

# MISQ Archivist

## Free Riding in Products with Positive Network Externalities: Empirical Evidence from a Large Mobile Network

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### Abstract

In this article, we study the effect of peer influence on products that exhibit positive network externalities to non-adopters (i.e., products that benefit adopters' friends even if they do not adopt). Contrary to products that exhibit positive network externalities upon adoption, this structure of incentives likely results in negative peer influence: the more friends that adopted the product, the smaller the incentives to adopt. We measure this effect empirically by using observational data from a large mobile carrier serving 5.7 million users. We estimate the effect of peer influence across five different products of this type. A naive approach to do so results in a positive estimate for peer influence, due to unobserved homophily. We follow two approaches to address this issue. First, we suggest using the number of friends that end up adopting the product as a proxy for unobserved user fixed effects. Second, we control for homophily by applying a shuffle test (i.e., we compare the effect of peer influence from the original data with the effect obtained from comparable, randomly generated data without peer influence). We obtain negative estimates from both approaches, which provides robustness to our findings. Finally, we show that even for these products, the effect of peer influence associated with the first friends that adopt the product is positive, which arises because they still convey useful information about reducing uncertainty. The negative effect of peer influence arises only for the subsequent friends that adopt the product. These friends are unlikely to convey new information about the product, but each of them decreases the economic incentive to adopt, resulting in a negative aggregate effect of peer influence.

**Keywords:** Peer influence, social networks, technology diffusion, viral marketing, randomization and shuffling