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# On the robustness and strategic implications of a parsimonious advertising – inventory competitive model with extensions to pricing competition

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**Abstract**

Using a market share attraction structure of advertising competition, this research introduces first, a parsimonious inventory-advertising model for which competition is limited to two symmetric firms thus obtaining its related comparative statics. Following a supermodular game approach, the derived comparative statics remain robust upon considering non-dominant firms (each with a market share of less than 50%) competing in an asymmetric oligopoly of N rivals where each firm controls the inventory / advertising decision variables. Furthermore, changes in model parameters are investigated in terms of their relative impact on equilibrium measures. In this regard, the findings indicate that for the analyzed model, the marketing parameters possess much more influence on the equilibrium measures than the operations parameters. The generalization appears applicable to both non-dominated oligopolies as well as dominated oligopolies (where one firm has a market share equal to or greater than 50%) where each firm controls the inventory/ advertising decision variables in addition to price. However, changes in shift parameters elicit a response from the dominant firm which will differ from its non-dominant rivals for products and services. Additionally, while the literature shows that the non-dominant firm will pursue a defensive strategy of decreasing both the equilibrium price and the amount of equilibrium advertising in response to competitive entry, our findings show that results for a fixed market potential may not continue to be robust once inclusion of the operations variables of order quantity are considered. Finally, the study explores the implications of the free - entry equilibrium for which the number of firms in the industry is determined endogenously.

*Keywords:* Advertising; Economic order quantity; Pricing; Comparative statics; Market share attraction models; Supermodular games

## 1. Introduction

Researchers advocate building analytical models that are *parsimonious,* focusing on the truly important aspects of the problem to permit "what-if" analyses that allow both managers and policy makers to understand how changes in the parameters of their problem might affect their strategies or policies (viz. comparative statics / sensitivity analysis). Researchers also argue that such models should be *robust* in that their comparative statics predictions must hold up to a relaxation of the assumptions ([10], [30]).