

Forecasting Innovation Success via Shapes of Prediction Markets

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We propose a novel model for forecasting innovation success based on prediction markets. Prediction markets are market-like mechanisms that efficiently collect knowledge from a large number of participants for the sole purpose of making better forecasts. Prediction markets have been successfully used to forecast events ranging from presidential elections to homeland security and they are being applied by major corporations such as HP and Google for internal forecasting. In this talk, we start by introducing and discussing prediction markets and the data associated with it.

Our study proposes an innovative approach for forecasting demand for innovations using prediction market data. In particular, we forecast the release weekend box office performance of Hollywood movies which serves as an important planning tool for allocating marketing resources, determining optimal release timing and advertising strategies. Our approach is based on ideas from functional data analysis and extracts shapes from the trading histories of prediction markets. We show that our shape model not only adds value compared to traditional forecasting models (such as those that only use the most recent trading value), it also allows us to make forecasts early (i.e. long before the movie is released) and it also enables us to incorporate newly arriving information “on the fly.” In particular, our approach is especially well-suited to capture information that changes dynamically, such as movie buzz or hype originating from word-of-mouth and other sources that are not easily controlled by the marketer.

**jointly with Natasha Foutz, McIntire School of Commerce, University of Virginia*