Advertiser prominence effects in search advertising

On-line Appendix

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This On-line Appendix contains additional analyses replicating the results in our main specifications. The results are contained in two sections. First section contains results for exactly matched keywords used in Jeziorski and Segal (2015). Second section contains results for two location-based keywords. Please refer to the main paper for the discussion of these results.

1 Exactly matched keywords

Dep. Var.	Top-100 Alexa dummy		Top-500 Alexa dummy		Reciprocal of Alexa
	Click	Click	Click	Click	Click
Pos. 1	0.060^{**}	0.060^{**}	0.063^{**}	0.062^{**}	0.058^{**}
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Pos. 2	0.028^{**}	0.026^{**}	0.034^{**}	0.030^{**}	0.025^{**}
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Pos. 3	0.014^{**}	0.015^{**}	0.015^{**}	0.018^{**}	0.013^{**}
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Pos. 4	-0.001^{**}	-0.001^{**}	-0.001^{**}	-0.001^{**}	-0.001^{**}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pos. 5	-0.001^{**}	-0.001^{**}	-0.001^{**}	-0.001^{**}	-0.001^{**}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pos. 1×Top Alexa	-0.018^{**}	-	-0.023^{**}	-	-
	(0.004)		(0.003)		
Pos. 2×Top Alexa	-0.019^{**}	-	-0.026^{**}	-	-
	(0.002)		(0.002)		
Pos. 3×Top Alexa	-0.005^{**}	-	-0.005^{**}	-	-
	(0.002)		(0.002)		
Pos. 1-3×Top Alexa	-	-0.013^{**}	-	-0.017^{**}	-
		(0.002)		(0.002)	
Pos. 1×(Alexa rank)$^{-1}$	-	-	-	-	-0.0133
					(0.0142)
N	201750	201750	201750	201750	195423
R^2	0.044	0.044	0.044	0.044	0.043

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$

Model includes advertiser fixed effects, main effects for ad position (Pos.), and its interaction with advertiser prominence (Top Alexa), represented as Top-100 Alexa rank in columns I-II, as Top-500 Alexa rank in columns III-IV, and as inverse Alexa rank in column V.

Table 1: Linear probability model predicting clicks for the exactly matched Weather keyword.

Dep. Var.	Top-100 Alexa dummy		Top-500 Alexa dummy		Reciprocal of Alexa
	Click	Click	Click	Click	Click
Pos. 1	0.042** (0.004)	0.043** (0.003)	0.042** (0.004)	0.042** (0.003)	0.048** (0.004)
Pos. 2	0.046** (0.002)	0.046** (0.002)	0.045** (0.002)	0.045** (0.002)	0.053** (0.002)
Pos. 3	0.024** (0.002)	0.024** (0.002)	0.024** (0.002)	0.023** (0.002)	0.025** (0.002)
Pos. 4	-0.002** (0.001)	-0.002** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.004** (0.001)
Pos. 5	-0.001** (0.001)	-0.001** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)
Pos. 1×Top Alexa	0.001 (0.011)	-	-0.001 (0.009)	-	-
Pos. 2×Top Alexa	-0.026** (0.007)	-	0.003 (0.007)	-	-
Pos. 3×Top Alexa	-0.017** (0.004)	-	-0.008** (0.003)	-	-
Pos. 1-3×Top Alexa	-	-0.016** (0.003)	-	-0.004 (0.003)	-
Pos. 1×(Alexa rank)$^{-1}$	-	-	-	-	-0.0773** (0.0336)
N	169153	169153	169153	169153	148967
R^2	0.049	0.049	0.049	0.049	0.048

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$

Model includes advertiser fixed effects, main effects for ad position (Pos.), and its interaction with advertiser prominence (Top Alexa), represented as Top-100 Alexa rank in columns I-II, as Top-500 Alexa rank in columns III-IV, and as inverse Alexa rank in column V.

Table 2: Linear probability model predicting clicks for the exactly matched Games keyword.

	Top-100 Alexa dummy		Top-500 Alexa dummy		Reciprocal of Alexa
Dep. Var.	Click	Click	Click	Click	Click
Pos. 1	0.108** (0.002)	0.108** (0.002)	0.108** (0.002)	0.108** (0.002)	0.112** (0.002)
Pos. 2	0.053** (0.002)	0.053** (0.002)	0.053** (0.002)	0.053** (0.002)	0.056** (0.002)
Pos. 3	0.008** (0.001)	0.008** (0.001)	0.008** (0.001)	0.009** (0.001)	0.009** (0.001)
Pos. 4	-0.008** (0.001)	-0.008** (0.001)	-0.008** (0.001)	-0.008** (0.001)	-0.009** (0.001)
Pos. 5	-0.005** (0.000)	-0.005** (0.000)	-0.005** (0.000)	-0.005** (0.000)	-0.006** (0.000)
Pos. 1×Top Alexa	-0.100** (0.002)	-	-0.071** (0.029)	-	-
Pos. 2×Top Alexa	-0.045** (0.002)	-	-0.045** (0.002)	-	-
Pos. 3×Top Alexa	-0.000 (0.001)	-	-0.000 (0.001)	-	-
Pos. 1-3×Top Alexa	-	-0.018** (0.003)	-	-0.020** (0.003)	-
Pos. 1×(Alexa rank)$^{-1}$	-	-	-	-	0.0540 (0.0436)
N	182653	182653	182653	182653	167114
R^2	0.093	0.093	0.093	0.093	0.092

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$

Model includes advertiser fixed effects, main effects for ad position (Pos.), and its interaction with advertiser prominence (Top Alexa), represented as Top-100 Alexa rank in columns I-II, as Top-500 Alexa rank in columns III-IV, and as inverse Alexa rank in column V.

Table 3: Linear probability model predicting clicks for the exactly matched White pages keyword.

2 Location-based keywords

Dep. Var.	Top-100 Alexa dummy		Top-500 Alexa dummy		Reciprocal of Alexa
	Click	Click	Click	Click	Click
Pos. 1	0.069** (0.012)	0.069** (0.011)	0.073** (0.015)	0.070** (0.012)	0.050** (0.011)
Pos. 2	0.052** (0.011)	0.045** (0.010)	0.048** (0.012)	0.045** (0.010)	0.031** (0.009)
Pos. 3	0.000 (0.006)	0.005 (0.006)	0.001 (0.006)	0.005 (0.006)	-0.003 (0.005)
Pos. 4	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.008* (0.004)
Pos. 5	0.001 (0.004)	0.001 (0.004)	0.001 (0.004)	0.001 (0.004)	0.001 (0.005)
Pos. 1×Top Alexa	-0.011 (0.027)	-	-0.023 (0.020)	-	-
Pos. 2×Top Alexa	-0.039** (0.014)	-	-0.022 (0.015)	-	-
Pos. 3×Top Alexa	0.012 (0.013)	-	0.002 (0.011)	-	-
Pos. 1-3×Top Alexa	-	-0.011 (0.009)	-	-0.012 (0.009)	-
Pos. 1×(Alexa rank)$^{-1}$	-	-	-	-	0.0048 (0.0146)
N	5876	5876	5876	5876	4725
R^2	0.039	0.039	0.040	0.039	0.039

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$

Model includes advertiser fixed effects, main effects for ad position (Pos.), and its interaction with advertiser prominence (Top Alexa), represented as Top-100 Alexa rank in columns I-II, as Top-500 Alexa rank in columns III-IV, and as inverse Alexa rank in column V.

Table 4: Linear probability model predicting clicks for the Chicago keyword.

	Top-100 Alexa dummy		Top-500 Alexa dummy		Reciprocal of Alexa
Dep. Var.	Click	Click	Click	Click	Click
Pos. 1	0.021** (0.010)	0.029** (0.010)	0.021* (0.012)	0.030** (0.011)	0.024** (0.011)
Pos. 2	0.017** (0.009)	0.014* (0.008)	0.013 (0.010)	0.015* (0.008)	0.010 (0.007)
Pos. 3	0.009 (0.008)	0.007 (0.007)	0.015 (0.010)	0.009 (0.008)	0.003 (0.007)
Pos. 4	-0.001 (0.003)	-0.001 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.004)
Pos. 5	0.000 (0.003)	0.000 (0.003)	-0.000 (0.003)	0.000 (0.003)	-0.003 (0.002)
Pos. 1×Top Alexa	0.020 (0.023)	-	0.006 (0.018)	-	-
Pos. 2×Top Alexa	-0.028** (0.010)	-	-0.006 (0.013)	-	-
Pos. 3×Top Alexa	-0.020** (0.009)	-	-0.021* (0.012)	-	-
Pos. 1-3×Top Alexa	-	-0.011* (0.006)	-	-0.010 (0.009)	-
Pos. 1×(Alexa rank)$^{-1}$	-	-	-	-	-0.0118** (0.0056)
N	2549	2549	2549	2549	2192
R^2	0.013	0.013	0.015	0.013	0.016

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$

Model includes advertiser fixed effects, main effects for ad position (Pos.), and its interaction with advertiser prominence (Top Alexa), represented as Top-100 Alexa rank in columns I-II, as Top-500 Alexa rank in columns III-IV, and as inverse Alexa rank in column V.

Table 5: Linear probability model predicting clicks for the Seattle keyword.

3 List of articles on targeting

According to the data provider no targeted impressions are within our subsample. Nevertheless, we provide an overview the targeting options offered by the Microsoft adCenter at the point our sample was collected. Such information provides better understanding of the limitations of our analysis, in case, targeted impressions were a part of our sample. The contemporaneous articles listed below[1] reveal that, at the point of collecting our sample, only users for who Microsoft had voluntary demographics information could be targeted. Thus, despite extensive press coverage of adCenter's targeting capabilities at that time, the actual capacity to target was relatively limited. In comparison, targeting capacity (at both Google and Microsoft Bing) at the time of the publication of this paper is substantially more extensive.

1. "MSN Adds Behavioral Targeting to adCenter" – published 6 Sep 2006
   http://www.searchmarketingstandard.com/msn-adds-behavioral-targeting-to
   "Microsoft adCenter advertisers can now have their pay-per-click ads shown to users who have been identified as likely purchasers based on their search history."

2. "Targeting Local Audiences with Search, Part 1: MSN" – published 2 Feb 2006
   https://www.clickz.com/targeting-local-audiences-with-search-part-1-msn/47760/
   "Search campaigns through MSN's adCenter (also emerging from beta sometime in mid-2006) are another venue to target local audiences. Campaigns can be geotargeted through the interface at higher CPC (define) charges."

3. "Better Targeting with adCenter" – published 28 Oct 2005
   https://www.clickz.com/better-targeting-with-adcenter/47836/
   "AdCenter provides a whole new level of targeting by allowing marketers to better select their target audience by age, gender, geography, or daypart time of day or day of week."

4. "MSN adCenter: Content Ads, adCenter Beta and Demographic Targeting" – published 21 March 2007
   https://www.searchenginejournal.com/msn-adcenter/4554/
   "MSN also beat both Yahoo! and Google to the punch in offering day parting. Day parting is when you select the time and days you want your ad displayed. As an example if you sell B2B software you might want to run your ads from 8:00-6:00PM, whereas a real estate agent might be better served running ads from 5:00-10:00PM."
   "MSN adCenter offers a very unique way to target specifically by demographic."

5. "Targeting Search Ads by Demographics and Behavior" – published 5 Dec 2005
   https://www.seroundtable.com/archives/002904.html
   "First up, Jed Nahum from MSN Search and he explains that targeting is what it is all about. He went over some of the highlights of adCenter, they piloted in France and Singapore earlier in 2005 and now they have a US pilot."

References

JEZIORSKI, P. AND I. SEGAL (2015): "What makes them click: Empirical analysis of consumer demand for search advertising," *American Economic Journal: Microeconomics*, 7, 24–53.

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[1] We thank the anonymous referee for these references.