Research Proposal: On Measuring the Long-term Effectiveness of TV Ads: Channel Position Effects

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Advertising has been one of the major research topics for the fields of economics and marketing for more than a century, yet to this moment little is known about the exact mechanisms behind advertising (in)effectiveness. Is advertising driven primarily by information, as it is argued by Ackerberg (2001) and Blake et al. (2015)? Or does advertising serve as a signal, as suggested by the results of Sahni and Nair (2016)? And even before we get into the mechanisms, is there a systematic causal link between product advertising and future sales? While empirical studies of advertising effectiveness date back to the beginning of the twenties centure (Shryer, 1912), the vast majority of evidence linking advertising and sales is hard to interpret as causal.[1] In the recent years, an increasing number of papers has started to measure advertising effectiveness more convincingly, exploiting either field (Bertrand et al., 2010; Johnson et al., 2016) or natural (Shapiro, 2016; Hartmann and Klapper, 2017; Stephens-Davidowitz et al., 2017) experiments, online and offline. However, the evidence is still limited, as well as the existing empirical strategies. For the field experiments, Lewis and Rao (2015) show that even an online experiment with millions of observations might not have enough statistical power to measure advertising effects. As for the natural experiments, they often require a very specific setting, e.g. from a location (Shapiro, 2016) or timing (Stephens-Davidowitz et al., 2017) points of view.

The goal of this research proposal is to exploit a large natural experiment to measure the effectiveness of TV advertising. Identification relies on the quasi-exogenous positions of TV channels in the local cable systems in the US. Martin and Yurukoglu (ming) show that

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[1]See Bagwell (2007) for a detailed overview of the literature.

such positions are often determined by the order-of-entry of a channel to the cable network systen and that a higher position of a channel on a cable systems leads to more viewers.[2] Advertisements that are carried by the channels are different, so different channel positions in the local cable systems lead to the different advertising exposure across regions. This difference in advertising exposure has local (zip-code level) variation, applies to both urban and rural areas, and is persistent over time, which allows us to study advertising effectiveness across a variety of contexts.

Given the widespread adoption of cable systems and persistent nature of channel positions, we believe that the variation induced by the difference in channel positions creates a great set-up to study long-term advertising effectiveness and test alternative mechanisms of advertising effects. However, there are potential limitations to keep in mind. Different channels represent different bundles of information, including both advertising and "native" content. Thus, our interpretation of advertising effects should be cautions. For example, if there are some spillover effects of advertising, like in the antidepressant market that (Shapiro, 2016) describes, we cannot separate out the effects of two antidepressant ads if they advertise at the same time. Similarly, if content on the channel is complementary to the advertised product, like in a case of ESPN and the sports equipment ads, it is hard for us to disentangle the effect of the viewed content on the purchase behavior.

Empirical strategy contains four steps:

1. Establish the differences in content and ads carried by channels.
2. Establish the differences in channel positions across cable systems and the exogeneity of these position differences.
3. Show that there are effects of channel position on viewership (first stage).
4. Use the position of channels as an instrument for viewership to estimate its effect on product sales (second stage).

To use this identification strategy, four datasets are required: (1) information of channel positions in cable systems (e.g. FOCUS data of Nielsen), (2) zip-code level viewership information (e.g. NLTV dataset of Nielsen), (3) information on ads aired by the channels (e.g. AdIntel data of Nielsen), and (4) information about local sales (e.g. HMS and RMS dataset of Nielsen). Through Kilts center at the University of Chicago Booth, we have access to the dataset (3) and (4). Thus, we would like to request access to the datasets (1) and (2) (FOCUS and NLTV). Ideally, we would like to get FOCUS data and NLTV daily viewership data by zip-code level for 2011-2013. Local viewership information is important in the first

[2]This result is supported by the other work on position effects online (Narayanan and Kalyanam, 2015; Ursu, 2015).

stage (it provides more variation to be correlated with the local channel positions) and in the second stage (more variation in the viewership projected on channel positions) of our empirical exercise. We have reached out to Nielsen and got a quote of $65,000 for this data in this time frame, which assures us that this data exists and is potentially accessible for academic research. We are happy to provide more details upon our communications with Nielsen upon request.

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