

The Impact of Over-The-Top Media Services on Piracy Search: Evidence from a Natural Experiment

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As of 2018, the Video Advertising Bureau (VAB) reports that 74% of US households access media through an over-the-top (OTT) media service. This popularity of OTT services in the US has coincided with an increasingly large number of OTT options globally. While some consider digital content provided by OTT services to be more easily pirated than traditional technologies (e.g., cable television), the introduction of low-cost digital streaming services is thought to be a reason for globally decreasing levels of piracy. However, the reasoning behind these arguments is mostly correlational and has not been yet been empirically supported.

The main goal of this research is to identify and quantify the causal impact of OTT services on consumers' search for piracy. We address this question by leveraging a sudden block of Netflix in Indonesia in January 2016, right after Netflix's global expansion earlier that month. We collect a monthly panel of piracy search data for a sample of 304 Netflix titles in 41 Asian countries (Indonesia included) between October 2014 and June 2016. Based on this exogenous source of variation, we use the synthetic control method to assess the causal impact of the Netflix ban on piracy search, where the control is a convex combination of 40 Asian countries where Netflix was simultaneously introduced.

Four findings yield from our estimation results. First, we find a positive (negative) causal impact of the block (entry) of OTT services on piracy search. Specifically, consumers in Indonesia search for pirated shows 19.7% more than what they would have searched in the presence of Netflix during the five months after the block, suggesting an overall substitution between OTT services and pirated media. Second, we identify the boundary conditions of this substitution effect: such a substitution effect mainly applies to non-original content, whereas the net effect is nonsignificant for original content. Third, based on the comparison between effects on original versus non-original content, we provide evidence of the coexistence of substitution and market expansion mechanisms for original content. Fourth, a dynamic investigation of market entry of competing OTT services in Indonesia shows that search for piracy returns to levels found in the synthetic control country after the competitor's introduction.

The implications of these findings are highly relevant to the American media industry, which estimates that piracy costs the video industry \$8.9 billion in 2016, and the music industry an additional \$2.7 billion in earnings. Our substantive results suggest that media firms which provide OTT services to a new market should target resources on combating piracy of original content, as piracy for non-original content can be effectively decreased through market entry.

Keywords: piracy, over-the-top service, streaming, synthetic control, natural experiment.

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