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
  - 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:

\[
\ln(TIX_{it}) = \beta_0 + \beta_1 WP_{it(t-1)} + \beta_2 \ln(INC_{it}) + \beta_3 \ln(POP_{it}) + \beta_4 STAD_{it} + \epsilon
\]

- \( TIX_{it} \) was the natural log of the average ticket price of an NFL team
- \( WP_{it(t-1)} \) 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:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T-Value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS</td>
<td>0.102460</td>
<td>0.035579</td>
<td>2.879806</td>
<td>0.0043</td>
</tr>
<tr>
<td>INC</td>
<td>1.159583</td>
<td>0.065233</td>
<td>17.77601</td>
<td>0.0000</td>
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<tr>
<td>POP</td>
<td>1.425414</td>
<td>0.155037</td>
<td>9.194047</td>
<td>0.0000</td>
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<tr>
<td>NS</td>
<td>0.130918</td>
<td>0.031248</td>
<td>4.189592</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

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.