

Can the tabloid media create Eurosceptic attitudes? A quasi-experiment on media influence in England

Florian Foos*
Daniel Bischof[‡]

6th June 2018

Abstract

Are changes in citizens' attitudes towards EU-integration endogenous to campaigns by tabloid media outlets? The question to what extent public opinion is a consequence, rather than a cause of media reports is difficult to answer because citizens self-select into media consumption. We use a unique quasi-experiment in the United Kingdom – the widespread boycott of the most important right-wing tabloid newspaper, the Sun, in Merseyside county as a direct consequence of the Sun's reporting on the 1989 Hillsborough soccer disaster – to identify the effects of reading the Sun on attitudes towards leaving the EU. Using a difference-in-differences design based on British Social Attitudes data spanning the years from 1983 to 1996, we show that this specific event caused a sharp drop in Sun readership in Merseyside. We also show that attitudes towards the EU got significantly more positive in Merseyside during the boycott, compared to attitudes of respondents in other English regions. We estimate that this effect amounts to around 11 percentage-points. The results of this paper have important implications for our understanding of media effects, and suggest that the tabloid media played a role in influencing attitudes towards leaving the EU.

[†]Comments very welcome. Print until the beginning of the appendix (page 29).

*Department of Political Economy, King's College London (UK); florian.foos@kcl.ac.uk. We are grateful for comments and suggestions by Judith Spirig, Gabe Lenz, Stuart Wilks-Heeg, Dominik Hangartner, and Arndt Leininger, and would like to thank the participants and the audience of the MPSA 2018 panel "Identifying Media Effects on Political Outcomes".

[‡]Department of Political Science, University of Zurich (CH); bischof@ipz.uzh.ch.

1 Introduction

How the media shape public opinion on important political issues is a key question to research on democracies (Bartels 1993; Erikson 1976; Klapper 1960; Ladd and Lenz 2009; Lazarsfeld, Berelson, and Gaudet 1948; Lippmann 1921; Mutz and Martin 2001; Zaller 1996). At least since the 17th century democratic theorists assign a crucial role to the mass media, and specifically the press, in informing and to enlightening citizens (for a summary of these arguments, see: Holmes 1991).¹ Classical readings frequently employ superlative terms in relation to the press such as “the watchdog”, the “guardian of public interest” or the “Fourth Estate” when referring to the media in this context (Holmes 1991).

While much of the literature in democratic theory hence sees the media as a force with the potential to empower citizens in a democracy, and to hold the government and business accountable, there is also a darker side to media influence, especially if it is concentrated in the hands of a few influential individuals (Lukes 1974). According to this view of media power, the media can manipulate public opinion to suit the interests of a narrow economic and political elite (Horkheimer, Adorno, and Noeri 2002). The media influence public opinion by politizising issues, keeping other issues off the political agenda, and by suggesting what and how citizens think about specific issues (Lukes 1974). As Lippmann (1921) wrote:

“Under the impact of propaganda, not necessarily in the sinister meaning of the word alone, the old constants of our thinking have become variables. It is no longer possible, for example, to believe in the original dogma of democracy; that the knowledge needed for the management of human affairs comes up spontaneously from the human heart (Lippmann 1921: Chapter XV).

Lippmann (1921) emphasizes that individual attitudes that aggregate into public opinion do not arise out of a vacuum or solely out of the lived experience of individuals. Instead, they are informed and influenced by elites that use the means of propaganda to shift public opinion in their favour.

No matter to which view of the media one subscribes both assume that the media is able

¹For instance, Montesquieu describes “publicity” as a cure against corrupt and abusive elites. (Holmes 1991)

to influence citizens, either by providing useful information or by providing misinformation. However, the empirical evidence on the media's ability to influence citizens is far from conclusive. Early studies suggested that public opinion remains mostly stable across time (Klapper 1960; Lazarsfeld, Berelson, and Gaudet 1948; Lippmann 1921), and at best, that media exposure should lead to a reinforcement of existing attitudes (Sherrod 1971; Shrum 2002). Most prominently Klapper (1960) concluded that, if anything, the media has "minimal effects" – meaning at best the media can prime citizens.

Yet, more recent research casts doubt on these studies, emphasizing that earlier findings on media effects suffer from both methodological as well as conceptual shortcomings (Entman 1989; Bartels 1993; Kinder 1998; Ladd and Lenz 2009; Terkildsen and Schnell 1997). Recent research emphasizes that in several instances the media can affect public opinion (Baum and Potter 2008), especially on issues which are relatively unobtrusive to the public – such as issues of foreign policy (Baum 2002; Iyengar and Simon 1992). In the European context, the European Union (EU) is frequently described as an unobtrusive, technocratic, institutional puzzle both by the tabloid media as well as the general public (Kritzinger 2003). Specifically during the UK's Brexit campaign mainstream media, pundits and academics frequently suggested that British tabloids had a crucial impact on how the public perceived the campaign and how the public felt about the UK leaving the EU.² Also current research suggests that public knowledge about the EU are subject to media effects (Azrout, van Spanje, and de Vreese 2012; Carey and Burton 2004; De Vreese and Boomgaarden 2006; De Vreese, Boomgaarden, and Semetko 2011; Maier and Rittberger 2008). However to the best of our knowledge, we still lack robust *causal* evidence on whether and how the tabloid media affects public opinion on Euroscepticism.

Existing research faces several challenges in making robust causal inferences about the relationship between the media and public opinion regarding EU membership. First, in general, traditional media environments are fairly stable (*low variation*). Thus, empirically, the relative stability of the media environment makes it difficult to disentangle the effects of specific newspapers or television stations on public opinion. This means that the impression of minimal effects can arise because we are methodologically unable to study the effects of entire

²The Guardian: [Did the Mail and Sun help swing the UK towards Brexit?](#); NYT: [To Understand 'Brexit', Look to Britain's Tabloids](#); Simon Wren-Lewis: [Leave and the Left Behind](#).

1 Introduction

media organizations or media agendas on specific issues, and are left with studying smaller interventions that are manipulatable by researchers, for instance in survey experiments. Second, there is a consensus that there is a lack of credible measures of individuals' media exposure. Even if such measures exist, they usually suffer from severe *selection biases*. Most crucially individuals tend to self-select into media exposure, with self-selection being strongly driven by partisan and ideological reasoning. Third, mass media not only set the agenda, but also follow the political agenda, and are responsive to public opinion (*reverse causation*). Specifically the last two problems above make causal inference about important media effects extremely difficult – if not impossible for most studies.

Using a quasi-experimental design we attempt to address the three problems discussed above. Experimental (Gerber, Karlan, and Bergan 2009) and quasi-experimental designs (DeLaVigna and Kaplan 2007; Ladd and Lenz 2009; Martin and Yurukoglu 2017) have been most successful in studying the causal effects of the media on political outcomes, and public opinion. Our design rests on a specific historical event, the Hillsborough disaster, a human crush at Hillsborough soccer stadium in Sheffield, England, on 15 April 1989, which led to the boycott of the Eurosceptic tabloid “The Sun” in Merseyside (UK). Importantly, this boycott was not triggered by the eurosceptic slander of “The Sun”, but by its extremely biased reporting on the disaster. The boycott was hence orthogonal to EU attitudes because it was triggered by a sports event, and therefore both *selection biases* and *reverse causation* are unlikely to explain the much greater decline in Sun readership in Merseyside after the disaster. Moreover, the only large-scale, and enduring boycott of the nation's most important tabloid newspaper is a sufficiently large and important event to allow us to estimate the effects of a powerful news organisation on euroscepticism, addressing the methodological concern that often important causes are difficult to manipulate.

Using a difference-in-differences design based on yearly British Social Attitudes data spanning the years from 1983 to 1996, we show that this specific event caused a sharp drop in Sun readership in Merseyside. We also show that respondents' attitudes towards the EU got significantly more positive in Merseyside after the boycott, compared to attitudes of respondents in the UK as a whole, and other Northern cities.

2 Conditions favorable to media influence: An unobtrusive issue subject to one-sided messaging

Our findings suggest that the tabloid media had a severe influence on public perceptions of the EU. The substantial size of our effect – around 11 percentage-points – speaks also to previous research finding comparable media effects on political behavior and attitudes (e.g. King, Schneer, and White 2017; Ladd and Lenz 2009; Reeves, McKee, and Stuckler 2016; DellaVigna and Kaplan 2007; Martin and Yurukoglu 2017). Several implications can be drawn from our study. On the one hand, it appears that the public actively used information that they receive via media to become informed about what was then a relatively unobtrusive issue – the EU. On the other hand, simple messages spread via by the tabloid media stuck with parts of the public. A well-organised and sustained media campaign, especially if it is characterised by one-sided messaging, can hence have important consequences for public opinion. Consistent with our findings, the Sun’s 20 years campaign against British EU membership might hence contributed to laying the groundwork for one of the most consequential public policy decisions in recent history, the UK’s decision to leave the European Union in the 2016 EU referendum.

2 Conditions favorable to media influence: An unobtrusive issue subject to one-sided messaging

In the current polarizing times, characterized by strong two-sided messaging against or in favor of the EU, we should not expect strong persuasive effects of media exposure as subjects increasingly consume media outlets that are aligned with their political preferences (Chong and Druckman 2007). Under these circumstances we should observe the polarization of political attitudes, instead of a shift in the population mean. This is what DellaVigna and Kaplan (2007) and Hopkins and Ladd (2014) find in their papers about Fox News consumption in the United States. Lately, the EU issue has also been subject to increased visibility since the rejection of the European constitutional treaty in France and the Netherlands in 2004, the latest economic and financial crisis, and the Brexit and refugee debates (Boomgaarden et al. 2010).

However, in the late 1980s, and mid 1990s, the period under investigation, news about the EU have been at the margins of the mainstream news media agenda (Peter and De Vreese 2004); only facing singular peaks during crucial moments such as the ratification of the Maastricht treaty, and the UK’s withdrawal from the ECU.

2 Conditions favorable to media influence: An unobtrusive issue subject to one-sided messaging

Arceneaux and Kolodny (2009) show based on a randomized field experiment that campaign messages influence attitudes and issue salience on emerging, but not on established issues. In the 1980s and 1990s, the EU issue could be classified as an emerging issue, which was politicised by issue entrepreneurs (De Vries and Hobolt 2012; Hobolt and de Vries 2015). Combined with sustained one-sided messaging (Chong and Druckman 2007) from campaigning media outlets, an emerging issue provides optimal conditions for slanted media coverage to have large and durable effects on public opinion. If this one-sided messaging on an issue of paramount public policy importance is not countered by political elites and the mainstream media, campaigning papers such as “The Sun” or the “Daily Mail”, which succeed at framing and politicizing an issue, can fuel a perfect storm.

2.1 How the media affects euroscepticism: challenges for causal inference

Research on the effects of media persuasion are plagued by several severe methodological challenges. First, in most instances, variation of messages sent by the media is low. Since the mid 1980s, in general media outlets and newspapers have been remarkably consistent in their position on the European Union. This might also explain why several studies find no effect or small effects of individual media exposure to EU messages (Carey and Burton 2004; Azrout, van Spanje, and de Vreese 2012). Instead some studies suggest that a country’s media environment drives euroscepticism (e.g. Azrout, van Spanje, and de Vreese 2012). This might be case purely because there is more variation of media environments across countries (de Vreese 2001) than there is variation within countries across news outlets.

Furthermore, it remains difficult to conclude that cross-country differences are subject to different media environments and not driven by any other country-specific difference (*confounding*). For instance Lubbers and Scheepers (2010) find that between 1994-2004 Dutch citizens became more eurosceptic whereas support for the EU increased in Spain for the same period. They suggest that the introduction of the Euro might partly explain this difference. While this seems to be a plausible explanation, any difference between the two countries experienced between 1994 and 2004 might be plausibly responsible for the increase/decrease of Euroscepticism. This problem of confounding became more severe in the last decade with sev-

2 Conditions favorable to media influence: An unobtrusive issue subject to one-sided messaging

eral disruptive and simultaneous events driving the European agenda – such as the European debt crisis, the “refugee crisis” or the Brexit debate.

From a methodological angle, more recent research on the media and EU attitudes addresses concerns about confounding by relying on individual panel studies (Semetko, Van der Brug, and Valkenburg 2003; De Vreese and Boomgaarden 2006; Azrout, van Spanje, and de Vreese 2012). While improving on the issue of confounding compared to cross-sectional data, and more carefully investigating the low variation of media messages, these studies rely on respondents’ self-reported exposure to media environments, and in the absence of a clear identification strategy, are still subject to time-variant confounders and sample attrition. This is troublesome for various reasons. First, studies frequently rely on general questions about media exposure – e.g. number of days watching television news (De Vreese and Boomgaarden 2006). Studies relying on such questions at best can differentiate between respondents *amount* of exposure. But in essence, the crucial comparison of interest for causal claims is the difference between respondents without exposure and people with *any* exposure. More crucially, researchers are also interested in the specific type of media that respondents are exposed to. For instance, in the British case the effect of exposure to a yellow press tabloid such as the Sun is likely different from reading the Guardian. Nevertheless, even if panel respondents are asked about which news outlets they consume, citizens still self-select into exposure. This selection process is likely to be correlated with several factors, with political ideology being a major driver. When respondents select into media which coincide with their political ideology, differentiating the cause from the effect of media exposure becomes impossible.

Lately scholars have also employed survey experimental designs to address issues of confounding (Schuck and De Vreese 2006; Maier and Rittberger 2008; De Vreese, Boomgaarden, and Semetko 2011). These studies report consistent effects of media exposure on attitudes towards the EU. However they suffer from questions of external validity, and durability. For instance, Maier and Rittberger (2008) build their sample on 95 undergraduates at the University of Kaiserslautern (Germany). Leaving aside the small sample size, this is a peculiar sample of respondents, which makes it virtually impossible to generalise from the sample to the broader population of interest.

3 *The Hillsborough Disaster*

In summary, while literature reports mixed findings on the influence of the media on Euro-sceptic attitudes, previous research suffers from several issues making it difficult to sustain causal claims about media effects on Euroscepticism. While findings are mixed (Hobolt and de Vries 2016: 421-423), from a theoretical perspective the period under investigation lends itself to strong media effects because it is characterised by sustained populist, one-sided messaging from newspapers with a large audience, on a relatively inobtrusive and technical issue.

3 The Hillsborough Disaster

We seek to address these issues of causal inference by relying on a quasi-experiment, exploiting exogenous differences in exposure to the most important tabloid paper in the UK (The Sun), as a direct consequence of the “Hillsborough Disaster”. On 15 April 1989 Liverpool F.C. was playing Nottingham Forest in the semi-finals of the British Football Association (FC) Cup at the Hillsborough stadium located in Sheffield (UK). Originally the match was scheduled to start at 3 pm. Yet, approximately at 2.30 pm large crowds – largely Liverpool F.C. supporters – started gathering in front of the stadium. At that time the police officer in charge of the site became aware that police started losing control of the masses. At 2.47 pm the commander in chief decided to ask staff to open the exit gates of the stadium (Jemphrey and Berrington 2000: 472-476; Scration 2004).

At 2.52 pm the gates were opened for about five minutes. Roughly 2000 Liverpool F.C. supporters found their way into the stadium. Once the match was underway the exit gates were opened again and more supporters entered the stadium. This uncontrolled instreaming of ever more people led to a overcrowding of the stadium, specifically of the side pens (Jemphrey and Berrington 2000: 472-476). Since the stands were separated from the pitch by tall fences, people had no possibility to escape and run on the pitch. This eventually led to ninety-six people losing their lives, hundreds being injured and thousands traumatized (Scration 2004; Wright 1993; Wright, Gaskell, and O’Muircheartaigh 1998).

3.1 The Sun's Coverage of the Hillsborough Disaster, the boycott in Merseyside & Euroscepticism in the Sun

The Sun's coverage of the Hillsborough disaster was particularly one-sided and falsely claimed that "the truth" about the disaster was that the Liverpool fans were largely responsible for the chaotic escalation (see figure 1). Based partly on false information by a South Yorkshire

Figure 1: The Sun's Hillsborough coverage



Source: The Sun on 13th September 2012: We are sorry for our gravest error.

police inspector, the Sun claimed that Liverpool fans had stolen from the dead as the disaster unfolded. According to the Sun's source one of the dead people had "numerous wallets" on him, and was likely "one of the Liverpool pickpockets".³

23 years after the incident, in the wake of the publication of the 2nd Hillsborough report by the Hillsborough Independent Panel established by Parliament, which concluded that Liverpool fans were in no way responsible for the disaster⁴, the Sun admitted that their coverage was "false". The Sun apologized to the families of victims, and Liverpool supporters, and called their Hillsborough coverage "our gravest error", and the "blackest day in this newspaper's history". Their apology read "Today we unreservedly apologize to the Hillsborough victims, their

³The Guardian: How the Sun's 'truth' about Hillsborough unravelled.

⁴Hillsborough Independent Panel

3 The Hillsborough Disaster

families, Liverpool supporters, the city of Liverpool and all our readers for that misjudgment.”

Despite what was clearly a commercial disaster for the paper, with sales in Merseyside dropping from 524,000 to 320,000 overnight, in the days following the infamous front page, The Sun remained stubborn. This stubbornness led to a boycott of the Sun in the Merseyside area. The boycott was not only supported by supporters of Liverpool F.C., the most popular soccer club in the Merseyside region, but even supporters of Premier League rival Everton F.C. showed their solidarity with Liverpool supporters and the Hillsborough 96, and vouched never to buy the Sun again. Until today this boycott is ongoing. In 2017 after speaking to several victims of the Hillsborough disaster, the club owners, and the manager Jürgen Klopp decided to ban any Sun journalists from entering their stadium at Anfield road and their training ground.⁵

3.2 The Sun’s campaign against the EU

The Australian-born media mogul Rupert Murdoch bought the Sun in 1969. During the period

Figure 2: The Sun’s anti-EEC coverage in the early 1990s



we study (1981-1996) the paper supported the Conservative party under Margaret Thatcher (PM from 1979-1990), and John Major (PM from 1990-1997). Since the beginning of the 1980s, the Sun has printed strong anti-EU sentiments. For instance, on the frontpage in figure 2 it takes a strong stance against EU integration in November 1990. During the time period under investigation, there was hence no change in the Sun’s stance on the EU. While the Sun

⁵The Guardian: Liverpool ban Sun journalists over Hillsborough coverage.

supported New Labour under Tony Blair and Gordon Brown from 1997 until the 2010 General Election, it remained steadfast in its Eurosceptic slant and anti-EU coverage throughout UK Labour's last period in office (Ladd and Lenz 2009).

3.3 Plausible mechanisms

There are essentially three potential mechanisms through which the Hillsborough disaster and the ensuing Sun boycott could affect Eurosceptic attitudes in Merseyside. First, there could be an immediate effect associated with a backlash against the Sun in the immediate aftermath of the Sun's reporting on the disaster, which might turn Liverpoolians against the Eurosceptic opinion that the Sun is mostly associated with. By turning against the paper in general, Liverpoolians might hence also reject the opinions that the paper champions. Second, we should expect mid- to long-term effects of not reading the Sun on attitude formation towards the EEC/European Union. This is because Liverpoolians are deprived of the constant and persistent stream of anti-EEC/EU information and opinion, published in the Sun. Third, while we should expect some of this effect to materialize through direct exposure (or in this case non-exposure) to the Sun's content among its former readers, some of the effect should also work indirectly through social networks (Sinclair 2012; Huckfeldt and Sprague 1995). Citizens share information with each other, and in doing so, influence the opinion formation of others. Newspapers like the Sun therefore do not only influence their readers, but indirectly also the readers' family members, friends, and colleagues.

4 Research Design

The unexpected occurrence of the Hillsborough disaster allows us to estimate the causal effect of a plausibly exogenous, sudden decline in Sun readership on attitudes towards leaving the EU. Given the strong anti-EU stance of the Sun, we expect that the boycott of the Sun in Merseyside should affect public attitudes towards the EU in Merseyside. More specifically, we assume that, after the Hillsborough disaster, euroscepticism should decrease in Merseyside, compared to the rest of the country. To test if the Hillsborough disaster firstly led to a decrease of Sun readership in Merseyside, and secondly, to a decrease in Euroscepticism, we exploit

4 Research Design

the occurrence of the Hillsborough disaster in a difference-in-differences design (Angrist and Pischke 2009: 165-186; Folke, Hirano, and Snyder 2011; Fowler and Hall 2015; Keele 2015; Dinas et al. 2018). More specifically we use the Hillsborough Disaster to assign respondents into treatment (=Merseyside) and control groups (=remaining England):

$$\text{Leaving } EU_{i,c,t} = \gamma_M + \lambda_t + (\gamma_M \times \lambda_t) + \rho_r + \tau_t + \zeta_i + \epsilon_{i,c,t} \quad (1)$$

where *Leaving EU*_{*i,c,t*} is respondent_{*i*}'s support to leave the EU in constituency_{*c*} at year_{*t*}; ρ_r are regional fixed effects, τ_t year fixed effects, ζ_i a vector of individual level controls outlined below and $\epsilon_{i,c,t}$ the error term. $\gamma_M \times \lambda_t$ is the treatment effect of interest based on the Hillsborough disaster which is an interaction term between a set of binary dummy variables being '1' for constituencies in Merseyside (γ_M) and a binary variable being '1' for all respondents surveyed after the Hillsborough disaster (λ_t). Since the sampling frame of the survey is stratified by constituency, we cluster our standard errors at the constituency level.

Our analyses is based on the long-running and high-quality British Social Attitudes (BSA) survey. We measure euroscepticism by relying on a question asking respondents if "Britain should continue its EC/EU membership". Respondents can then either answer "continue", "withdraw", or "don't know".⁶ Our dependent variable *Leaving EU* is then coded '1' if respondents answered that Britain should withdraw from the EC/EU, and 0 otherwise. We cover the years from 1983 to 1996, the last year in which a question on leaving the European Union was included in the BSA.⁷ We control for respondents' gender, age, education, ethnicity, self-reported social class and party identification. Since the BSA reports the interview dates for each respondent, we can directly identify which respondents were interviewed before and after the 20th of April 1989 – the day the Sun published its article on the Hillsborough Disaster.

⁶From 1993 onwards the BSA introduced six answer categories to the same question: "uk leave ec", "stay+reduce ec power", "leave as is", "stay+incr.ec power", "single ec govt", and "don't know". However, since this change in the measurement instrument does not coincide with the treatment, it should not bias our results. All results are robust to excluding the 1993-1996 period.

⁷Unfortunately, the question only re-appears in different wording in the 2015 wave of the BSA. We also include a range of control variables in our models.

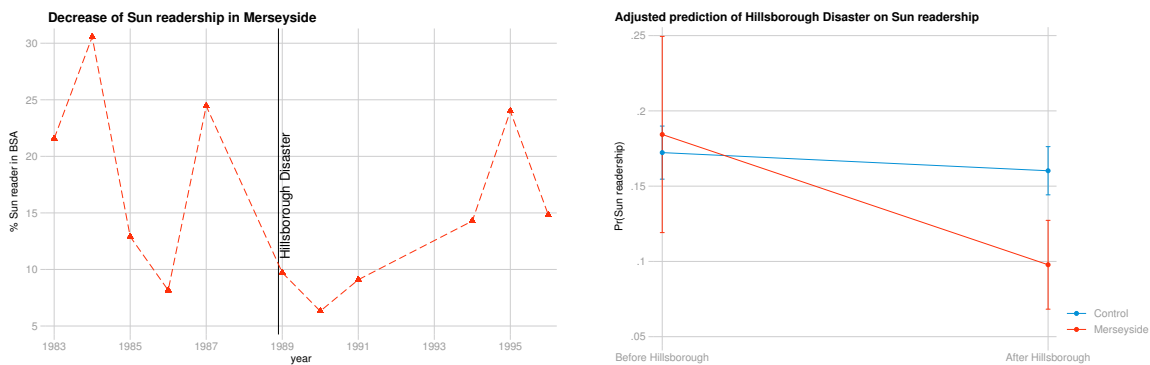
5 Results

5.1 Plausibility of difference-in-differences assumptions

Decrease of Sun readership in Merseyside

While ample anecdotal evidence exists on the Sun boycott in Merseyside following Hillsborough, little systematic empirical evidence has been provided so far. However, anecdotal evidence is hardly enough to validate our identification strategy. In the first step of our analyses we estimate if a decrease of Sun readership occurred in Merseyside based on British Social Attitudes (BSA) data. The left panel in figure 3 gives a first insight into the development of the

Figure 3: How much the Sun readership declined in Merseyside



Notice: left: average Sun readership in Merseyside per year based on BSA; right: predictions of logistic diff-in-diffs surrounded by 95 % confidence intervals.

Sun readership across time in Merseyside. There is a significant drop of 15 percentage-points immediately after the Hillsborough disaster.

The right panel in figure 3 then compares this drop with the remaining constituencies covered in the BSA for England using a logistic difference-in-differences regression (full models reported in table B.1 in the appendix). We estimate that the Hillsborough disaster cost the Sun about half its readership in Merseyside. While before the Sun’s false reports about the disaster around 18 percent of Merseyside respondents reported reading the Sun on a daily basis, after the disaster the percentage declined to around 10 percent. Notice also that the Sun readership remains remarkably stable in the remaining English constituencies as indicated by the flat slope of the blue line in figure 3. In summary, we find a sharp decrease of Sun readership

in Merseyside after the Hillsborough disaster.

Parallel trends assumption

Difference-in-differences (DiD) designs only constitute a valid identification strategy if the parallel trends assumption is fulfilled. In the optimal scenario we would compare Merseyside after the Hillsborough disaster to a counterfactual Merseyside which has not experienced the Hillsborough disaster. But obviously we can only observe Merseyside after having experienced the Hillsborough disaster (also called the *fundamental problem of causal inference* in Holland 1986: 947). A comparison of Merseyside before and after the Hillsborough disaster does not provide a credible counterfactual since several time-varying conditions might be responsible for such changes. Therefore we create credible counterfactuals to Merseyside by relying on other districts in England. The crucial assumption then standing behind the validity of our DiD design is that the treated unit (*Merseyside*) would have followed the same trend as the untreated units (*remaining England*) if it had never experienced the treatment (*Hillsborough disaster*). While we can never be certain that this assumption is truly fulfilled, observing parallel trends in the outcome variable prior to treatment suggests that the parallel trends assumption is unlikely to be violated.

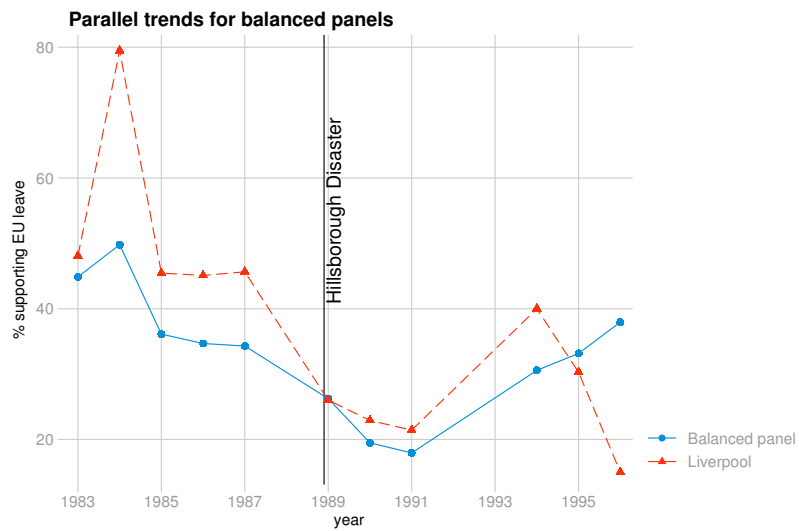
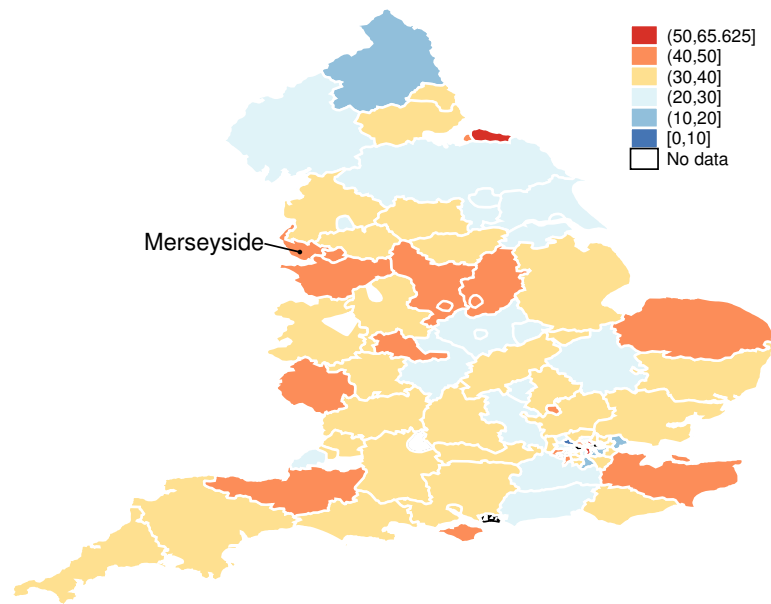
Figure 4 reports the key insights into the parallel trend assumptions prior to the Hillsborough disaster. The upper panel in figure 4 maps eurosceptic attitudes for the whole of England based on BSA data. Here we simply want to show that prior to the Hillsborough disaster the Merseyside region was not a pro-EU outlier. On the contrary, according to the BSA, Merseyside was a rather typical eurosceptic region in England with almost half of its population (49.4%) supporting leaving the EU/EEC. Also notice that eurosceptic attitudes were typical for the adjacent regions surrounding Merseyside (Greater Manchester, Lancashire, Cheshire). The map also underpins the face validity for our measure of euroscepticism, with London, the South of England, and the Northern boarder regions to Scotland being the most in favor of EU integration.

The lower panel in figure 4 plots the percentage of respondents supporting leaving the EU for Merseyside and the control units across time. Notice that we cannot rely on the en-

5 Results

Figure 4: Euroscepticism before Hillsborough disaster across the UK & parallel trends

% support leaving EU before Hillsborough disaster



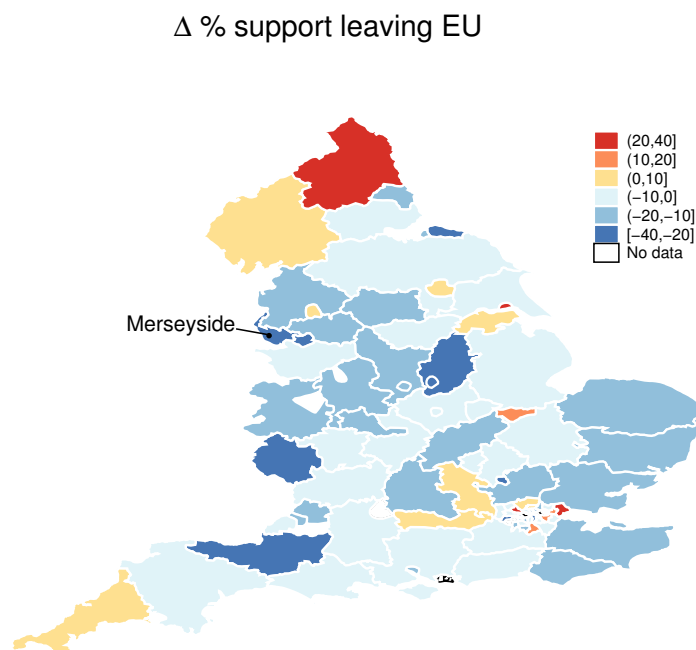
tire sample of English counties covered in the BSA since several counties are not included in each annual cross-section provided by the BSA. Obviously we cannot test the parallel trend assumptions for counties which we do not observe for the entire period. Thus, we only include counties in our analyses which are included for the entire period we analyze. The trends between Merseyside and the remainder of England are remarkably parallel before the Hillsborough disaster, only in 1984 Merseyside experienced a slightly sharper increase in euro-scepticism. Notice, however, that excluding 1983 and 1984 from our analyses does not change our findings. In general we can conclude that the remaining counties in the BSA constitute a credible counterfactual for Merseyside.

5.2 The effect of the Sun boycott on euroscepticism in Merseyside

After having outlined the credibility of our DiD design and the substantially large and statistically significant decrease of Sun readership in Merseyside, we now turn to the main findings of our analyses.

Figure 6 displays the shift of euroscepticism in Merseyside in comparison to the remaining counties in England after the Hillsborough disaster. While a shift in favor of EU integration is pronounced throughout the UK in the early and mid 1990s, it is clearly visible that Merseyside saw one of the biggest shifts in favor of continued EEC and EU membership. In contrast to the pre-Hillsborough situation Merseyside is a clear outlier after the disaster. Only four other regions (Greater Manchester, Somerset in South-East England, Herefordshire in East England & Nottinghamshire in Middle England) experienced a similar shift away from euroscepticism after the disaster. Yet while these regions experienced a similar shift on euroscepticism the Sun readership in these regions did not shift substantively after the Hillsborough Disaster. Thus it is unlikely that the Sun boycott spread into these regions and equally unlikely that the reason for the decrease of euroscepticism in these four regions was caused by the Hillsborough disaster.

Table 1 goes beyond such suggestive evidence and reports the main finding of our DiD models. Each model is based on the same identification strategy outlined above with the interaction between the Hillsborough disaster and Merseyside being the diff-in-diff estimand of

Figure 6: Shift in Euroscepticism after Hillsborough disaster

Note: Reported are differences in % support for leaving the EU in each UK county. Blueish colors show counties in which Euroscepticism *decreased*; reddish colors show counties in which Euroscepticism *increased*.

interest. Each model uses a different set of controls reported in the bottom part of the table. The first model does not use any controls, while models (2) - (7) sequentially introduce region fixed effects, time fixed effects, squared time trends and the set of controls outlined above.

Throughout all models we estimate a theoretically meaningful, large effect of Hillsborough on attitudes towards leaving the EEC/EU: After the Hillsborough disaster, Merseyside became less eurosceptic due to the absence of the Sun. Depending on the models we estimate, this effect ranges from 10 percentage-points to a 14 percentage-points decrease. Thus, we find a statistically significant and substantial drop of euroscepticism due to the Sun boycott in Merseyside. This effect is comparable in its size to previous studies on media effects (e.g. Ladd and Lenz 2009). Notice that this effect is also comparable in its size and significance ones we add regional, time fixed effects and controls.

A major concern when estimating DiD models is that such models usually do not correct for unit specific autocorrelation (Bertrand, Duflo, and Mullainathan 2004). To address this concern we follow Bertrand, Duflo, and Mullainathan (2004) and re-estimate our models using

5 Results

Table 1: Did Euroscepticism decrease after Hillsborough in Merseyside? Yes.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU
Hillsborough	-0.126 (0.0140)	-0.0177 (0.0280)	-0.0805 (0.0208)	-0.0843 (0.0127)	0.000445 (0.0282)	-0.0758 (0.0210)	-0.0177 (0.0297)
Merseyside	0.121 (0.0507)	0.106 (0.0386)	0.104 (0.0399)	0.0766 (0.0389)	0.0806 (0.0404)	0.0795 (0.0422)	0.106 (0.0448)
DiD	-0.138 (0.0509)	-0.126 (0.0376)	-0.124 (0.0379)	-0.107 (0.0386)	-0.105 (0.0418)	-0.104 (0.0414)	-0.126 (0.0430)
Constant	0.374 (0.0103)	0.550 (0.0262)	17241.3 (1690.7)	0.273 (0.0924)	0.368 (0.0938)	17004.1 (2317.5)	0.344 (0.0460)
Controls				✓	✓	✓	
Regional FEs		✓	✓		✓	✓	✓
Year FEs		✓			✓		✓
Year ²			✓			✓	
R^2	0.0206	0.0428	0.0382	0.0518	0.0677	0.0645	0.0428
N	9375	9375	9375	7701	7701	7701	9375
$N_{constituencies}$	232	232	232	231	231	231	232

Clustered standard errors by constituency;

Controls (1985-1996): age, gender, education, religion, social class, party-ID;

region fixed effect & year fixed effects omitted from table, model (7) uses bootstrapped standard errors.

bootstrapped standard errors (model (7) in table 1). Comparing the standard errors reported in models (2) and (7) in table 1 suggests that indeed the estimates based on bootstrapping are larger and, thus, “more conservative”. However, our findings remain robust to using bootstrapped standard errors.

Estimating the effect on plausible Sun readers

Critical readers might argue that we should not expect a homogeneous effect of the Sun boycott on euroscepticism in Merseyside. Instead the effect should vary within Merseyside: most importantly, those subgroups that were most likely to read the Sun before Hillsborough should see a larger effect of the boycott than subgroups that were very unlikely to read the Sun in the first place. However, since our analyses are based on repeated cross-sectional data, observing a different sample of respondents prior to and after the Hillsborough disaster, we do not have the possibility to *directly* observe these respondents over time.

Yet, we can estimate which subgroups were more likely to read the Sun before the dis-

5 Results

aster. We first predict which individual characteristics predict Sun readership in the sample of respondents prior to the Hillsborough disaster (for more details please see section B.1 in the Appendix). We find that the strongest predictor of Sun readership is social class – most specifically unskilled and skilled working class respondents are much more likely to read the Sun than middle class respondents. We should therefore expect that the effect of the Sun boycott should be most pronounced among working class respondents, and particularly among the unskilled working class.

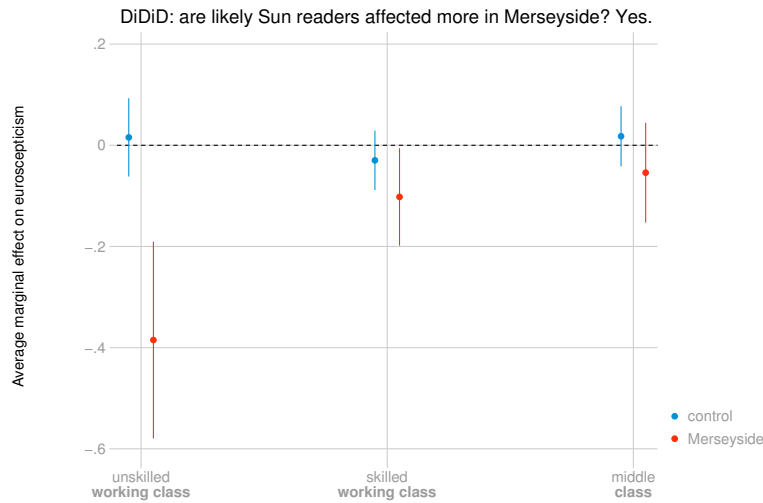
We use a difference-in-difference-in-differences (DiDiD) model to understand if the Hillsborough effect on euroscepticism varies by social class. Formally we add an interaction between the standard DiD estimator ($\gamma_M \times \lambda_t$) and the class variable ($class_i$) to our general DiD model estimated above:

$$\begin{aligned}
 \text{Leaving } EU_{i,c,t} &= \gamma_M + \lambda_t + class_i \\
 &+ (\gamma_M \times \lambda_t) + (\gamma_M \times class_i) + (\lambda_t \times class_i) \\
 &+ (\gamma_M \times \lambda_t \times class_i) \\
 &+ \rho_r + \tau_t + \zeta_i + \epsilon_{i,c,t}
 \end{aligned} \tag{2}$$

Figure 7 reports the findings based on this model. The figure reports the marginal effects of the three-way interaction between the DiD estimand and social class. The results are in line with our expectations. We do not find any significant effect of the Hillsborough disaster for the respondents living outside of Liverpool (blue whiskers). In contrast, significant differences emerge within Liverpool due to the disaster (red whiskers). Furthermore, the effects vary as expected along social class – with the most likely Sun readers being affected by the boycott. We observe significant decreases of euroscepticism for unskilled and skilled working class respondents (the working class) while we estimate a null effect for respondents with middle class/white collar occupations that were very unlikely to read the Sun in the first place. Thus, the decrease of euroscepticism in Merseyside after the Hillsborough disaster reported in the first part of our analyses appears to be driven by working class respondents who should have been more likely to have read the Sun in the absence of the Hillsborough disaster.

5 Results

Figure 7: Difference-in-Difference-in-Differences results for social classes



Note: Reported are the ATTs stemming from a difference-in-difference-in-differences model interacting the standard DiD estimand (Merseyside \times Hillsborough) with self-reported social class (unskilled working class (baseline): “never had job”, unskilled; skilled working class: *partly skilled*, *skilled*, middle: *intermediate*, *professionals*) of BSA respondents. Plotted are point estimates (scatter) surrounded by 95 % confidence intervals (whiskers).

5.3 Robustness

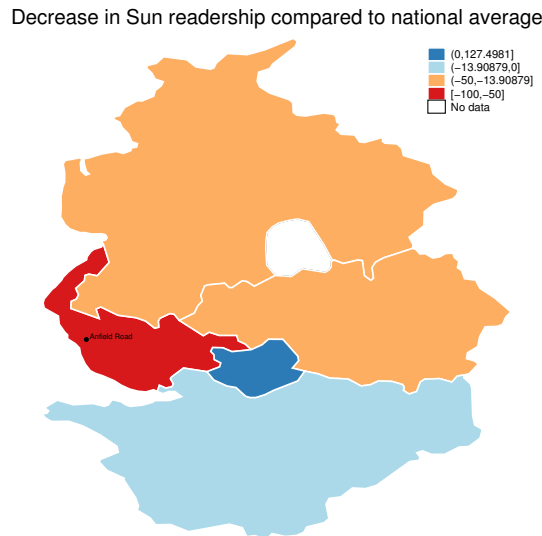
Although table 1 reports robust findings across all models, a range of potential concerns remain to be addressed. First, estimates might change if we use the unbalanced panel of English constituencies, or the most comparable constituencies in the North instead of the balanced panel we use in table 1. Yet, re-estimating our models including either all observations in England (table C.2 in the Appendix), or respondents located in Northern constituencies only (table D.2 in the appendix) does not affect the findings reported above.

Second, spillover effects into adjacent counties might be possible such that not only Merseyside but also adjacent counties might have experienced both a decrease in Sun readership and in euroscepticism. Since respondents in those counties are included in all counterfactual control groups, spillover effects might bias the estimates reported above. However, figure 8 shows that adjacent counties neither experienced a similar decrease in Sun readership, nor did they experience a significant decrease in euroscepticism after the Hillsborough disaster (see figure 6).

Third, in general the decrease of euroscepticism might not be unique to Merseyside, but

5 Results

Figure 8: Are there spillover effects to adjacent counties? No.



driven by a more general trend against euroscepticism in England in the 1990s. For instance, as discussed above, at least four regions experienced a similar decrease in euroscepticism after the Hillsborough disaster. To address this concern we estimate a placebo test in space. More specifically, we randomly re-assigned the Hillsborough event into other constituencies in England. The upper panel in figure 9 reports the finding of this randomization test. The red vertical line reports the effect we found for Merseyside while the density plot reports the estimated effect for all 1000 permutations we estimated. It becomes strikingly evident that the Hillsborough effect for Merseyside remains distinct and is statistically different from the distribution of placebo effects we estimated.

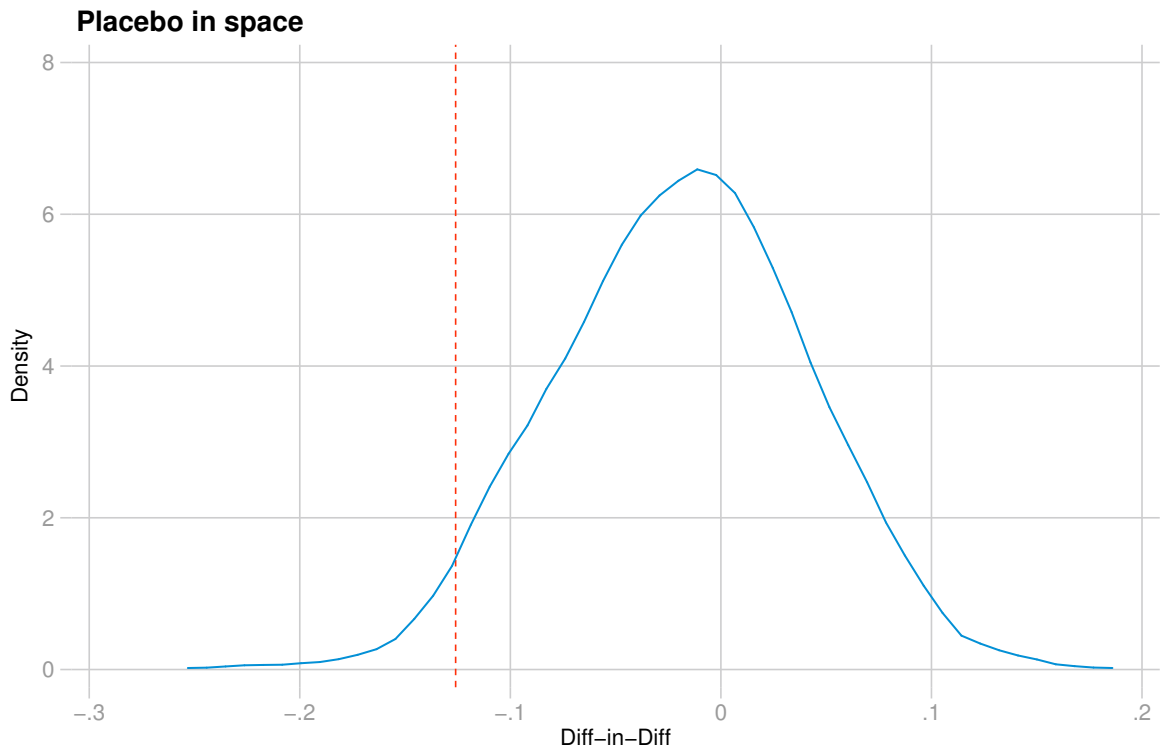
Fourth, a potential issue might be that the treatment and control group are not comparable on specific covariates and, thus, that our findings are driven by omitted variable bias. To address this concern we use matching. We explain our matching approach extensively in the appendix (please see Appendix section E). All findings are robust to using matching techniques. The effect decreases to around 8 percentage-points, but remains significantly different from zero in all specifications.

5.4 Excludability

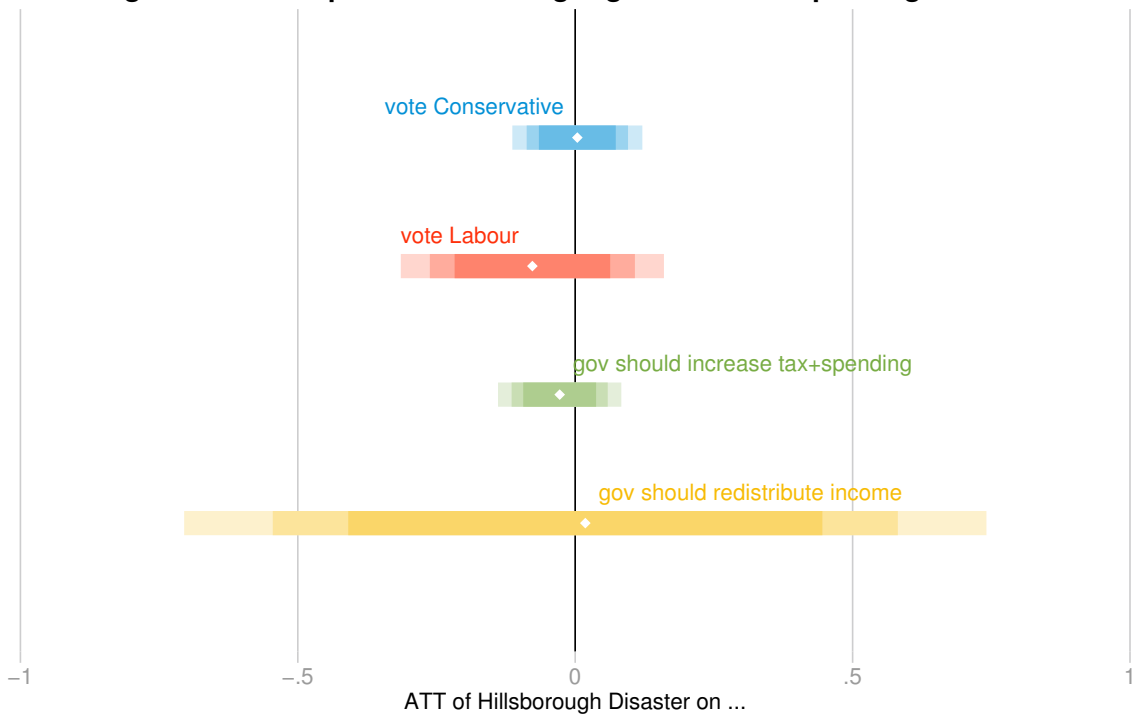
There are two potential alternative theoretical explanations, an increase in EU structural funds to Merseyside, and a decline in Conservative party support during the same time period, that

5 Results

Figure 9: Placebo tests: placebo in space & change of voting patterns after Hillsborough



Excluding alternative explanations: voting & governmental spending



Note: Placebo in space based on 1000 permutations, reports an ATT=-0.126 with $SE(P)=0.006$.

could potentially explain our findings. We provide evidence against these two alternative hypotheses below.

It is well-known that during the 1990s Merseyside was dedicated a priority region for the receipt of EU structural funds (Objective 1 spending) by the UK government lead by Conservative Prime Minister John Major. An increase in EU structural funds over and above what other regions received could hence potentially provide an alternative explanation for our findings. However, Merseyside was only dedicated a priority region for EU structural funds from 1994 onwards, for the 1994-1999, the 2000-2006, and the 2007-2013 funding rounds (Di Cataldo 2016). Before that, for the 1989-1993 funding round, Merseyside benefited from structural funds equally with other Northern cities. The increase in EU structural funds, albeit significant, therefore only affects the last three years of our analysis. Our results are in no way dependent on the inclusion of the 1994-1996 period, and are both substantially and statistically robust to the exclusion of those years. Furthermore, we also estimated interactive fixed effects models which should control for such unit specific changes in EU funding. Due to issues of overfitting our data we can only estimate such models when including the entire English sample, but again our findings remain robust to such an estimation strategy (model (7) in table C.2 in the Appendix).

Finally, during the beginning and mid 1990s, the UK saw a decline in Conservative party support and a shift to the Labour Party, first lead by the late John Smith and after the former's death, from 1994 onwards, by Tony Blair. Thanks to its industrial heritage and radical political tradition, Merseyside has always been a strong bastion of the UK Labour Party. A steeper drop in support for the governing Conservative Party in Merseyside than elsewhere in the beginning and mid 1990s could hence invalidate our research design by violating the exclusion restriction. However, as Figure 9 above shows, the differential decline in support for the Conservatives is no more pronounced in Merseyside than in other UK regions. In fact, the difference-in-differences estimate is a tightly estimated null. We can therefore rule out that it is a more pronounced decline in Conservative party support that could explain the differential increase in the observed EU support in Merseyside post 1989 rather than a decline in Sun readership as a function of the Hillsborough soccer disaster.

6 Discussion and conclusion

In this paper we provide robust empirical evidence that a sharp drop in Sun readership in a British county, Merseyside, due to an exogenous shock, the Hillsborough soccer disaster, led to a large increase in pro-EU attitudes in that county during the 1990s, in comparison to other counties that were on similar trajectories before the shock. Our difference-in-differences results are robust to different specifications, the inclusion of control variables, matching techniques, and withstand demanding placebo tests. We estimate this effect to be on average around 11 percentage-points in favor of remaining in the European Economic Area, and later in the European Union (based on models 5 and 6 in Table 1), with the lower bound of the estimated 95% confidence interval indicating an effect of 5 percentage-points, and the upper bound an effect of as much as 18 percentage-points.

Hence, the effect of removing a key Eurosceptic media outlet from consideration among half of its previous readership in a defined locality, is clearly non-trivial for attitude formation on the issue of continued EU membership. Moreover, our analyses show that this decline was likely driven by a large decrease in Euroscepticism among the skilled, and particularly among the unskilled working class, which was the largest audience for the Sun before the disaster.

Although it is important to emphasize that the available data does not allow us to extrapolate to the 2016 EU referendum, based on the results of this paper, it is likely that the Sun's EU coverage has, at least, contributed to laying the groundwork for one of the most consequential policy decisions of the early 21st century. While the city of Liverpool voted overwhelmingly to remain in the European Union, other parts of Northern England, despite similarly strong Labour Party backing, voted to leave.⁸

This study therefore shows that, in favorable environments, sustained media campaigns on emerging issues can have large persuasive effects on public opinion, and that the media can influence citizens' attitudes on issues of real policy consequence. While the results of our study may be conditional on the type of issue on which papers decide to campaign, and the type of counter campaign, or more precisely, the existence and strength of such a counter campaign by other media outlets and political organizations, it provides evidence against the

⁸[Liverpool Echo](#)

References

minimal media effects hypothesis. Under the favorable scope conditions that we specify in this paper, and that were present in this case, we conclude that a sustained media campaign can influence public opinion in the desired direction.

References

- Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton & Oxford: Princeton University Press.
- Arceneaux, Kevin, and Robin Kolodny. 2009. "The effect of grassroots campaigning on issue preferences and issue salience." *Journal of Elections, Public Opinion and Parties* 19 (3): 235–249.
- Azrout, Rachid, Joost van Spanje, and Claes de Vreese. 2012. "When News Matters: Media Effects on Public Support for European Union Enlargement in 21 Countries." *JCMS: Journal of Common Market Studies* 50 (5): 691–708.
- Bartels, Larry M. 1993. "Messages Received: The Political Impact of Media Exposure." *American Political Science Review* 87 (02): 267–285.
- Baum, Matthew A. 2002. "Sex, Lies, and War: How Soft News Brings Foreign Policy to the Inattentive Public." *American Political Science Review* 96 (1): 91–109.
- Baum, Matthew A., and Philip B.K. Potter. 2008. "The Relationships Between Mass Media, Public Opinion, and Foreign Policy: Toward a Theoretical Synthesis." *Annual Review of Political Science* 11 (1): 39–65.
- Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2004. "How much should we trust differences-in-differences estimates?" *Quarterly Journal of Economics* 119 (1): 249–275.
- Boomgaarden, Hajo G., Rens Vliegenthart, Claes H. de Vreese, and Andreas R.T. Schuck. 2010. "News on the move: Exogenous events and news coverage of the European Union." *Journal of European Public Policy* 17 (4): 506–526.
- Carey, Sean, and Jonathan Burton. 2004. "Research note: The influence of the press in shaping public opinion towards the European Union in Britain." *Political Studies* 52 (3): 623–640.
- Chong, Dennis, and James N. Druckman. 2007. "Framing public opinion in competitive democracies." *American Political Science Review* 101 (4): 637–655.
- de Vreese, Claes H. 2001. "'Europe' in the News." *European Union Politics* 2 (3): 283–307.

References

- De Vreese, Claes H., and Hajo G. Boomgaarden. 2006. "Media Effects on Public Opinion about the Enlargement of the European Union." *JCMS: Journal of Common Market Studies* 44 (2): 419–436.
- De Vreese, Claes H., Hajo G. Boomgaarden, and Holli A. Semetko. 2011. "(In)direct framing effects: The effects of news media framing on public support for Turkish membership in the European Union." *Communication Research* 38 (2): 179–205.
- De Vries, Catherine E., and Sara B. Hobolt. 2012. "When Dimensions Collide: The Electoral Success of Issue Entrepreneurs." *European Union Politics* 13 (2): 246–268.
- Dehejia, Rajeev H., and Sadek Wahba. 2002. "Propensity Score-Matching Methods for Nonexperimental Causal Studies." *Review of Economics and Statistics* 84 (1): 151–161.
- DellaVigna, Stefano, and Ethan Kaplan. 2007. "The Fox News effect: Media bias and voting." *The Quarterly Journal of Economics* 122 (3): 1187–1234.
- Di Cataldo, Marco. 2016. "Gaining and losing EU Objective 1 funds: Regional development in Britain and the prospect of Brexit." *LEQS Paper No. 120*.
- Dinas, Elias, Matakos Konstantinos, Dimitrios Xefteris, and Dominik Hangartner. 2018. "Waking Up the Golden Dawn: Does Exposure to the Refugee Crisis Increase Support for Extreme-right Parties?" *Political Analysis* pp. 1–10.
- Entman, Robert M. 1989. "How the Media Affect What People Think: An Information Processing Approach." *Journal of Politics* 51 (2): 347–370.
- Erikson, Robert S. 1976. "The Influence of Newspaper Endorsements in Presidential Elections: The Case of 1964." *American Journal of Political Science* 20 (2): 207–233.
- Folke, Olle, Shigeo Hirano, and James M. Snyder. 2011. "Patronage and elections in U.S. States." *American Political Science Review* 105 (3): 567–585.
- Fowler, Anthony, and Andrew B. Hall. 2015. "Congressional seniority and pork: A pig fat myth?" *European Journal of Political Economy* 40: 42–56.
- Gerber, Alan S., Dean Karlan, and Daniel Bergan. 2009. "Does the Media Matter? A Field Experiment Measuring the Effect of Newspapers on Voting Behavior and Political Opinions." *American Economic Journal: Applied Economics* 1 (2): 35–52.
- Hobolt, Sara B., and Catherine E. de Vries. 2015. "Issue Entrepreneurship and Multiparty Competition." *Comparative Political Studies* 48 (9): 1159–1185.

References

- Hobolt, Sara B., and Catherine E. de Vries. 2016. "Public Support for European Integration." *Annual Review of Political Science* 19 (1): 413–432.
- Holland, Paul W. 1986. "Statistics and Casual Inference." *Journal of the American Statistical Association* 81 (396): 945–960.
- Holmes, Stephen. 1991. "Liberal constraints on private power?" In *Democracy and the Mass Media*. Cambridge: Cambridge University Press pp. 21–65.
- Hopkins, Daniel J., and Jonathan M. Ladd. 2014. "The Consequences of Broader Media Choice: Evidence from the Expansion of Fox News." *Quarterly Journal of Political Science* 9 (1): 115–135.
- Horkheimer, Max, Theodor W. Adorno, and Gunzelin Noeri. 2002. *Dialectic of enlightenment*. Stanford: Stanford University Press.
- Huckfeldt, Robert R., and John D. Sprague. 1995. *Citizens, Politics and Social Communication: Information and Influence in an Election Campaign*. Cambridge: Cambridge University Press.
- Iyengar, Shanto, and Adam Simon. 1992. "New Coverage of the Gulf Crisis and Public Opinion." *Communication Research* 20 (3): 365–383.
- Jemphrey, Ann, and Eileen Berrington. 2000. "Surviving the Media: Hillsborough, Dunblane and the press." *Journalism Studies* 1 (3): 469–483.
- Keele, Luke. 2015. "The Statistics of Causal Inference: A View from Political Methodology." *Political Analysis* 23 (3): 313–335.
- Kinder, Donald R. 1998. "Communication and Opinion." *Annual Review of Political Science* 1 (1): 167–197.
- King, Gary, Benjamin Schneer, and Ariel White. 2017. "National Agendas." 780 (November): 776–780.
- Klapper, Joseph. 1960. *The Effects of Mass Communication*. Glencoe, IL: Free Press.
- Kritzinger, Sylvia. 2003. "The influence of the nation-state on individual support for the European Union." *European Union Politics* 4 (2): 219–241.
- Ladd, Jonathan Mcdonald, and Gabriel S. Lenz. 2009. "Exploiting a Rare Communication Shift to Document the Persuasive Power of the News Media." *American Journal of Political Science* 53 (2): 394–410.
- Lazarsfeld, Paul F., Bernard Berelson, and Hazel Gaudet. 1948. *The People's Choice*. New York: Columbia University Press.
- Lippmann, Walter. 1921. *Public Opinion*. Transaction Publishers.

References

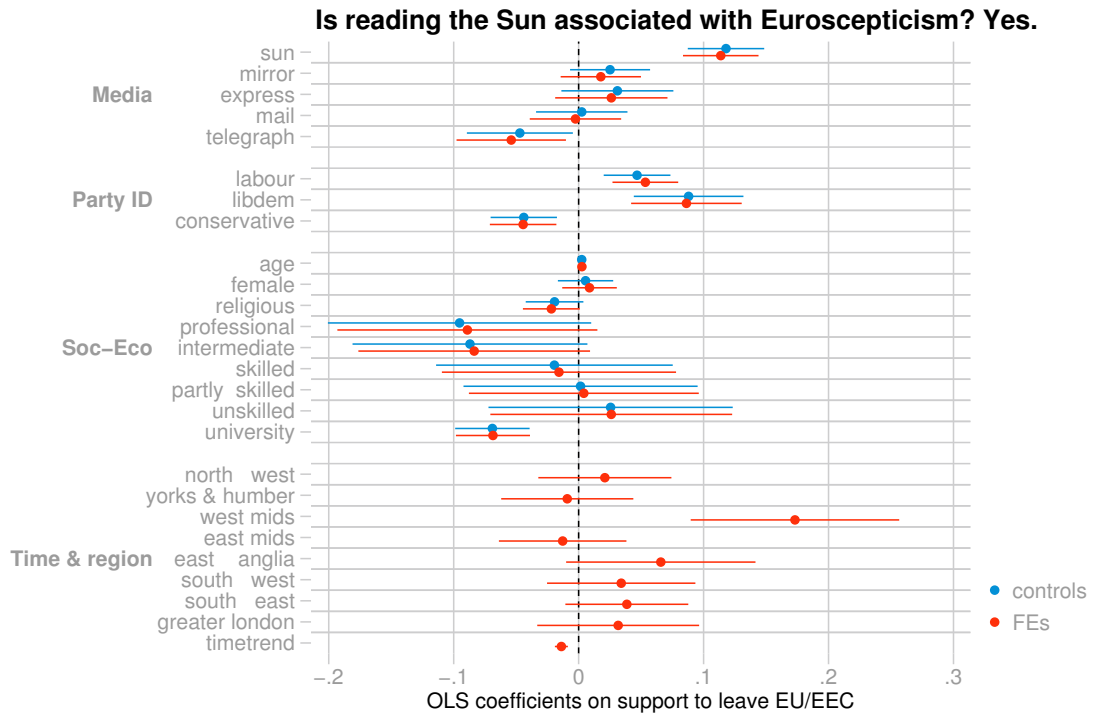
- Lubbers, Marcel, and Peer Scheepers. 2010. "Divergent Trends of Euroscepticism in Countries and Regions of the European Union." *European Journal of Political Research* 49 (6): 787–817.
- Lukes, Steven. 1974. *Power: A radical view*. New York: Palgrave Macmillan.
- Maier, Jürgen, and Berthold Rittberger. 2008. "Shifting Europe's boundaries: Mass media, public opinion and the enlargement of the EU." *European Union Politics* 9 (2): 243–267.
- Martin, Gregory J., and Ali Yurukoglu. 2017. "Bias in cable news: Persuasion and polarization." *American Economic Review* 107 (9): 2565–2599.
- Mutz, Diana C., and Paul S. Martin. 2001. "Facilitating Communication across Lines of Political Difference: The Role of Mass Media." *American Political Science Review* 95 (1): 97–114.
- Peter, Jochen, and Claes H. De Vreese. 2004. "In search of Europe. A cross-national comparative study of the European union in national television news." *Harvard International Journal of Press/Politics* 9 (4): 1–24.
- Reeves, Aaron, Martin McKee, and David Stuckler. 2016. "'It's The Sun Wot Won It': Evidence of media influence on political attitudes and voting from a UK quasi-natural experiment." *Social Science Research* 56: 44–57.
- Rosenbaum, Paul R., and Donald B. Rubin. 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika* 70 (1): 41–55.
- Rosenbaum, Paul R., and Donald B. Rubin. 1985. "Constructing a control group using multivariate matched sampling methods that incorporate the propensity score." *American Statistician* 39 (1): 33–38.
- Rubin, Donald B. 1974. "Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies." *Journal of Educational Psychology* 66 (5): 688–701.
- Rubin, Donald B. 2006. "Using propensity scores to help design observational studies: Application to the tobacco litigation." *Matched Sampling for Causal Effects* pp. 365–382.
- Schuck, Andreas R.T., and Claes H. De Vreese. 2006. "Between Risk and Opportunity – News Framing and its Effects on Public Support for EU Enlargement." *European Journal of Communication* 21 (1): 5–32.
- Scrutton, Phil. 2004. "4 Death on the Terraces: The Contexts and Injustices of the 1989 Hillsborough Disaster." *Soccer & Society* 5 (2): 183–200.
- Semetko, Holli A., Wouter D. Van der Brug, and Patti M. Valkenburg. 2003. "The Influence of Political Events on Attitudes Towards the European Union." *British Journal of Political Science* 33 (4): 621–634.
- Sherrod, Drury R. 1971. "Selective perception of political candidates." *Public Opinion Quarterly* 35 (4): 554–562.

References

- Shrum, L. J. 2002. "Media consumption and perceptions of social reality: Effects and underlying processes." In *LEA's communication series. Media effects: Advances in theory and research*, ed. J. Bryant, and D. Zillmann. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Sinclair, Betsy. 2012. *The Social Citizen: Peer Networks and Political Behavior*. Chicago: University of Chicago Press.
- Stuart, Elizabeth A, Kenneth Duckworth, Jeffrey Simmons, and Colleen L Barry. 2015. "Using propensity scores in difference-in-differences models to estimate the effects of a policy change." 14 (4): 166–182.
- Terkildsen, Nayda, and Frauke Schnell. 1997. "How Media Frames Move Public Opinion: An Analysis of the Women's Movement." *Political Research Quarterly* 50 (4): 879–900.
- Wright, D B, G D Gaskell, and C a O'Muircheartaigh. 1998. "Flashbulb memory assumptions: using national surveys to explore cognitive phenomena." *British Journal of Psychology* 89 (1): 103–121.
- Wright, Daniel B. 1993. "Recall of the Hillsborough disaster over time: Systematic biases of 'flashbulb' memories." *Applied Cognitive Psychology* 7 (2): 129–138.
- Zaller, John R. 1996. "The Myth of Massive Media Impact Revived." In *Political Persuasion and Attitude Change*, ed. Diana C. Mutz, Paul M. Sniderman, and Richard A. Brody. Ann Arbor: University of Michigan Press pp. 17–78.

A OLS results

Figure A.1: How sun readership predicts euroscepticism

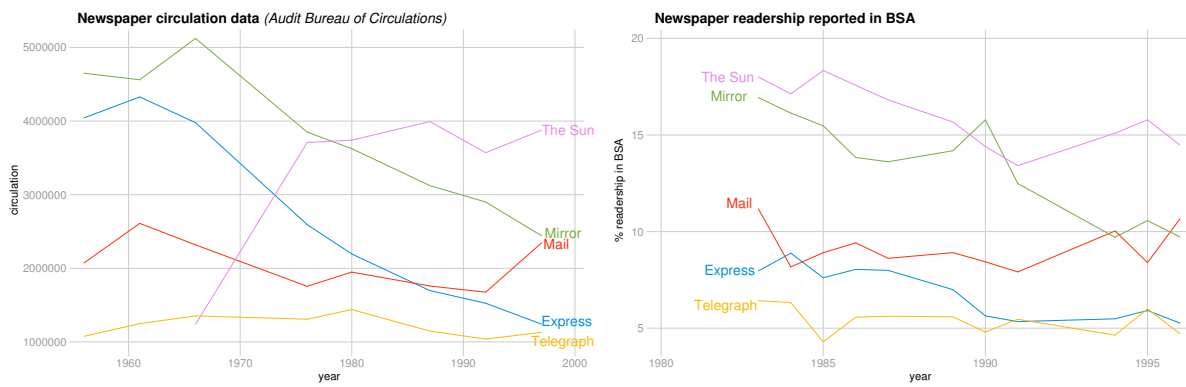


B Sun circulation, readership & decline in Merseyside

Figure B.2 reports descriptives about the circulation and readership reported in the BSA of the five most sold newspaper in the UK until 1996. The top figures suggest that the trends of readership reported in the BSA data (top figure on the right) seems to be comparable to the actual circulation trends (top figure on the left) across time.

B Sun circulation, readership & decline in Merseyside

Figure B.2: Newspaper readership in the UK, circulation (1950-1997; Top-5 in 1997) & readership in BSA



Notice: left: Audit Bureau of Circulations (UK); right: BSA.

B Sun circulation, readership & decline in Merseyside

Table B.1: Did the Sun readership decrease after Hillsborough in Merseyside? Yes.

	(1)	(2)	(3)
	Sun reader	Sun reader	Sun reader
Hillsborough	-0.0121 (0.0116)	0.0291 (0.0204)	0.00483 (0.0169)
Merseyside	0.0120 (0.0345)	0.0860 (0.0320)	0.0814 (0.0309)
Diff-in-diff	-0.0745 (0.0399)	-0.0930 (0.0363)	-0.0907 (0.0342)
Constant	0.172 (0.00900)	0.197 (0.0270)	1928.6 (1398.7)
Regional FEs		✓	✓
Year FEs		✓	
Year ²			✓
R^2	0.00114	0.0178	0.0160
N	9196	9196	9196
$N_{constituencies}$	232	232	232

Clustered standard errors by constituency;
region fixed effect & year fixed effects omitted from table.

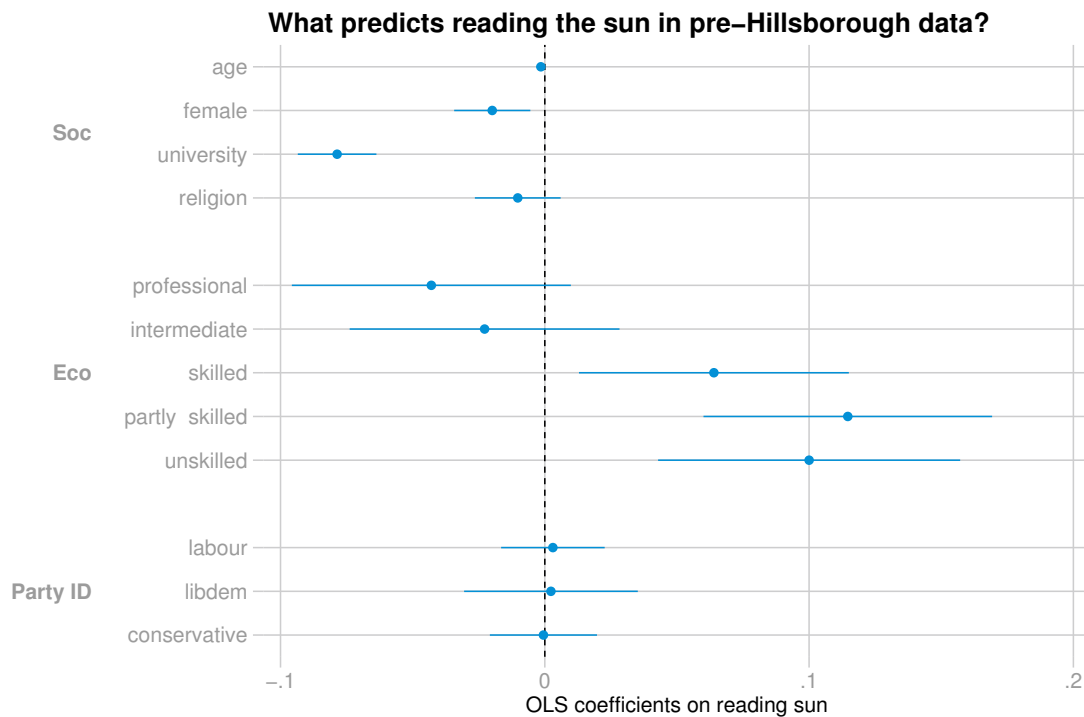
B.1 Who reads the Sun?

We estimated an OLS regression on which BSA respondents are most likely to read the Sun in the pre-Hillsborough data. We care about the Sun readership for at least two reasons.

First, the most immediate reaction to the Hillsborough Disaster came from the reactions of FC Liverpool supporters. FC Liverpool fans immediately selected out of reading the Sun. Thus, plausibly this group should be the one most affected by the Sun boycott. FC Liverpool fan largely correspond to the working class in Liverpool (partly unskilled and unskilled classes).

Second, the effect of the Hillsborough Disaster on euroscepticism should be strongest for people who are the plausible Sun readers after the Disaster. However, given that our analyses is based on repeated cross-sections we cannot plausibly know which persons would have read the Sun in Liverpool if the Hillsborough Disaster never had happened. We only observe people in Liverpool in the presence of the Disaster. Yet, we can approximate this group by relying on the strongest predictor(s) of Sun readership in the pre-Hillsborough data. Once we have identified this group we can run a difference-in-difference-in-differences (DiDiD) model as described in the main body of the text.

Figure B.3: Who reads the Sun?



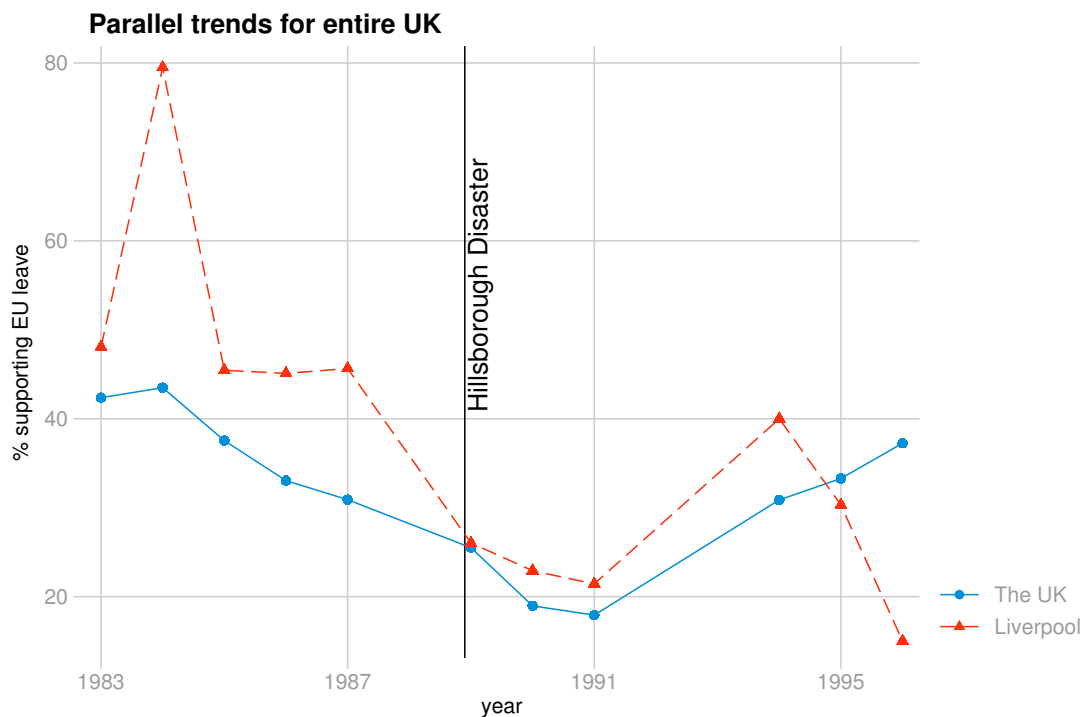
Note: Baseline category for class is “never had a job” (1.6 % of all respondents).

C Main analysis with entire UK sample

The OLS estimates are reported in figure B.3. It becomes clearly visible that university education and social class are the strongest predictors for sun readership in the pre-Hillsborough data set. The higher a respondents' social class, the less likely s/he is to read the Sun. The unskilled working class is by far the most likely to read the Sun, followed by the skilled working class. Although we have no data on this question, it appears plausible that working class people are also more likely to be Liverpool F.C. supporters. To help with interpretation of our DiDiD estimates, and to have a large enough N in all cells we recoded the class variable into three categories, lower (*“never had job”, unskilled working class*), middle (*partly skilled, skilled working class*) and higher (*intermediate, professionals*). We then use this recoded class variable to estimate the DiDiD model.

C Main analysis with entire UK sample

Figure C.2: Parallel trends, entire UK sample



C Main analysis with entire UK sample

Table C.2: Did Euroscepticism decrease after Hillsborough in Merseyside (**Entire UK sample**)? Yes.

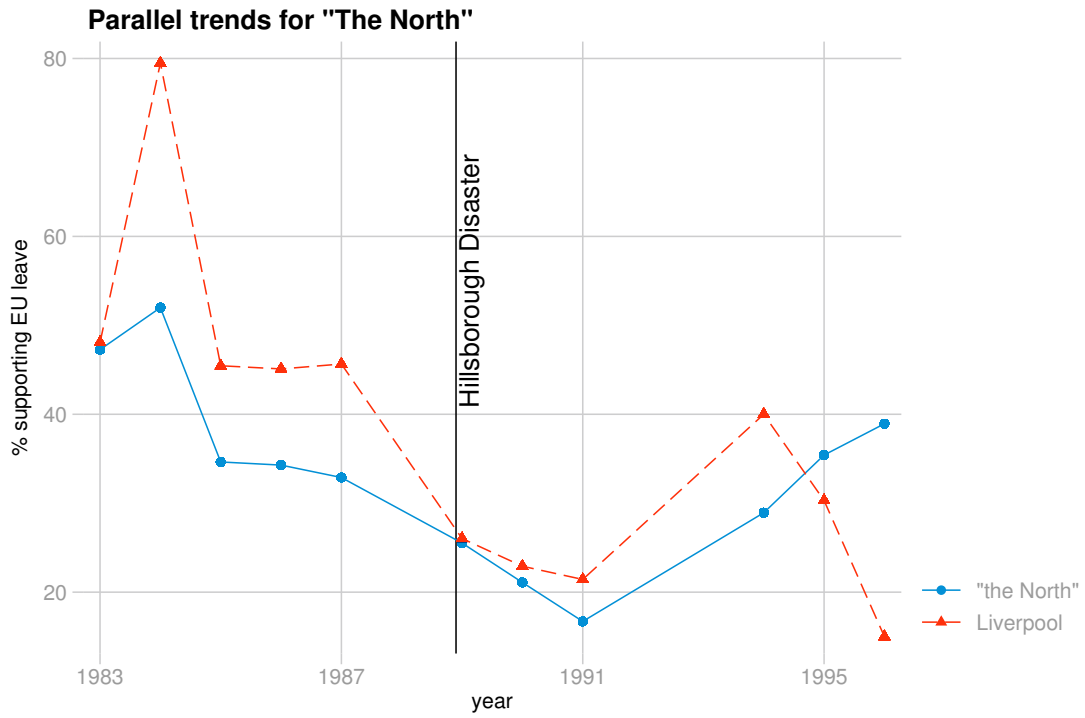
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU
Hillsborough	-0.105 (0.00984)	-0.0754 (0.00896)	-0.0213 (0.0189)	-0.0746 (0.0139)	-0.00712 (0.0189)	-0.0588 (0.0141)	-0.0108 (0.0193)
Merseyside	0.145 (0.0502)	0.0862 (0.0383)	0.116 (0.0397)	0.114 (0.0397)	0.0882 (0.0407)	0.0890 (0.0415)	0.0779 (0.0418)
Diff-in-diff	-0.159 (0.0499)	-0.118 (0.0375)	-0.143 (0.0373)	-0.142 (0.0371)	-0.115 (0.0421)	-0.117 (0.0415)	-0.0974 (0.0438)
Constant	0.349 (0.00775)	0.188 (0.0510)	0.353 (0.0306)	16444.7 (1211.6)	0.242 (0.0550)	18341.6 (1648.0)	-0.0802 (0.129)
Controls		✓			✓	✓	✓
Regional FEs			✓	✓	✓	✓	✓
Year FEs			✓		✓		✓
Year ²				✓		✓	
Interactive FEs							✓
R^2	0.0146	0.0514	0.0336	0.0316	0.0658	0.0640	0.0692
N	17923	14916	17923	17923	14916	14916	14957
$N_{constituencies}$	472	467	472	472	467	467	467

Clustered standard errors by constituency;

Controls (1985-1996): age, gender, education, religion, social class, party-ID;
region fixed effect & year fixed effects omitted from table.

D Main analysis with "The North" only

Figure D.2: Parallel trends, "The North" only



D Main analysis with “The North” only

Table D.2: Did Euroscepticism decrease after Hillsborough in Merseyside (**The North only**)? Yes.

	(1)	(2)	(3)	(4)	(5)	(6)
	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU
Hillsborough	-0.113 (0.0190)	-0.00955 (0.0342)	-0.0579 (0.0261)	-0.0733 (0.0160)	0.0111 (0.0376)	-0.0612 (0.0254)
Merseyside	0.128 (0.0516)	0.113 (0.0384)	0.111 (0.0396)	0.0910 (0.0375)	0.0897 (0.0395)	0.0865 (0.0418)
Diff-in-diff	-0.144 (0.0574)	-0.103 (0.0456)	-0.0995 (0.0441)	-0.110 (0.0402)	-0.0864 (0.0431)	-0.0827 (0.0397)
Constant	0.366 (0.0138)	0.311 (0.0479)	19852.8 (2072.7)	0.00222 (0.0806)	0.0606 (0.0807)	17421.1 (2707.2)
Controls				✓	✓	✓
Regional FEs		✓	✓		✓	✓
Year FEs		✓			✓	
Year ²			✓			✓
R^2	0.0195	0.0488	0.0429	0.0640	0.0776	0.0744
N	5606	5606	5606	4660	4660	4660
$N_{constituencies}$	189	189	189	183	183	183

Clustered standard errors by constituency;

Controls (1985-1996): age, gender, education, religion, social class, party-ID;

region fixed effect & year fixed effects omitted from table.

E Covariate balance & matching

E.1 Covariate balance statistics

Below we report the distributional differences between the treated (Liverpool after the Hillsborough disaster) and the control group. While there is no empirical evidence to support the use of any particular cut-off point on the standardized difference to define imbalance, Rubin (2006) suggests that a standardized difference between treatment and control group of about 0.25 is strong evidence for imbalance. The last two columns of table E.3 report the standardized difference and variance ratio (ratio of treated and control variances as a balance measure of the second moment, where balance is defined by values close to 1.0). As can be seen according to Rubin’s 0.25 criterium, we only find imbalances between treatment and control for the Labour vote variable – with a substantially higher share of respondents voting for the Conservatives in the control group. All other variables appear to be balanced between treatment and control groups.

Table E.3: Covariate balance between treatment (Liverpool after Hillsborough) and control groups

	mean	Treated variance	skewness	mean	Control variance	skewness	Balance std. diff.	Balance variance ratio
age	46.23664	354.4566	.3787138	46.62632	323.7468	.3028696	-.0211611	1.094857
gender	1.559796	.247053	-.2409148	1.546512	.2478613	-.1868567	.0267058	.996739
university	.1882952	.15323	1.594611	.2043331	.1625973	1.466553	-.0403589	.9423897
religious	.6208651	.2359921	-.4982365	.6327768	.2323934	-.5508861	-.0246142	1.015485
social class	3.066158	1.102755	-.4100634	3.036474	1.037234	-.0526337	.0286966	1.063169
labour	.2798982	.2020694	.9805202	.2843371	.2035097	.9561684	-.0098572	.9929224
conservative	.2086514	.1655372	1.433997	.3411847	.2248	.6699553	-.299999	.7363754

E.2 Matching

Even though we only observe imbalance between treatment and control groups for the Conservative vote, we still decided to estimate matching models to be as rigorous as possible. Matching techniques help to address concerns of distributional in-balances between treatment and control groups for observational studies (Rubin 1974; Rosenbaum and Rubin 1983, 1985; Dehejia and Wahba 2002; Rubin 2006; Stuart et al. 2015). Thereby matching mainly addresses issues of omitted variable bias in observational research. Yet, few studies use matching for difference-in-differences (DiD) models. Furthermore, until today there appears to be no consensus on how matching can be used in models, especially for DiD models based on repeated cross-sections such as our study.

E Covariate balance & matching

The difficulty in applying matching methods in DiD designs are twofold. First, since balance between treatment and control groups is established based on covariates which credibly affect the outcome of interest, matching methods might introduce post-treatment biases for DiD studies based on repeated cross-sections. Given that there is no simple mathematical fix for this issue, researchers are advised to only match on variables which are plausibly not affected by an obvious issue of post-treatment bias.

Second, matching techniques usually match a *single* treated group on a *control* group. However, DiD models are essentially based on four groups. They are based on a treatment and control group, but these groups are again split by time – namely by pre- and post-treatment periods (see table E.4).

Table E.4: Relevant groups for DiD models

		time	
		pre-	post-
treatment	treated	1	2
	control	3	4

This means that for DiD estimands two potential selection biases should be addressed by matching techniques. First, selection biases across time. To use our case as an example, our DiD model assumes that the groups we compare do not change across time. But likely they will, for instance by people moving out or into Liverpool. Second, selection biases across the treatment status groups. This means that the groups are different to begin with. Again, applied to our case we showed in table E.3 that there is a difference in the distribution of Labour voters between Liverpool and the control group. This second difference is not an issue for DiD studies, since constant difference across treatment and control groups do not violate the parallel trends assumption. However, if the first issue applies – differences across groups across time – the parallel trends assumption could be violated.

To address this concern we match each group onto group 1 (the pre-treated group). By doing so we ensure that the matching technique addresses both biases across groups, and more importantly across time:

1. We are interested in the effect of our treatment on group 1 in table E.4 – namely the effect of the

E Covariate balance & matching

treatment on the respondents living in Liverpool prior to the Hillsborough Disaster.

2. We then code a variable which reflects all four groups:
 - **Group 1:** if Hillsborough=0 & Liverpool=1
 - **Group 2:** if Hillsborough=1 & Liverpool=1
 - **Group 3:** if Hillsborough=0 & Liverpool=0
 - **Group 4:** if Hillsborough=1 & Liverpool=0
3. We then estimate a multinomial logit model with the group variable as our dependent variable and all covariates (X_i) included in our study (*age, gender, university, religious, social class, Conservative voter, Labour voter*) as predictors of group status. We use group 1 as our baseline category in the multinomial logit model.
4. We export the probabilities of belonging to each group based on a respondents covariate from the results of the multinomial logit model.
5. We estimate a respondent's probability of belonging to Group 1 based on the probability of the respondent belonging to her/his group. Thus, we define the probability of being in group 1 versus being in the other groups. More specifically, each respondent is assigned four probabilities, namely the probability of belonging to each of the four groups. We then use each of these four probabilities to weight them to be similar to group 1 (treatment group in pre-treatment period):

$$w_i = \frac{p_1(X_i)}{p_g(X_i)} \quad (3)$$

where g is the subscript for a respondent i 's status group. Therefore, respondents which are part of group 1 will have a weight of exactly 1. All remaining respondents receive a propensity weight which is relative to the probability of the group they are actually in.

6. Finally, we introduce this weights into the DiD models we estimated in our paper. Thus, we weight each respondent by their probability to be in the treatment group prior to treatment.

Table E.5 reports the findings from our matching results. While the ATT decreases to about 8 % points the effect of the Hillsborough disaster remains statistically significant and substantive in its size. We omit questions on voting in the first model since they are plausibly affected by media exposure as Ladd

E Covariate balance & matching

Table E.5: Did Euroscepticism decrease after Hillsborough in Merseyside (**Matching**)? Yes.

	(1)	(2)	(3)	(4)
	Leave EU	Leave EU	Leave EU	Leave EU
Merseyside	0.0625 (0.0399)	0.0635 (0.0373)	0.0653 (0.0424)	0.0777 (0.0473)
After Hillsborough	-0.104 (0.0137)	-0.103 (0.0136)	-0.0753 (0.0404)	-0.147 (0.0309)
Merseyside × After Hillsborough	-0.0808 (0.0376)	-0.0832 (0.0364)	-0.0813 (0.0384)	-0.0775 (0.0369)
age (<i>continuous</i>)	0.00210 (0.000698)	0.00248 (0.000732)	0.00231 (0.000793)	0.00238 (0.000789)
female (<i>Yes; No</i>)	-0.0337 (0.0195)	-0.0289 (0.0193)	-0.0308 (0.0202)	-0.0299 (0.0192)
university (<i>Yes; No</i>)	-0.119 (0.0420)	-0.116 (0.0400)	-0.120 (0.0403)	-0.118 (0.0407)
religious (<i>Yes; No</i>)	-0.0264 (0.0342)	-0.0230 (0.0341)	-0.0171 (0.0342)	-0.0213 (0.0346)
never had job	0.0101 (0.115)	0.0220 (0.102)	0.0182 (0.102)	0.0262 (0.104)
professional	-0.138 (0.103)	-0.0995 (0.102)	-0.111 (0.0990)	-0.103 (0.103)
intermediate	-0.161 (0.0606)	-0.137 (0.0562)	-0.138 (0.0545)	-0.139 (0.0583)
skilled	-0.0863 (0.0332)	-0.0728 (0.0323)	-0.0744 (0.0334)	-0.0733 (0.0337)
partly skilled	-0.0451 (0.0423)	-0.0439 (0.0411)	-0.0448 (0.0423)	-0.0435 (0.0411)
Conservative voter		-0.0860 (0.0315)	-0.0962 (0.0316)	-0.0906 (0.0312)
Labour voter		-0.140 (0.0297)	-0.143 (0.0265)	-0.146 (0.0297)
Constant	0.440 (0.0406)	0.453 (0.0439)	0.429 (0.0634)	-7.312 (5.762)
Regional FEs			✓	✓
Year FEs			✓	
Year ²				✓
R^2	0.0639	0.0786	0.0917	0.0817
N	7701	7701	7701	7701
$N_{constituencies}$	231	231	231	231

Clustered standard errors by constituency;
Reference category: unskilled for class;
region fixed effect & year fixed effects omitted from table.

E Covariate balance & matching

and Lenz (2009) have shown especially for the British case. Yet our findings for matching is not affected by this decision as the results show.

F Placebo tests

F Placebo tests

Table F.4: Excluding alternative explanations

	(1)	(2)	(3)	(4)
	Vote Conservative	Vote Labour	Gov Spending	gov Redistribution
Merseyside	-0.0975 (0.0352)	0.158 (0.0508)	0.0635 (0.0285)	0.115 (0.221)
Hillsborough	0.0386 (0.0352)	-0.00556 (0.0309)	-0.0457 (0.0290)	-0.0581 (0.0774)
Diff-in-diff	0.00385 (0.0352)	-0.0772 (0.0712)	-0.0280 (0.0333)	0.0182 (0.217)
Constant	0.228 (0.0458)	0.438 (0.0453)	0.668 (0.0460)	3.330 (0.109)
Regional FEs	✓	✓	✓	✓
Year FEs	✓	✓	✓	✓
R^2	0.0275	0.0481	0.0323	0.0176
N	12163	12163	12163	7745
$N_{constituencies}$	233	233	233	227

Clustered standard errors by constituency;
region fixed effect & year fixed effects omitted from table.

F Placebo tests

Table F.5: Placebo test: Moving treatment into non-treated period shows no effect.

	(1)	(2)	(3)	(4)	(5)	(6)
	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU	Leave EU
placebotreat	-0.0596 (0.0179)	-0.165 (0.0248)	0.114 (0.0501)	-0.0268 (0.0169)	-0.0584 (0.0263)	0.127 (0.0462)
Merseyside	0.134 (0.0475)	0.106 (0.0398)	0.107 (0.0420)	0.0767 (0.0378)	0.0612 (0.0316)	0.0618 (0.0342)
Diff-in-diff	-0.0210 (0.128)	-0.00998 (0.126)	-0.0113 (0.127)	-0.0133 (0.105)	-0.00385 (0.104)	-0.00547 (0.105)
Constant	0.403 (0.0113)	0.591 (0.0175)	-61910.1 (38725.4)	0.255 (0.0453)	0.345 (0.0512)	-67631.8 (33367.3)
Controls				✓	✓	✓
Regional FEs		✓	✓		✓	✓
Year FEs		✓			✓	
Year ²			✓			✓
R^2	0.00583	0.0207	0.0164	0.0784	0.0885	0.0858
N	5091	5091	5091	5075	5075	5075
$N_{constituencies}$	136	136	136	136	136	136

Clustered standard errors by constituency;

Controls: age, gender, education, ethnicity, social class, party-ID;

region fixed effect & year fixed effects omitted from table.

G Differential attrition on dependent variable? No.

Table G.6: Is there differential attrition on the dependent variable after Hillsborough? No.

	(1)	(2)	(3)	(4)	(5)	(6)
	Missings	Missings	Missings	Missings	Missings	Missings
Hillsborough	0.00588 (0.00632)	0.000345 (0.0144)	-0.0152 (0.00978)	0.00488 (0.00676)	0.00337 (0.0146)	-0.00648 (0.0109)
Merseyside	0.00620 (0.0214)	0.00282 (0.0222)	0.00162 (0.0222)	0.0202 (0.0265)	0.0147 (0.0284)	0.0148 (0.0281)
Diff-in-diff	0.0280 (0.0362)	0.0295 (0.0353)	0.0279 (0.0346)	0.00756 (0.0411)	0.0101 (0.0406)	0.00765 (0.0399)
Constant	0.0617 (0.00429)	0.0480 (0.0159)	1352.2 (891.4)	0.0820 (0.0535)	0.0690 (0.0552)	1913.5 (1427.6)
Controls				✓	✓	✓
Regional FEs		✓	✓		✓	✓
Year FEs		✓			✓	
Year ²			✓			✓
R^2	0.000685	0.00412	0.00289	0.0250	0.0278	0.0269
N	9375	9375	9375	7701	7701	7701
$N_{constituencies}$	232	232	232	231	231	231

Clustered standard errors by constituency;

Controls (1985-1996): age, gender, education, religion, social class, party-ID;
region fixed effect & year fixed effects omitted from table.