Findings

- The estimated value of a visit to a news publisher website ranges between €0.04 and €0.08. The range represents the average value across the four markets (France, Germany, Spain, UK) for the years covered in the sample.
- More than 34% of visits a newspublisher website came from users who navigate to the site directly, either by typing the URL; 66% of visits came from users accessing the page from links, blogs, social media, email, news aggregators etc. (Comscore Data).
- On this basis, the referal traffic from online services to newspaper publishers generated an estimated €730 m across the four markets in 2014.

Methodology

We estimated the value of the referral traffic to newspaper publishers in France, Germany, Spain, and the UK. The study uses an econometric model to isolate and test the effects that different sources of referral traffic and other revenue drivers have on newspaper publisher revenues. This approach is described in more detail in Section 6.1.

This study is based on publishers' historical data. It does not seek to develop any counterfactual scenarios or answer any "what if?" questions related to the subject.

The newspaper publishers included in this analysis differ in their business models, product offerings, or readers' demographics. These differences make the estimation complex. The techniques used in this study have been selected to most accurately tackle these challenges. The subsequent sections outline the approaches employed in the estimation and provide sources for the underlying data and explanations for any assumptions.

6.1 Econometrics methodology

Econometric modelling was used to identify the impact that traffic referrals from websites have on newspaper publishers' revenues.

6.1.1 Sample

The analysis considered a sample of 66 newspaper publishers across four European markets: Germany, France, Spain, and the UK. These publishers were selected based on data availability and their levels of circulation or online traffic within their respective market. In addition, the sample also included smaller regional publishers. The time period examined was from 2011 to 2013.

Only publications with both a print and an online component were included in the sample. Online-only publishers such as Eurosport.fr and Goal.com were not considered, nor were the national broadcasters in the four markets, such as France TV, NDR, RTVE, and the BBC, that are otherwise popular sources of online news but do not have print editions and often are not funded by advertising revenues.

Companies with divisions unrelated to newspaper publishing were excluded, unless their publishing divisions had separate financial results available. News sources removed due to this limitation include Sky News, whose parent company Sky is a provider of cable and internet services that does not provide financial statements disaggregated for its news section. In addition, Sky News is available only online and not in print.

The inclusion of these publishers would have introduced noise into the model from the non-publishing revenues,

which are not relevant to this study.

In addition to these exclusions, where data for some publishers was unavailable or inaccurate, these publishers were not included.

The size of the sample varied across years due to missing values for some publishers. Different sample sizes did not affect the reliability of the estimation under the fixed effects methodology which is described below.

Table 4: Sample size by year

Sample size by year			
	2011	**2012**	**2013**
Number of publishers	56	63	48

6.1.2 Data

The results presented in this report are based on free publicly available data, as well as data obtained from comScore, Nielsen, Mint Global, and the OJD in Spain. The table below describes the variables included in the analysis.

Table 5: Data summary

Data Description Source Revenue · Total revenues of publishers in the sample in USD.	source
Revenue • Total revenues are composed of both print and online revenues. • For cases where a publisher is a holding company for various businesses, revenues have been disaggregated for the individual publication or group of publications using annual report data. • Revenues in local currencies were converted into USD using the average exchange rate for the given year.	Mint Global, publishers' annual reports, Oanda
GDP per capita • A metric of the value of a country's economy per person living in the country. • GDP is defined as the total value added by producers in a country.	World Bank
Circulation • The average number of print copies distributed per issue.	Country circulation bureaus
Paywall • Represents whether a publisher had either a hard or soft paywall in place. • This variable takes a 1 if a paywall was in place for the period considered and a 0 otherwise.	Publisher websites
Advertising spending • Represents the dollar amount that publishers spent on advertising their own products and	Nielsen, Oanda

services. • Values were provided in the local currencies and were converted using the average exchange rate for the given year. • This variable does not represent the advertising revenues the publisher collected from other businesses advertising in their publications.	
Total traffic • Represents the annual average number of monthly visits to a publisher's website, regardless of referral source.	comScore

6.1.3 Model

The underlying equation of interest estimated in this study is:

$$\log(revenue_{it}) = \beta_0 + \beta_1 \log(GDP\ per\ capita_{it}) + \beta_2 \log(circulation_{it}) + \beta_3\ paywall_{it} + \beta_4 \log(advertising\ spending_{it}) + \beta_5 \log(total\ traffic_{it}) + \theta\ year_{it} + u_{it}$$

This study follows recent academic literature and specifies a fixed effects panel model. This approach has several advantages. In particular, a fixed effects model accounts for time invariant differences between publishers. This is advantageous because it offers a solution to issues caused by omitted variables that are constant over the time period considered. For example, these omitted variables may include the overall quality of a publication, its reader demographics, its format, and whether its print edition is distributed nationally, regional, or locally.

In the specification detailed above, the coefficient of log(total traffic), β_5, can be interpreted as an elasticity. In other words, holding all else equal, a 1% change in total traffic to a publisher's website would imply a β_5 % change in overall revenues.

Total traffic can be separated into direct traffic, and referral traffic from other sites. As such, the coefficient of log(total traffic) may be attributed to the various categories based on their respective share of total traffic[1].

6.1.4 Results

The equation above was estimated with annual data from 2011-2013 using a sample of 66 publishers across Germany, Spain, France and the UK. The econometric results capture the average effect of the independent

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[1] This methodology assumes that the value of each visit is equal across referral sources. Statistical tests that compare the average value of traffic based on the percentage coming from different referral entities were conducted that support this assumption. This does not imply that the value of each visitor is the same. A visitor may visit a website multiple times and on average, the number of pages he or she views may differ based on his or her referral source.

variables on log(revenue) across countries. Due to data limitations, it was not feasible to estimate the country-specific effects with the chosen specification.

The estimates of the coefficients are detailed in the table below.

Table 6: Econometric results

Fixed effects model	
Number of observations: 169 **Number of publishers: 66** **Time period: 2011 - 2013**	
Independent variables	**Coefficients**
log(total traffic)	0.0641**
2012	-0.0583**
2013	-0.0651
log(GDP per capita)	3.495***
log(circulation)	0.178
paywall	-0.0491
log(advertising spending)	0.00135
Constant	-20.93*
*** significant at 1% ** significant at 5% * significant at 10% Standard errors were clustered on publishers	

The estimated coefficient of log(total traffic) suggests that holding all else equal, a 1% increase in total traffic to a news site is estimated to increase revenue by 0.0641%.

To estimate the dollar value of traffic to newspaper publishers' websites, the coefficient was used to assess the impact of a 100% decrease in total traffic. The results imply that a 100% decrease in total traffic would lead to a 6.41% decrease in total revenue.

The coefficient of the variable log (GDP per capita) implies that the variable has a positive impact on publishers'

revenues. As the citizens of a country grow wealthier, publishers may attain higher revenues. The countries examined also exhibit different GDP per capita patterns over the period.

Negative coefficients on the variables 2012 and 2013 indicate a declining trend in newspaper publishers' revenues over time. This finding is consistent with the general market trends discussed in the main body of the report.

The time period of three years does not allow for significant year-on-year variations in some of the other key variables estimated by the fixed effects model. As a result, the properties of the fixed effects model do not identify a significant impact of circulation and paywall on revenue. However, an alternative approach undertaken using a random effects model does capture a positive and significant effect of circulation, even when controlling for other firm-specific factors, while also maintaining a similar, significant coefficient on log (total traffic).

Given the advantages of estimating a fixed effects model in this study, the random effects model was not used in this report.[2]

Finally, the model has not identified a statistically significant relationship between advertising spending, as measured by log(advertising spending), and revenues for these publishers in the sample over this time period for similar reasons as for circulation.

6.1.5 Robustness checks

To assess the sensitivity of the estimates, additional specifications were run to test how the coefficients of interest varied if other variables were excluded. These specification tests did not produce material differences in the coefficient on log(total traffic) and did not affect its significance.

Recent literature by Cozzolino and Giarratana (2014) suggests that endogeneity may have been introduced with the inclusion of both circulation and total traffic variables in the model[3].

Additional specifications omitting circulation as well as employing a two-stage least squares estimation using the instruments proposed by Cozzolino and Giarratana have been estimated. Differences between the coefficients of these specifications and the original specification were not material.

6.1.6 Calculating the value of a visit

The average value was derived from the estimated revenue impact on the publishers in the sample and the traffic they received as follows:

Estimates revenue impact / total traffic = average value of a visit

The estimated value of a visit ranges between €0.04 and €0.08. The range represents the average value across the four markets for the years covered in the sample.

6.2 Relevant literature

The main sections of the report and the appendix reference a number of sources that provide evidence for statistics and arguments made in the analysis. In addition, the study has consulted and taken into consideration other research on the subject of newspaper publishers, website traffic, and market performance. Summaries of the literature are presented below.

The impact of news aggregators on internet news consumption Athey & Mobius (2012) analyse the impact of news aggregators on the quantity and composition of news in France.[4]

Using a case study analysis, where Google News added local content to users' home pages who chose to enter their location, they find that the inclusion of local content by Google News had mixed effects on local new sites. It increased traffic, especially in the short run, but it also increased the reliance of users on Google News for their

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[2] For more details on panel data models please refer to Wooldridge (2010), "Econometric Analysis of Cross Section and Panel Data"

[3] Cozzolino and Giarratana (2014), "Mechanisms of Value Creation in Platform Markets"

[4] Athey,S. and Mobius,M. (2012), 'The impact of news aggregators on internet news consumption: The case of localisation' , mimeo, Harvard University.

choice of news, and increased the dispersion of user attention across outlets.

Furthermore, they find that the adoption of Google News leads to greater consumption of local news, both unconditionally (by more than 26%) and conditional on Google News page views. They find a 5% increase in direct navigation to local outlets (bypassing Google News altogether, presumably because the user had learned that they like the outlet and actively chooses it in the future), and a 13% increase in clicks on local outlets from the Google News home page. However, over time, incremental local news consumption is derived primarily from increased use of Google News.

The impact of online news advertising on print advertising Sridhar and Sriram (2014) analyse how firms choose to transfer their budgets over time between online and print newspaper publishing. Using monthly advertising data for a large US newspaper over the period 2007-2011, they carry out an empirical study to determine whether online advertising is substituting print advertising revenues.[5]

They find that, whilst online traffic is increasing, online advertising prices remain low. They report that 4-9% of the decline in print advertising revenues was due to substitution from the transition to online media, with most of the decline being attributed to the substitution of advertisers to alternative media options other than newspapers.

Media, aggregators and the link economy Dellarocas, Katona, and Rand (2012) develop a theoretical model to determine how hyperlinking affects the incentives of news providers to produce quality content, rather than link to third party content, and the resulting impacts on the profits and content quality of both news providers and aggregators.[6]

They find that the Internet has been disruptive in breaking up geographical monopolies, with all content competing for online readers. Linking allows similar sites to coordinate content production in ways that increase their joint profits and quality, thus benefiting consumers.

The main benefit of aggregators to content creators comes from traffic expansion. Assuming content aggregators form links to the best available content, their presence makes it easier for consumers to access good content, and increases the attractiveness of the entire content ecosystem. However, the presence of aggregators incurs costs that need to be considered, such as the appropriation of attention and revenues to news content providers. Their net effect is positive for content creators only if the traffic expansion they induce is sufficient to offset the loss of attention and advertising revenue.

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[5] Sridhar, S. and Sriram, S. (2013), 'Is online newspaper advertising cannibalizing print advertising?', University of Michigan.

[6] Dellarocas, C., Katona, Z., and Rand, W. (2013), 'Media, aggregators and the link economy: Strategic hyperlink formation in content networks' in Management Science 59:10, 2360-2379.