(a) Summary of the main contribution of the paper

Blake, Nosko, Tadelis’s paper “Consumer heterogeneity and paid search effectiveness: A large scale field experiment (2015)” found that paid search advertising on the brand name of a well-known brand e.g. “ebay” was ineffective for increasing short term revenue for customers. Big brand’s names usually appear through natural search after the paid search which is displayed at the top, hence customers who were going to go on the website anyway are being intercepted by those paid links.

Additionally, it was shown that non-brand search terms, e.g. “shoes”, were effective in gaining new users. However, those new user’s purchase rates are low, and the frequent users - who would have come on to the website anyway - clicking on the links account for most of the advertising costs.

Given the findings, ROI for both brand and non-brand keyword ads were estimated to be negative in the short term, but because it causes new users to visit the site and could potentially deter competitors, the effect for the longer term are unknown.

(b) The methodology they used

Typical consumers who click on the brand and non-brand adlinks had purchase intentions so would have found a way to the ebay website regardless of adverts. The CPC model means that ad spend increases as these consumers go to purchase on ebay, hence ad spend rises along with sales, leading to the endogeneity of the independent variable, spend. Strictly speaking this is known as backwards causation, and causes E(|) . Naively regressing sales on ad spending with OLS will result in biased estimates of the true effect of ad spend. This endogeneity of log(spend) problem is alleviated by estimating it using the IV a dummy variable for weather ads were being paid for or not in a region (made from the interaction of a dummy for whether the test was running and a dummy whether that region keeping search spending on during the test). Differences in Differences regression was used to estimate treatment effect of turning adverts on directly for m=11 different sections of consumers (by purchase frequency).

OLS:

IV: First stage regression:

IV: Second stage:

DnD:

ROI was calculated as:

Where is estimated US 2012 revenues given ad spend =$2880.64m, and is estimated spend on US 2010 search ads =$51m. is the estimate of from turning on Ads, (i.e. the variable of interest in the DnD regression). To obtain a comparable measure for OLS and IV, their coefficients are multiplied by the coefficient in the first stage IV equation.

(c) based on this, how would you approach ad spending if you are working at a company.