

# Dissertation Proposal

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The first chapter applies Bayesian estimation in product and product line design. When choosing which colors to offer in their product lines, firms often rely upon consumer preference models that do not account for the heterogeneity of their target market and do not consider the trade-offs consumers are willing to make for different color options. For this research we used visual conjoint analysis to assess preference for backpack color and then modeled respondent utilities with a Bayesian hierarchical multinomial logit model, and the part-worth over the color space is modeled through splines. This provided counter intuitive results in which product line color options are not additive but each color changes depending on the number of options the firm is willing to offer and that colors which seem to dominate secondary preferences within a target market may not be the best colors to choose for product line expansion.

The second chapter analyzes the demand relationships across theatrical and downstream DVD retail channels. Movies are distributed through multiple, carefully segmented, channels. This paper investigates how consumption in a movie's theatrical channel affects demand in the subsequent DVD retail channel. We exploit exogenous variation in events that affect theatrical attendance in a geographic market to estimate the causal impact of theater attendance on home entertainment demand. Specifically, we use the occurrence of major snowstorms surrounding a movie's theatrical opening weekend as an exogenous shock to theatrical demand in a local market.

Using this instrumental variable approach, we find evidence that theatrical attendance causally impacts home entertainment demand: lower theatrical attendance in a geographical market that experiences an opening weekend snowstorm leads to lower DVD/Blu-ray sales in the movie's subsequent home entertainment release window in that geographical market. Specifically, we estimate a 10 percent rise (drop) in theatrical attendance causes an approximate 8 percent increase (decrease) in the volume of DVDs/Blu-ray discs sold in the first eight weeks of the DVD release window. This result provides important managerial guidance in an industry undergoing significant changes in the how movies are marketed across theatrical and home entertainment channels.

The third chapter analyzes the effect of piracy on theatrical demand in the context of global theatrical releases. Since the second half of last decade, theaters in international markets gradually shifted towards digital distribution systems. This technological change allowed the global movie release schedules to be more flexible for movie studio, and as a result, the number of Hollywood movies that were release simultaneous in domestic and international markets increased significantly in recent years. The decision of simultaneous versus staggered global release is complicated by piracy. Because pirated videos are distributed online, piracy in one market not only cannibalizes the theatrical demand in the same market, but also might affect the theatrical demand worldwide.

In order to quantify the piracy's global cannibalizing effect across international markets in the context of studio's decisions of global release schedules, we investigate 1) the timing and prevalence of piracy supply by countries, and 2) the varying degrees of substitution from theatrical demand to piracy videos in multiple countries. One of the contributions is that we relax the assumption of supply of piracy being exogenous in the demand equation that is commonplace in the literature of piracy. This assumption may be unrealistic because piracy producers often prioritize pirating popular movies. To address these issues, we specify a joint model of aggregate movie demand and timing of piracy supply, and also handle the endogeneity of international release scheduling through the use of instrumental variables.