during a typical week.<sup>6</sup>

### *Content analysis*

For the purposes of the content analysis, the most prominent newspapers in Denmark, and the public broadcaster and the biggest private TV network were used as well as their websites: the broadsheets newspapers Politiken, Jyllands-Posten and Berlingske, the tabloid newspapers B.T. and Ekstra Bladet, the public broadcaster DR and the TV station TV2. For the sampling of the articles, words<sup>8</sup> that are commonly used in the economic news stories were used as search terms in the population of the articles published in these newspapers and websites in this period.<sup>9</sup> For the measurement of visibility of economy for TV news three native speaker students were employed Percentage Agreement in identifying which news stories were economic in a sample of news was 93.3%. The period covered by our content analysis started on the 7 March 2013, right after the first wave of the survey, and lasted until the 19 May 2013, right before the second wave. Two economic articles/TV clips were chosen each week based on a 'constructed week sampling' (Riffe et al., 1993), with three additional articles per outlet for 1 week leading up to each wave. The individual article/TV clip was used as a unit of analysis. The population of economic news was 18,752.

In order to assess which economic articles contained the economic consequences frame, coders were asked to identify whether an article 'reported an event, problem or



issue in terms of the economic consequences it had/has/can have on an individual, a group, a company, an institution, a region or a country'. This assessment builds on from (De Vreese et al., 2001). The Krippendorff's alpha inter-coder reliability score on the coding of this variable was .72. Two economic articles/TV clips were chosen each week based on a 'constructed week sampling' (Riffe et al., 1993), with three additional articles per outlet for 1 week leading up to each wave, mounting to 364 articles.

### *Data analysis*

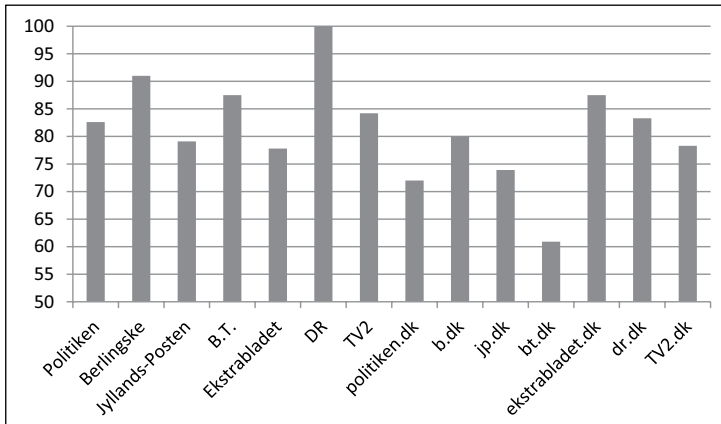
Ordinary least-squares (OLS) regressions were used to examine the impact of media frames, interpersonal communication and personal experiences on the change of economic sophistication as well as the complimentary role of these variables. We added a dependent lagged variable of the economic sophistication measure in the first wave in order to examine the change between the two waves. A two-wave panel design allows for stronger causal claims than a cross-sectional design (Markus, 1979). Media content analysis and survey results were integrated by combining the media exposure measures to the content analysis findings as has been previously used in the media effects literature (Jasperson et al., 1998; Hopmann et al., 2010). The days of exposure to each outlet for each individual were weighted with the percentage representing the presence of the economic consequences in each medium and to the percentage of the economic articles in the general population of the outlet (visibility)<sup>11</sup> (see also, for example, Hopmann et al., 2010). These percentages represent the average presence of economic consequences frame and the average visibility of the economy in the outlets, for the days of the sampling.

### **Results**

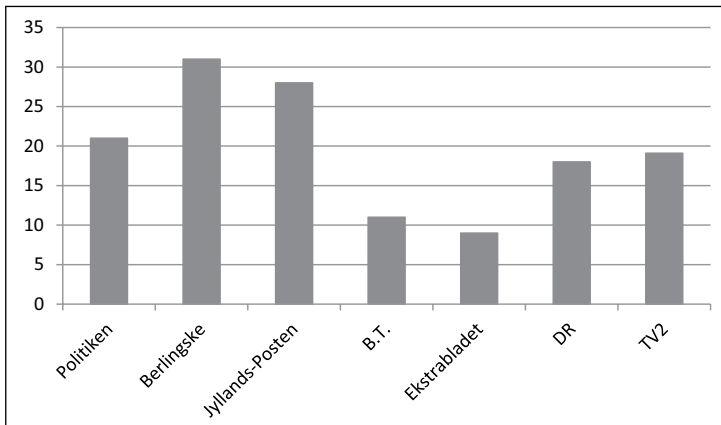
The results of the content analysis can be seen in Figures 1 and 2, where the visibility of economic articles in media outlets and the presence of economic consequences frames are reported.

As we can see from Figure 1, there is a widespread journalistic consensus on the use of economic consequences frame when reporting about the economy. The highest difference in scores lies between the public broadcaster (100%), that is, the economic consequences frame is present in each of their economic news stories, and the tabloid B.T. (61%). When it comes to visibility of the economic issues in the outlets, there are larger differences between the outlets. Scores ranged from 9% for the tabloid Ekstrabladet to 31% for broadsheet Berlingske. In general, by looking at the visibility figures, one can identify a difference in the pattern between tabloid and broadsheet newspapers, with the exception of Politiken, a broadsheet which lies in the middle of this division along with the TV stations.

When it comes to changes in sophistication between the individuals (knowledge gains or losses), 23% of individuals scored lower on the sophistication score, 29.4% of individuals showed an increase, while only 47.5% of individuals had a stable score between the two waves. These scores represent the number of correct answers on economic sophistication in the second wave, minus the number of correct answers in the first wave. The net increase was 6.4%.



**Figure 1.** Presence of economic consequences frames in different outlets. Numbers are percentages ( $N = 364$ ).



**Figure 2.** Visibility of economy in different outlets. Numbers are percentages which represent the visibility of economy in the printed version of the outlets, and they are used as a proxy for the ‘online’ version of the outlets ( $N = 18,752$ ).

To test the hypotheses, OLS regressions were run (Table 1). From the first main effects model (Model A), we can conclude that the first hypothesis according to which exposure to the economic consequences frame in the media has a positive effect on economic sophistication is supported.<sup>12</sup>

In addition, engaging in interpersonal communication has a significant positive effect on the change of economic sophistication between the waves. On the contrary, the fourth hypothesis which predicted that negative personal experiences will have a positive effect on the change in economic sophistication between the waves was not supported. Results showed that negative experiences with the economy have a negative and a significant impact on the change in economic sophistication between the waves.<sup>13</sup>

**Table 1.** Ordinary least-squares (OLS) regressions.

Economic sophistication	Model A		Model B		Model C	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Economic sophistication (t1)	.677***	.017	.674***	.017	.676***	.017
Interpersonal communication	.080***	.021	.161***	.039	.080***	.021
Personal experiences	-.072***	.019	-.073***	.019	-.057	.035
Media	.053***	.015	.131***	.034	.063**	.023
Media × interpersonal communication			-.033*	.013		
Media × personal experiences					-.006	.012
Constant	.532***	.063	.359***	.092	.430***	.085
Adjusted R <sup>2</sup>	.542		.544		.542	
N	1666		1666		1666	

Dependent variable: economic sophistication.

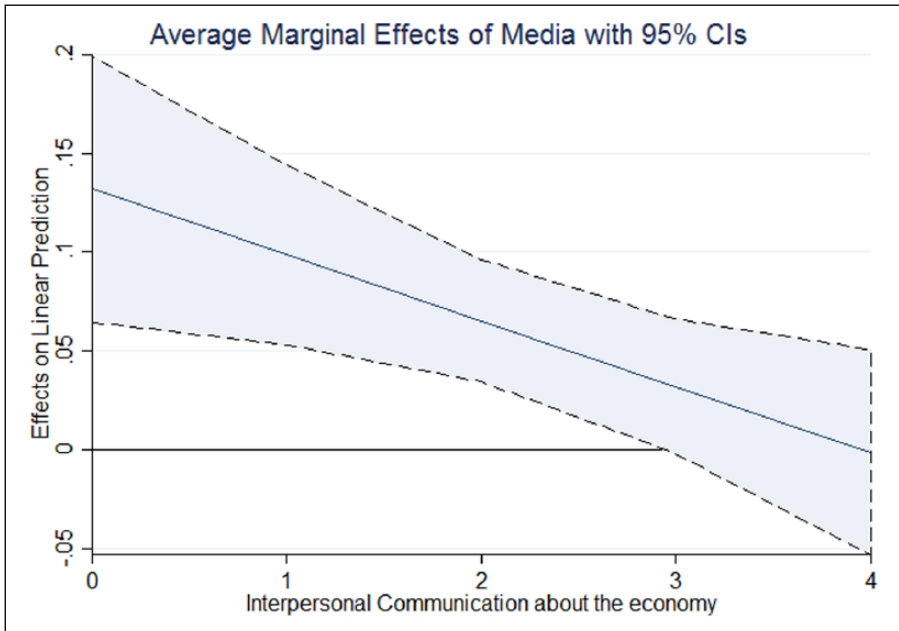
\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

When interacting exposure to economic news with interpersonal communication (Model B), we find a significant negative relation. In Figure 3, we can see that the lower the interpersonal communication, the higher the effects of media when it comes to learning about the economy. As the effects of media on learning become weaker the more people talk, and insignificant (below the zero line) for the people who talk (almost) everyday. According to these findings, the third hypothesis which suggests that people with higher scores of interpersonal communication will show increased media effects on learning about the economy is not supported.

The last moderation, between media exposure and negative experiences with the economy (Model C), is not significant, although there is a region of significance; the relationship is significant and positive for people with lower scores of experience (Figure 4). This method is highly recommended because failure to evaluate this evidence may understate (or overstate) the support of the hypotheses (Berry et al., 2012; Brambor et al., 2006). As we can see in the figure, people with zero or few direct or indirect negative experiences (zero, one or two) show a significant learning effect from the media, while people with many experiences (three or four) do not have significant learning effect from the media (the latter two groups amount for 16.4% of the sample). This region of significance lends partial support to the fifth hypothesis, suggesting that people with lower scores of negative experiences show higher media effects on learning.<sup>14</sup>

## Discussion

This article is the first to look at the combined impact of exposure to media information, interpersonal communication and personal experiences on learning effects about the

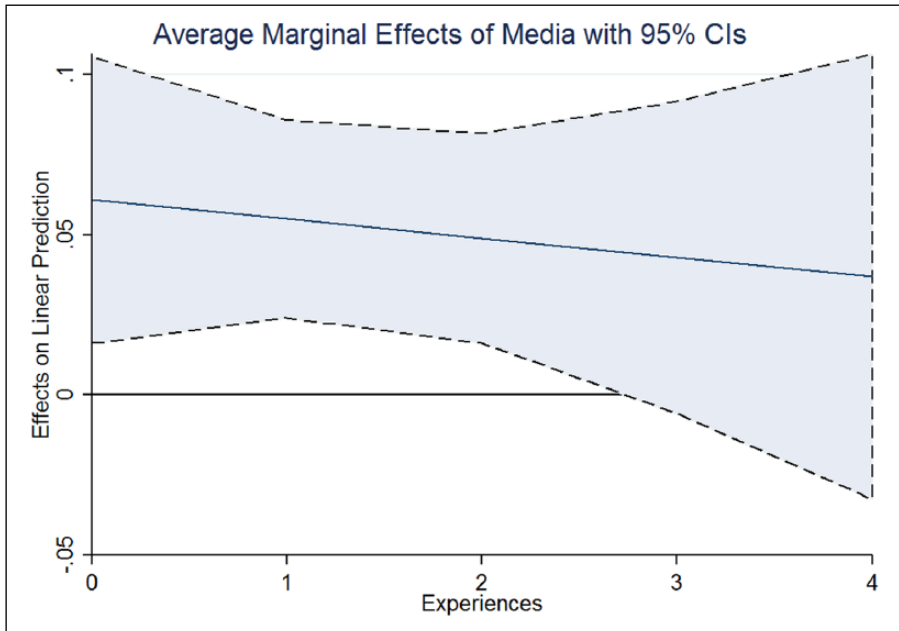


**Figure 3.** Marginal effect of media on economic sophistication for different levels of interpersonal communication about the economy.

economy. First, exposure to media information about the economy and to articles containing the economic consequences frame was found to be significantly and positively correlated with learning effects about the economy between the two waves. The results were similar for the second hypothesis which predicted that the higher the frequency of discussions about the economy, the larger the effects on learning about the economy. Both of these results were not surprising; the hypotheses were derived from a large number of studies that have found similar results about media visibility, frames and discussion on political sophistication. Nevertheless, it is important to note that these results were replicated for economic sophistication.

The impact of personal experiences in predicting learning effects about the economy was significant but pointing towards the opposite direction. Experiences were negative predictors of knowledge gains about the economy. Kolb's (1984) experiential learning method theorized that experiences help in the knowledge process. But according to this theory, there are some preconditions which may be interesting for the explanation of the results. These assumptions involve the skills and the cognitive abilities needed in order to process and reflect on the experience. We believe that our results support such an interpretation. Being in a midst of a crisis does have an impact on anxiety and anger (Ünal-Karagüven, 2009) in which can influence cognitive and psychological abilities (Lynch et al., 1997) and thus, can limit the learning effect from experiences.

The next set of hypotheses involved the moderation between media information and the two other sources of information (interpersonal communication and personal



**Figure 4.** Marginal effect of media on economic sophistication for different levels of negative experiences with the economy.

experiences). Are these two sources augmenting the media effect on learning or are they rather muting it? Individuals who never talk about the economy have the highest learning effects from the media while the effect decreased for each level of interpersonal communication and became insignificant for the group of individuals who talk about the economy everyday. Previous research has shown that interpersonal communication enhances media effects on political sophistication (Scheufele, 2002). We found that discussion about the economy, being (one of) the most important variable for gaining knowledge, has a strong impact on learning and media work only for respondents who do not engage in such discussions. We already know that interpersonal communication directly enhances economic sophistication, so the explanation that discussion may be filled with inaccurate information is rejected for this interpretation. We believe that our results support the notion that media fills the gaps in interpersonal communication.

Last but not least, how do groups with different levels of negative experiences with the economy learn from the media? Based on media dependency theory, people will be relying more on media to obtain information about an issue that they do not experience with one way or the other, while media effects will be weaker for people with a lot of experiences with an issue. Media effects were only significant for the groups that have zero or few direct or indirect negative experiences with the economy, something which follows the rationale of prior studies unfolded in the literature.

While there are methodological strengths in this study, such as the panel design and the integration of media content data with the survey results, there are shortcomings

concerning the measurement of economic sophistication. First, different measures such as broader knowledge of economic concepts can be measured and tested in future research. Second, we rely on self-reports of media use, which has shortcomings (Prior, 2009) but we were able to tap exposure to specific outlets which is recommended (Dilliplane et al., 2013). Third and finally, more panel waves could be added in order to enhance the quality of the design. In future research, more attention should also be devoted to the mechanisms that facilitate or block the cognitive abilities of people who face economic hardship. Such a research will give us insights into the relationship between learning and negative experiences.

Despite these limitations and the recommendations for future research, this study contributed to the understanding of dissemination of information about the economy. We have shown that visibility of the economy in media outlets, the use of economic consequences frame and discussions about the economy are important in raising the public's economic knowledge. At the same time, negative experiences with the economy were negatively correlated with economic knowledge, while neither experiences nor discussion enhanced media effects of economy. These findings are both important for media institutions at large as well as for literature on learning effects and its antecedents.

## Funding

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## Notes

1. Denmark was the first country to officially announce that there has been a recession after the credit crunch of 2007. Since then, it has been getting in and out of recession (In 2008, in 2011 and in 2012) according to Eurostat.
2. Region: 30.6% of the population lives in the capital compared to 30% in the panel. Young people (18–40): 23.7% of our panel versus 35.3% in the population. Middle-age groups (40–60): 33.6% in the sample, compared to 35.8% in the population. Older citizens (60+): 42.7% of the sample compared to 29.7% in the population. Education: 26.2% of the Danish population has completed more than vocational education, compared to 32.6% in our panel.
3. The survey was conducted by TNS Gallup.
4. We have a measure of time spent by each individual on each of the economic sophistication questions. If we remove the 96 individuals that took more than 4 minutes to respond to the questions from the sample, the results would be similar.
5. The low alpha score in the scales of experiences reflects the skewness of individual experiences.
6. Descriptives for the unweighted media exposure questions (DR  $M = 5.22$ , standard deviation ( $SD$ ) = 2.53; TV2  $M = 5.37$ ,  $SD = 2.53$ ; Politiken  $M = 1.72$ ,  $SD = 1.94$ ; Jyllands-Posten  $M = 1.76$ ,  $SD = 1.92$ ; Ekstra Bladet  $M = 1.51$ ,  $SD = 1.49$ ; BT  $M = 1.40$ ,  $SD = 1.32$ ; Berlingske  $M = 1.50$ ,  $SD = 1.64$ ; dr.dk  $M = 3.10$ ,  $SD = 2.56$ ; tv2.dk  $M = 2.91$ ,  $SD = 2.54$ ; politiken.dk  $M = 1.87$ ,  $SD = 1.95$ ; Jyllands-posten.dk  $M = 1.88$ ,  $SD = 1.96$ ; ekstrabladet.dk  $M = 2.42$ ,  $SD = 2.44$ ; bt.dk  $M = 2.01$ ,  $SD = 2.06$ ; b.dk  $M = 1.43$ ,  $SD = 1.36$ ).
7. The number is 12.9% lower than the expected (364) due to lack of economic articles in some outlets for some days. This lack is accounted for when measuring the visibility of economy for TV.
8. The words were as follows: economy, deficit, debt, national debt, state budget, inflation, employment, unemployment, unemployed, salary, payment, investment, finance, stock market,

- C20 (stock market index), stock exchange, tax, financial crisis, house prices, loans, economic growth, consumer, financial profits, exchange rate equivalent, income, deflation, gross domestic product (GDP), gross national product (GNP), imports, exports, trade balance, consumer spending.
9. The population of articles was obtained by a computer-assisted content analysis using two different electronic databases, Infomedia and BERTA. Infomedia is a database that archives all news articles from printed newspapers published by different media outlets. The specific search in Infomedia is conducted by using search criteria such as search words, date and media outlet. BERTA is a new archive of all news articles published online by different media outlets. When using different search criteria such as search words, date and media outlet, BERTA will, like Infomedia, show the population of articles fulfilling these criteria.
  10. The calculation was done as follows: Number of days using Medium 1  $\times$  visibility of the economy in Medium 1 (see Figure 2)  $\times$  presence of economic consequences frame in Medium 1 (see Figure 1) + number of days using Medium 2  $\times$  visibility of the economy in Medium 2 (see Figure 2)  $\times$  presence of economic consequences frame in Medium 2 (see Figure 1).
  11. When the regressions were run with the raw media exposure measure, results were similar.
  12. When the regressions were run with the control variables (gender, age, education, interest in economy and income) as well as with the dependent lagged variable, the effect of the three independent variables remained the same. In addition, when the media outlets were divided between the tabloids (and their websites) and broadsheets (and their websites), results showed that broadsheets had a significant positive effect while the tabloids did not have a significant effect.
  13. In another regression attempt, the interaction term between interpersonal discussion and personal experiences was not significant for any of the groups.

## References

- Arceneaux K and Stein RM (2006) Who is held responsible when disaster strikes? The attribution of responsibility for a natural disaster in an urban election. *Journal of Urban Affairs* 28(1): 43–53.
- Ball-Rokeach SJ and DeFleur ML (1976) A dependency model of mass-media effects. *Communication Research* 3(1): 3–21.
- Baum MA (2003) Soft news and political knowledge: Evidence of absence or absence of evidence? *Political Communication* 20(2): 173–190.
- Beck PA, Dalton RJ, Steven G, et al. (2002) The social calculus of voting: Interpersonal, media, and organizational influences on presidential choices. *American Political Science Review* 96(01): 57–73.
- Bennett SE, Flickinger RS and Rhine SL (2000) Political talk over here, over there, over time. *British Journal of Political Science* 30(1): 99–119.
- Berry WD, Golder M and Milton D (2012) Improving tests of theories positing interaction. *Journal of Politics* 74(3): 653–671.
- Blendon RJ, Benson JM, Mollyann B, et al. (1997) Bridging the gap between the public's and economists' views of the economy. *The Journal of Economic Perspectives* 11(3): 105–118.
- Brambor T, William RC and Matt G (2006) Understanding interaction models: Improving empirical analyses. *Political Analysis* 14(1): 63–82.
- Cappella JN and Hall JK (1996) News frames, political cynicism, and media cynicism. *The Annals of the American Academy of Political and Social Science* 546: 71–84.
- Carpini MXD (1996) *What Americans Know About Politics and Why It Matters*. New Haven, CT: Yale University Press.

- Cho J (2005) Media, interpersonal discussion, and electoral choice. *Communication Research* 32(3): 295–322.
- Curran J, Iyengar S, Lund AB, et al. (2009) Media system, public knowledge and democracy: A comparative study. *European Journal of Communication* 24(1): 5–26.
- Curtin R (2010) The impact of economic crisis on consumers' knowledge about economic statistics. In: *30th CIRET conference*, New York, 30 October.
- De Vreese CH (2005) News framing: Theory and typology. *Information Design Journal & Document Design* 13(1): 51–62.
- De Vreese CH and Boomgaarden H (2006) News, political knowledge and participation: The differential effects of news media exposure on political knowledge and participation. *Acta Politica* 41(4): 317–341.
- De Vreese CH, Peter J and Semetko HA (2001) Framing politics at the launch of the Euro: A cross-national comparative study of frames in the news. *Political Communication* 18(2): 107–122.
- Dilliplane S, Goldman SK and Mutz DC (2013) Televised exposure to politics: New measures for a fragmented media environment. *American Journal of Political Science* 57(1): 236–248.
- Duch RM, Palmer HD and Anderson CJ (2000) Heterogeneity in perceptions of national economic conditions. *American Journal of Political Science* 44: 635–652.
- Entman RM (1993) Framing: Toward clarification of a fractured paradigm. *Journal of Communication* 43(4): 51–58.
- Eveland WP Jr (2004) The effect of political discussion in producing informed citizens: The roles of information, motivation, and elaboration. *Political Communication* 21(2): 177–193.
- Eveland WP and Scheufele DA (2005) A test of competing models of the non-additive effects of political discussion and news media use on political knowledge. Paper presented at the annual meeting of the Association of Education in Journalism and Mass Communication, San Antonio, TX.
- Fraile M (2011) Widening or reducing the knowledge gap? Testing the media effects on political knowledge in Spain (2004–2006). *The International Journal of Press/Politics* 16(2): 163–184.
- Gastil J and Dillard JP (1999) Increasing political sophistication through public deliberation. *Political Communication* 16(1): 3–23.
- Gordon SB and Segura GM (1997) Cross-national variation in the political sophistication of individuals: Capability or choice? *The Journal of Politics* 59(01): 126–147.
- Graber DA (1997) *Mass Media and American Politics*. Washington, DC: CQ Press.
- Guo Z and Moy P (1998) Medium or message? Predicting dimensions of political sophistication. *International Journal of Public Opinion Research* 10(1): 25–50.
- Hallin DC and Mancini P (2004) *Comparing Media Systems: Three Models of Media and Politics*. Cambridge: Cambridge University Press.
- Hardy BW and Scheufele DA (2009) Presidential campaign dynamics and the ebb and flow of talk as a moderator: Media exposure, knowledge, and political discussion. *Communication Theory* 19(1): 89–101.
- Hetherington MJ (1996) The media's role in forming voters' national economic evaluations in 1992. *American Journal of Political Science* 40(2): 372–395.
- Holbert RL, Benoit W, Hansen G, et al. (2002) The role of communication in the formation of an issue-based citizenry. *Communication Monographs* 69(4): 296–310.
- Hopmann DN, Vliegenthart R, De Vreese CH, et al. (2010) Effects of election news coverage: How visibility and tone influence party choice. *Political Communication* 27(4): 389–405.
- Hügel R, Werner D and Weiss H-J (1989) Structural equation models for the analysis of the agenda-setting process. *European Journal of Communication* 4(2): 191–210.



- Jasperson AE, Shah DV, Watts M, et al. (1998) Framing and the public agenda: Media effects on the importance of the federal budget deficit. *Political Communication* 15(2): 205–224.
- Jebril N, De Vreese CH, Albæk E, et al. (2013) The effects of human interest and conflict news frames on the dynamics of political knowledge gains: Evidence from a cross-national study. *Scandinavian Political Studies* 36(3): 201–226.
- Kinder DR and Kiewiet DR (1979) Economic discontent and political behavior: The role of personal grievances and collective economic judgments in congressional voting. *American Journal of Political Science* 23: 495–527.
- Kolb DA (1984) *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, NJ: Prentice Hall.
- Kostadinova P and Dimitrova DV (2012) Communicating policy change: Media framing of economic news in post-communist Bulgaria. *European Journal of Communication* 27(2): 171–186.
- Lazarsfeld PF, Berelson B and Gaudet H (1944) *The People's Choice: How the Voter Makes Up His Mind in a Presidential Campaign*. New York: Columbia University Press.
- Lenart S (1994) *Shaping Political Attitudes: The Impact of Interpersonal Communication and Mass Media*. Thousand Oaks, CA: SAGE.
- Lusardi A and Mitchell OS (2008) Planning and Financial Literacy: How Do Women Fare? *American Economic Review* 98(2), pp. 413–417.
- Lusardi A and Mitchell OS (2011) Financial Literacy and Planning: Implications for Retirement wellbeing. In: Lusardi A and Mitchell O (Eds.) *Financial Literacy: Implications for Retirement Security and the Financial Marketplace*. Oxford: Oxford University Press.
- Luskin RC (1990) Explaining political sophistication. *Political Behavior* 12(4): 331–361.
- Lynch JW, Kaplan GA and Shema SJ (1997) Cumulative impact of sustained economic hardship on physical, cognitive, psychological, and social functioning. *New England Journal of Medicine* 337(26): 1889–1895.
- McClurg SD (2006a) Political disagreement in context: The conditional effect of neighborhood context, disagreement and political talk on electoral participation. *Political Behavior* 28(4): 349–366.
- McClurg SD (2006b) The electoral relevance of political talk: Examining disagreement and expertise effects in social networks on political participation. *American Journal of Political Science* 50(3): 737–754.
- MacDonald SE, Rabinowitz G and Listhaug O (1995) Political sophistication and models of issue voting. *British Journal of Political Science* 25(4): 453–483.
- Manning P (2013) Financial journalism, news sources and the banking crisis. *Journalism* 14(2): 173–189.
- Markus GB (1979) *Analyzing Panel Data*. Beverly Hills, CA: SAGE.
- Mondak JJ (1995) *Nothing to Read: Newspapers and Elections in A Social Experiment*. Ann Arbor, MI: University of Michigan Press.
- Mutz DC (1992) Mass media and the depoliticization of personal experience. *American Journal of Political Science* 36: 483–508.
- Mutz DC (1994) Contextualizing personal experience: The role of mass media. *The Journal of Politics* 56(03): 689–714.
- Neuman WR (1986) *The Paradox of Mass Politics: Knowledge and Opinion in the American Electorate*. Cambridge, MA: Harvard University Press.
- Neuman WR (1992) *Common Knowledge: News and the Construction of Political Meaning*. Chicago, IL: University of Chicago Press.
- Price V, Tewksbury D and Powers E (1997) Switching trains of thought the impact of news frames on readers' cognitive responses. *Communication Research* 24(5): 481–506.

- Prior M (2003) Any good news in soft news? The impact of soft news preference on political knowledge. *Political Communication* 20(2): 149–171.
- Prior M (2005) News vs. entertainment: How increasing media choice widens gaps in political knowledge and turnout. *American Journal of Political Science* 49(3): 577–592.
- Prior M (2009) Improving media effects research through better measurement of news exposure. *The Journal of Politics* 71(03): 893–908.
- Quiring O and Weber M (2012) Between usefulness and legitimacy media coverage of governmental intervention during the financial crisis and selected effects. *The International Journal of Press/Politics* 17(3): 294–315.
- Riffe D, Aust CF and Lacy SR (1993) The effectiveness of random, consecutive day and constructed week sampling in newspaper content analysis. *Journalism & Mass Communication Quarterly* 70(1): 133–139.
- Rudolph TJ (2003) Who's responsible for the economy? The formation and consequences of responsibility attributions. *American Journal of Political Science* 47(4): 698–713.
- Scheufele DA (2002) Examining differential gains from mass media and their implications for participatory behavior. *Communication Research* 29(1): 46–65.
- Schmitt-Beck R (2003) Mass communication, personal communication and vote choice: The filter hypothesis of media influence in comparative perspective. *British Journal of Political Science* 33(2): 233–259.
- Scott AJ and Lewis A (2000) The economic awareness, knowledge and pocket money practices of a sample of UK adolescents: A study of economic socialisation and economic psychology. *Citizenship, Social and Economics Education* 4(1): 34–46.
- Semetko HA and Valkenburg PM (2000) Framing European politics: A content analysis of press and television news. *Journal of Communication* 50(2): 93–109.
- Sheafer T (2008) The media and economic voting in Israel. *International Journal of Public Opinion Research* 20(1): 33–51.
- Soroka SN (2002) When does news matter. Public Agenda-Setting for Unemployment. Nuffield College Politics Working Paper 2002-W7.
- Stamm KR, Clark F and Eblacas PR (2000) Mass communication and public understanding of environmental problems: The case of global warming. *Public Understanding of Science* 9(3): 219–237.
- Strömbäck J (2005) In search of a Standard: Four models of democracy and their normative implications for journalism. *Journalism Studies* 6(3): 331–345.
- Tambini D (2010) What are financial journalists for? *Journalism Studies* 11(2): 158–174.
- Ünal-Karagüven MH (2009) Psychological impact of an economic crisis: A Conservation of Resources approach. *International Journal of Stress Management* 16(3): 177.
- Valentino NA, Beckmann MN and Buhr TA (2001) A spiral of cynicism for some: The contingent effects of campaign news frames on participation and confidence in government. *Political Communication* 18(4): 347–367.
- Valkenburg PM, Semetko HA and de Vreese CH (1999) The effects of news frames on readers' thoughts and recall. *Communication Research* 26(5): 550–569.
- Van Dalen A and Van Aelst P (2014) The media as political agenda-setters: Journalists' perceptions of media power in eight West European Countries. *West European Politics* 37(1): 42–64.
- Williams ML, Waldauer C and Duggal VG (1992) Gender differences in economic knowledge: An extension of the analysis. *The Journal of Economic Education* 23(3): 219–231.
- Zaller JR (1992) *The Nature and Origins of Mass Opinion*. Cambridge: Cambridge University Press.
- Zucker HG (1978) The variable nature of news media influence. *Communication Yearbook* 2: 225–240.

## Appendix I

### (a) Economic Sophistication Questions

(Bold font is used for the correct answers)

(1) How high is the unemployment rate in Denmark, according to Eurostat? (August 2012)

- (a) 2.3%
- (b) **4.8%**
- (c) **8.1%**
- (d) 11.2%
- (e) 13.5%
- (f) Don't Know

(There are two correct answers for this question, due to the complex system that unemployment is measured and reported in Denmark)

(2) Who is the current managing director of the International Monetary Fund (IMF)?

- (a) Dominique Strauss-Kahn
- (b) Kofi Anan
- (c) **Christine Lagarde**
- (d) Bill Gates
- (e) Don't Know

(3) Which of these countries is not in the top five export partners of Denmark?

- (a) Sweden
- (b) UK
- (c) **Russia**
- (d) Germany
- (e) Don't Know

(4) Which is the credit rating of Denmark according to Standard & Poors?

- (a) **AAA**
- (b) AA
- (c) BBB
- (d) C
- (e) Don't Know

*(b) Interpersonal Communication Question*

How often if at all, do you discuss about the economy?

- (a) Never
- (b) Once a month or less
- (c) A few times a month
- (d) A few times a week
- (e) Every day or almost everyday

*(c) Experiences Scale*

- (1) Have you, or someone you know, lost his job recently?
- (2) Have you, or someone you know, not been able to pay his bills recently?
- (3) Do you feel comfortable with your retirement savings?
- (4) Did you restrict your summer vacation spending in 2013?
- (5) Did you limit the expenses related to Christmas in 2012?

Answers

- (a) Yes
- (b) No
- (c) Do not know/Do not wish to answer