The Sethi Model and Determining the Effectiveness of Advertising

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One of the largest expenditures in business is advertising, but just how effective is advertising on sales? In 1957 the Vidale-Wolfe model was created to model the response of sales to advertising, in 1983 Suresh Sethi improved upon this model and created the Sethi Model, which has become the industry standard. The model takes advertisement expenditure, word of mouth and brand strength into consideration, and models change in sales over time. The model has been improved to include competition between multiple firms, and can now model the effect of advertising on sales of competing firms.

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Overview

1. Sethi Model
   - Stochastic Model
   - $\frac{dx}{dt} = (\rho u(t)\sqrt{1-x(t)} - \delta x(t)) + \sigma(X_t)dz_t$
2. Sorger Duopoly Version of Model
   - Deterministic Model
   - $\frac{dx}{dt} = \rho_1 u_1(x,y)\sqrt{1-x} - \rho_2 u_2(x,y)$
   - $\frac{dy}{dt} = \rho_2 u_2(x,y)\sqrt{1-y} - \rho_1 u_1(x,y)$
   - Numerical Confirmation of Model
3. Extension to n firms
   - $\frac{dx_i}{dt} = \frac{n}{n-1}\rho_i u_i\sqrt{1-x_i} - \frac{1}{n-1}\sum_{j\in I}\rho_j u_j\sqrt{1-x_j} - \delta(x_i - \frac{1}{n})$

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The End