Value Determination in the Secondary Ticket Market: A Quantitative Analysis of the 2007 NFL Playoffs

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Ticket prices in team sports are generally priced at a sub-optimal level. According to Volpano (2003), the evidence of sub-optimal pricing is demonstrated by the presence of empty seats at venues and the existence of a secondary ticket market. There exists an ambiguous area in ticket pricing where teams want to charge enough so that they maximize their revenue, but not too much so that the average fan is priced out of the stadium. Indeed, the process of determining prices for tickets in the primary market is of critical importance for sport organizations. Previous research has examined the factors that predict the face value of tickets in the primary market. Reese and Mittelstaedt (2001) found that ticket prices were based on a certain set of criteria. Those criteria, in order of importance, were: team performance, revenue needs of the organization, public relations issues, toleration of the market regarding price increases, fan identification, and the average league ticket price. Further, according to Rishe and Mondello (2004), a variety of factors impact primary ticket prices, including previous year's success, household income level, and playing in a new stadium. The authors also found that population size was positively correlated with ticket prices in all leagues with the exception of the NFL, where sellouts are common regardless of market size. However, fans often place a different value on tickets based on a variety of factors. The presence of a secondary market (i.e., scalpers, brokers, and online ticket resale websites) illustrates fans' willingness to pay prices that are considerably different from the face value of the ticket. The literature on factors that influence value, or the price that fans are willing to pay in the secondary market, is underdeveloped. The purpose of this study is to examine the potential factors that impact ticket value in the secondary market, where prices fluctuate based on fans' willingness to pay. An analysis of traditional price determinants, combined with factors that influence online auctions, will provide a more complete understanding of the true value placed on tickets by fans. Closely aligning ticket prices with demand conditions will help teams maximize revenue from ticket sales and perhaps decrease the presence of sellers in the secondary market, who have long been associated with unethical practices including price gouging and ticket fraud (Drayer et al., in press).

Data were collected for all NFL post-season games during the first three rounds of the 2007 NFL playoffs from November 2007 through January 2008. A total of 750 completed eBay auctions were collected during this time period (n = 750). This sample was chosen for two reasons. First, NFL playoff games are typically sold out, which increases the likelihood of these tickets being resold in the secondary market. Second, the researchers had access to all 2007 NFL playoff tickets sold on eBay, an online auction website where final sell prices indicate the maximum amount consumers are willing to pay.

This provided a complete sample of ticket transactions from this particular online auction source for the first three rounds of the 2007 post-season. The Super Bowl was not included in this study due to the unique characteristics of this mega-event. A regression model was developed to understand the factors that affect the variability in NFL playoff ticket prices within the secondary market in an online auction environment. Due to the non-existence of a model that examined secondary tickets prices in the NFL, the current model was created through an evaluation of previous literature in the areas of ticket price determinants in the primary market (Reese & Middlestaedt, 2001; Rishe & Mondello, 2003, 2004) and pricing through online auctions (Lucking-Reiley, Bryan, Prasad, & Reeves, 2007).

A total of 17 explanatory variables were used to investigate the determinants of secondary market ticket value in the NFL. In an attempt to develop a model from a considerably large set of explanatory variables that were selected from multiple studies, an all-subsets regression was used as a variable selection procedure to establish a best fitting model. An all-subsets regression was chosen because it allows for the examination of all potential regression equations from the chosen variables (Sen & Srivastava, 1990).

A measure of fit is provided for each equation, and the researchers can examine the model that provides the best fit from both a theoretical and statistical standpoint. The R2 statistic and the Mallow's Cp statistic were used to determine the most appropriate model from the all-subsets regression analysis. Based on the all-subsets regression results, a ten variable representation was selected as the most appropriate model for explaining the variability in NFL playoff ticket value within the secondary market. The ten variable model was found to be significant ($F= 129.56$ (10,740), $p < .01$) explaining 63.6% of the variability. The variables included in the selected model were population, total number of transactions per game, face value of the ticket, winning percentage from the previous year, day of the game, number of days before the game, per capita income, playoff round, total number of bids, and current winning percentage (all variables were significant, $p < .01$). The majority of variables had a positive relationship to secondary ticket value. Only population had a negative parameter estimate. In addition, the ten variable

model selected had a Mallows Cp value of 11.766, which was the closest to the recommended value (number of predictors + 1). This result indicated a lack of bias in the model compared to other potential models. Population, total number of transactions, and the face value of the ticket appear to have the greatest influence on secondary market ticket value in the model. Many online auction environment variables from the original list were not selected in the model, including buyer feedback and the length and format of the auction. There were also game-related variables that were not selected (game spread, game certainty, and if the game involved divisional opponents).

The findings in this study illustrate the importance of establishing a model for understanding secondary ticket value in an online auction environment. The current regression model was developed in an exploratory capacity to reduce a large number of potential predictors of ticket value into a more streamlined model for future investigation. As ticket pricing slowly shifts from cost-oriented to demand-oriented, studies such as this one can be used by sport organizations to determine where inefficiencies exist with regard to their current pricing structure. More efficient pricing in the primary market can potentially provide a strong revenue boost to a league that is claiming a shortage in revenue over the past year. For example, in the current study, it is estimated that the Pittsburgh Steelers gained an extra $2.52 million in revenue compared to other teams that hosted Wild Card games by pricing their tickets more efficiently. Other teams that hosted Wild Card games allowed ticket brokers to capitalize on this additional revenue. By using the secondary market to understand demand trends, these teams would not have made these costly pricing mistakes. Other examples of pricing inefficiency will be provided during the presentation.