

Online Tracking and Publishers Revenues: An Empirical Analysis

Work in progress

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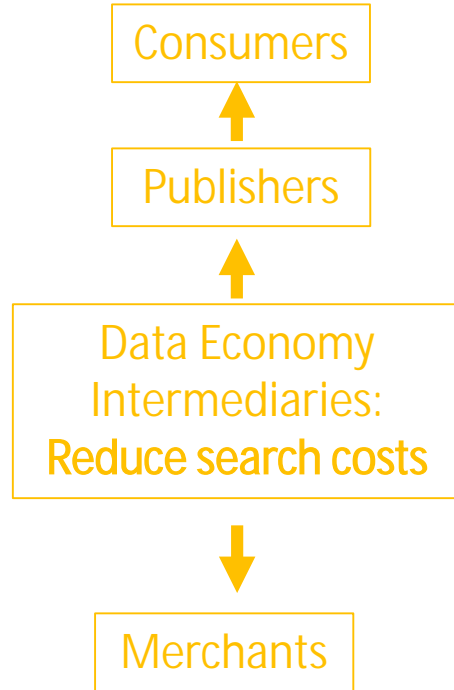
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- To the extent that economic surplus is being generated by increasing (and increasingly sophisticated) consumer tracking, how is that surplus allocated?

Online advertising:

Frame 1



Online advertising:

Frame 2

The Online Advertising Market Puzzle

- Advertising revenues in US reached \$88 billion in 2017 (*IAB, 2017*)
 - Growth rate of about 21.4%, relative to 2016
- However, revenues for about 40% of publishers – the final seller of ads – seem stagnant or shrinking (*Econsultancy, 2015*)
- Following GDPR enactment, NYT focused on contextual and geographical targeting and did not experience ad revenues drop (Jean-Christophe Demarta, SVP for global advertising at New York Times International, quoted by Digiday 2019b)
- A Digiday 2019 poll of publisher executives found that for 45% of respondents, behavioral ad targeting “has not produced any notable benefit, while 23% of publisher executives said behavioral targeting has actually caused their ad revenues to decline” (Digiday, 2019a)

Research Goals

- Provide insights on the relationship between advertisers ability to behaviorally target ads and publishers' revenues
- We leverage a unique dataset to investigate increase in publisher's revenues, after accounting for other factors, when the ads they sell can, or cannot, be behaviorally targeted via cookies to users
 - We focus on programmatic, open-auctions
 - We exploit the fact that if the user's cookie is not available, audience-based targeting is not implemented (other types of targeting can still be possible)

Related Works

- Advertising effectiveness:
 - Purchase Probabilities, Click-Through rates (Manchanda et al., 2006; Sahni, 2015; Farahat and Bailey, 2012; Bleier and Eisenbeiss, 2015; Lewis and Reley, 2014)
 - Page visits and online searches (Ghose and Todri-Adamopoulos, 2016; Johnson et al., 2017; Fong, 2016)
- Publishers' incentives and impact of targeting on revenues (Chen and Stallaert, 2014; Ghosh et al., 2015; Levin and Milgrom, 2010; Hummel and McAfee, 2016)
 - Theoretical predictions are mixed
- Empirical works on publishers' side are lacking

How Targeting May Affect Publishers' Revenue

- Advertisers willingness to pay increases if they can target audiences (Chen and Stallert, 2014; Board, 2009)
 - Ad prices increases, publisher's revenue increases
- When targeting audiences, advertisers reach narrow markets with reduced competition (Levin and Milgrom, 2010; Hummel and McAfee, 2016)
 - Ad prices decreases, publisher's revenue decreases

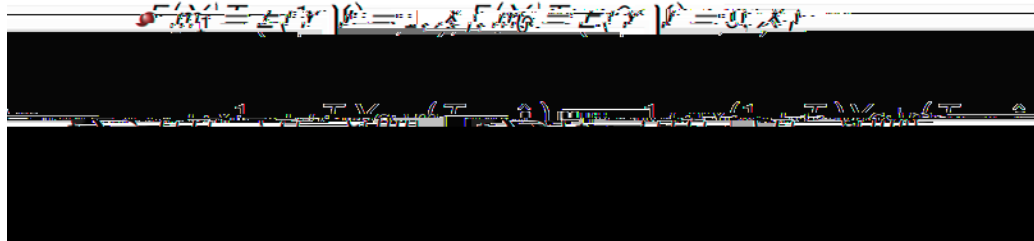
Empirical Approach

- Augmented Inverse Probability Weighting (Robins et al., 1994)
 1. Estimate the Probability Model: Probability that user has a cookie associated

Empirical Approach

3. Compute weighted means of treatment-specific predicted outcomes
4. Compute average treatment effect

- $Prob(Cookie|X) = \hat{c}_i$



- **Double-robustness:** only needs either the probability model or outcome models to be correctly specified for the estimate to be consistent

Results

AUPW					
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- After controlling for other factors, when tracking cookie is available, revenue does increases - approximately by 4%, relative to when cookie is not available

Limitations

- The result can be interpreted as the increase in value generated for publishers specifically by the presence of a cookie
 - It cannot be interpreted as the value generated by behavioral advertising in general
- Our data pertain to a sample of websites of one large media company
 - Results may not apply to the entire universe of websites
- We observe publisher's revenue, already net of any intermediation fees
 - We do not have information on the actual amount of the fees
- We cannot capture presence of more sophisticated forms of tracking (e.g. device fingerprinting)