Theory and Determinants of Consumer Demand for Sports Lottery: Development of a Conceptual Model

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Both gambling and sports are ancient and ubiquitous. The magnitude of dollars involved in gambling is staggering - 2.6 trillion U.S. dollars were spent in 2007 worldwide (Morss, 2012). Most Americans have participated in some form of gambling, whether it involves purchasing a lottery ticket, playing slot machine, placing a bet at the track, or making a bet with friends in an office pool (Welte, Barnes, Wieczorek, Tidwell, & Parker, 2002). What ties gambling and sports together is that people like betting on the outcome of sporting events. Although representing only 2.6% of the legalized gambling market, sport gambling has become the fastest growing gambling segment, with an annual growth rate of 14.7% in the past five years (AAP News, 2012). For instance, in the U.S. sport gambling represents 9.86% of the sports industry (Zhang & Cianfrone, 2011). In 2011, 2.88 billion U.S. dollars were legally waged in Nevada's sports books, representing less than 1% of all sports betting in the U.S. Approximately $93.9 million was wagered on the Super Bowl in the state's sports books in 2012 according to the Nevada Gaming Control Board, and the event earned a net income of $5.1 million for the Nevada sports books (American Gaming Association, 2012).

Sports lottery is an important element of sports gambling. Sports lottery is a compromise between traditional lottery games and sports betting, which differs from traditional lottery games in several critical aspects: (a) non-randomness of the drawing, (b) knowledge-based reasoning and over-confidence, and (c) experiential utility in sports gambling. As an alternative taxation, sports lottery is widely available in many countries with a noticeable exception of the U.S., where bookmaking is only legal in Nevada and certain forms of sports lotteries in Oregon, Delaware, and Montana. In 2012, the state of New Jersey plans to legalize sports betting.

The burgeoning of sports gambling is puzzling. Gambling markets in general cannot simultaneously yield profits for both sides of gambling participants (Sauer, 1998). The lottery market is even worse. With a higher take-out ratio compared to other forms of gambling and an extremely low probability of wining, the average expected return on a one dollar lottery ticket is between 40 and 60 cents (Thaler & Ziemba, 1988). A lottery ticket is evidently a type of "negative asset" and usually a poor investment For any rational economic agent, whose goal is to maximize the expectation of return. Yet, people, in droves, continue to buy lottery tickets anyway, violating the standard economic assumption of rationality and risk-aversion in human behavior (McCaffery, 1994; Quiggin, 1991).

Scholars working in separate disciplines of psychology, economics, sociology, and business, among others, have explored the demand for gambling in general and lotteries in specific, which may shed light on the consumer demand for sports lottery. The purpose of a demand analysis is to explain the process by which a consumer makes choices to maximize the utility he or she can derive from selecting the best possible combination of commodities within a budget constraint (Clarkson, 1963). Empirical investigations of the demand for lottery products in the economics literature, explicitly or implicitly, often adopt a paradigm based on the generalization of the expected utility theory. Theories and research investigations into lottery gambling have focused on the consumption value of lottery play (Conlisk, 1993; Forrest, Simmons, & Chesters, 2002), lottery play as motivated by indivisibility in expenditures (McCaffery, 1994; Ng, 1965), and lottery play as a means to gain "something for nothing" (Nyman, Welte, & Dowd, 2008).

Through a comprehensive review of literature as the primary methodology of research inquiry, the purpose of this study was to develop a conceptual framework to identify and study those determinants affecting consumer demand for sports lottery. Development of the conceptual model was based on the rationality of human behaviors and the notion of gambling as a consumption practice (Conlisk, 1993; McCaffery, 1994; Ng, 1965). As a result, the demand for sports lotteries was recognized as being highly influenced by three categories of determinants: (a) product attributes, include the effective price of the ticket, the size of jackpot pool, and the attractiveness of sports games; (b) consumer demographics, including income, education, gender, age, religion, ethnicity, and profession; and (c) marketing variables, including cross-border competition, product substitution, venue accessibility, and social responsibility marketing. Incorporating these determinants, a prediction model was formed, as outlined below: $y_{it} = \alpha_i + \lambda_t + x_{it}\beta + \varepsilon_{it}$, $t=1,2,\ldots,T$, $i=1, 2, \ldots, n$. here, y_{it} denotes the demand of the ith subject during the tth time period. The quantity $\beta = (\beta_1, \beta_2, \ldots, \beta_k)$ is a $K \times 1$ vector of parameters that is common to all subjects and $x_{it} = (x_{it,1}, x_{it,2}, \ldots, x_{it,k})$ is the corresponding vector of covariates as outlined above. The term α_i is specific to subject i, yet is common to all time periods. This variable may account for features that are unique, yet unobserved, characteristics of each subject. The term λ_t is specific to the time period t, yet is common to all provinces. This variable may account for common, yet unobserved, events that affect sales. Both terms α_i and λ_t are random variables and hence the model is also known as the two-way error components model (Baltagi, 1988).

Demand analysis in terms of product features, consumer characteristics, and market environment is essential to develop a product that can deliver value to the consumers, where analyses of consumer characteristics are fundamental to segment consumers, and analyses of market variables can help facilitate the formulation of marketing plans and forecast sales (Kotler & Keller, 2009). The current study represents an initial effort to explore the theories explaining the market demand for sports lottery gambling, a much under-researched phenomenon in the sports industry. The regression model provides a viable direction for conducting empirical investigations into consumer demands of various forms of sports lotteries. Further discussions are made on how an in-depth understanding of the demand for sports lotteries would help lottery consumers make more informed and rational decisions and choices, facilitate the governing bodies to make more sensible decisions regarding the sanctioning of gambling products, and enable sports lottery agencies to allocate resources toward optimizing product portfolio.