

The Determinants of NFL Ticket Prices: What Managers May Consider When Pricing Tickets

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Abstract:

Our purpose of this study is to determine what factors contribute to NFL ticket prices across teams and over time. After creating a theoretically sound model based on past economic studies, a panel dataset was constructed based on the 32 NFL teams from the 2002 through the 2010 season. Results of this study show that a team's previous season's winning percentage, the average income of the area, the population of the area, and playing in a new stadium all have a positive, and significant, influence on ticket price. This study's outcome allows fans and others to observe what team managers may consider when making price-changing decisions, and also by what percent a change in each factor will potentially change price. The study also shows what contributes to ticket price over time; an interesting observation given the rapid increase in the demand for football in the last decade.

Theory:

- ▶ “An Exploratory Study of Criteria Used to Establish NFL Ticket Prices” (2001)
 - Reese & Mittelstaedt
 - A survey released at the end of the 1998 NFL season asking directly the individuals responsible for ticket pricing what determinants they use in ticket-pricing strategy
 - In order of importance:
 - Team performance
 - Revenue needs of the organization
 - Public Relations Issues
 - Toleration of the market regarding price increases
 - Fan identification
 - Average league ticket price
 - Weakness was that it did not provide any quantitative value of importance, only rank
 - “Ticket Price Determination in the National Football League: A Quantitative Approach” (2003)
 - Patrick James Rishe & Michael J. Mondello
 - Purpose: To explain cross-sectional differences in ticket prices across teams, and causes for the size and direction of seasonal price increases in the NFL.
 - Concluded that playing in a new stadium, the previous year's performance, fan income, and population size are all important determinants of cross-sectional differences in average ticket price across teams

- Playing in a new stadium, a change in winning percentage from the previous year, reaching a championship, and the size of the previous year's ticket price increase are important determinants of seasonal increases in average ticket price over time for a given team.

Equation:

$$\ln(\text{TIX}_{it}) = \beta_0 + \beta_1 \text{WP}_{it(t-1)} + \beta_2 \ln(\text{INC}_{it}) + \beta_3 \ln(\text{POP}_{it}) + \beta_4 \text{STAD}_{it} + \varepsilon_{it}$$

TIX_{it} was the natural log of the average ticket price of an NFL team

$\text{WP}_{it(t-1)}$ was the winning percentage of the team in the previous season

INC_{it} was the natural log of the income per capita of the surrounding metropolitan area

POP_{it} was the natural log of the population of that same area

STAD_{it} was a dummy variable of whether or not the team was playing its first year in a new stadium

Results:

Variable	Coefficient	Std. Error	T-Value	Prob.
WS	0.102460	0.035579	2.879806	0.0043
INC	1.159583	0.065233	17.77601	0.0000
POP	1.425414	0.155037	9.194047	0.0000
NS	0.130918	0.031248	4.189592	0.0000

R-squared: 0.848847

Adjusted R-squared: 0.82776

A 1% increase in a team's winning percentage should result in a 0.10% increase of the average ticket price.

A 1% increase in income would result in a 1.16% increase in average ticket price

A 1% increase in population will result in a 1.42% increase in a team's average ticket price.

If a team is playing its first season in a new stadium, the average NFL ticket price for that team will increase by 0.13%, all else held constant

Summary and Conclusions:

- It adds to the field of economics by providing an up-to-date empirical analysis of ticket prices within the professional sports industry. We have created a model that can help management from professional teams come as close as possible in capturing a fan base's willingness to pay, with considering what type of product the team has on the field with what kind of area a team is located in. Management may also consider how much of a change in ticket price could result from improved amenities to fans.
- Results of our final regression show that across teams and over time, winning percentage, average income of the metropolitan area, population of the metropolitan area, and a team playing its first year in a new stadium are all important determinants of ticket price. Furthermore, all of the coefficients for these variables are positive, and as they increase a percentage, ticket price will also increase a fraction of that percentage.