

Modeling Elasticity: A Brief Survey of Price Elasticity of Demand Estimation Methods

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Abstract

Price elasticities play a central role in marketers and sale professionals' decision-making processes. Yet, given the variety of possible econometric models, the central question that arises as which one of them would be the most appropriate for elasticity measurement. In this paper, we conduct a comprehensive empirical study of 104 weeks of sales (January 2016 to December 2017) for 340 Hair Care products sold in 11 retailers. We present four different econometric models: Ordinary Least Squares (OLS), Quantile Regression (QR), Quantile on Quantile Regression (QQR) and Gravity Center Regression (GCR).

Our first findings show that considering breakpoints and outliers ahead of using any econometric model significantly improves the output from the classical and most widely used models such as Ordinary Least Squares (OLS) and Quantile Regressions (QR). Moreover, we present two other innovative models, Quantile on Quantile Regression (QQR) and Gravity Center Regression (GCR) which could further eliminate the measurement bias given limited or even aggregated data and, assist with the marketing decision making processes.

Keywords: Price elasticity of demand, Breakpoint and Outlier, Quantile on Quantile Regression (QQR), Gravity Center Regression (GCR)

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