



What Determines NFL Ticket Prices?

Cameron Norris and Kyle Shewmaker

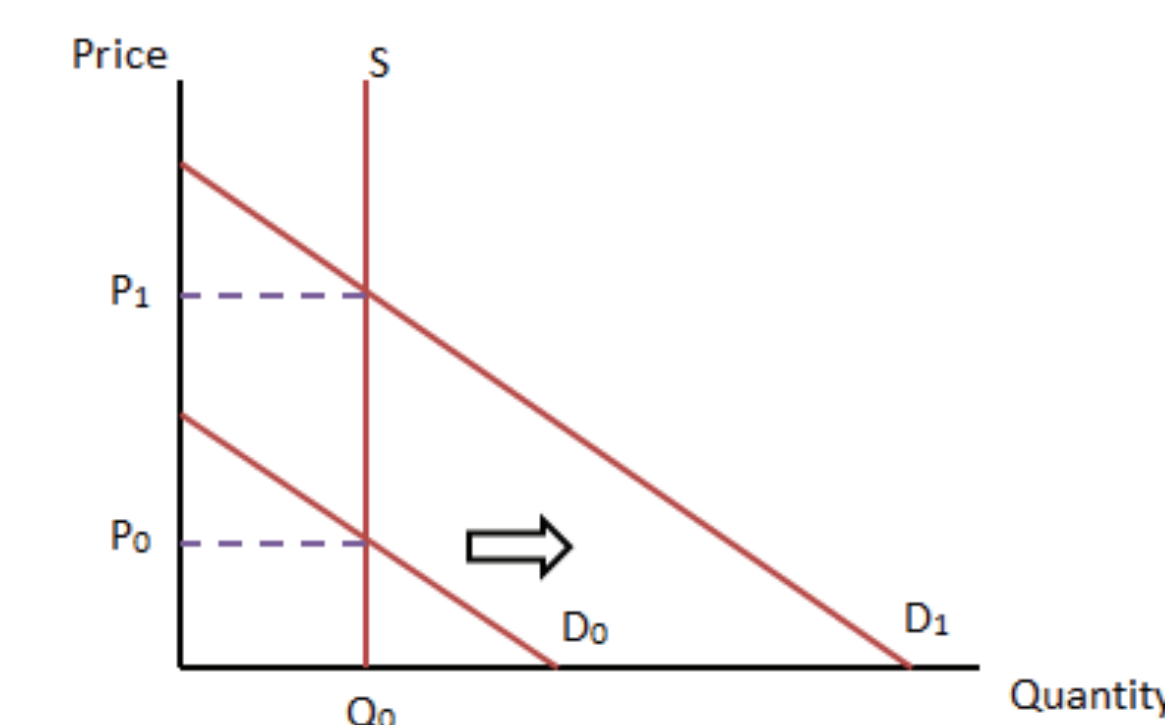
Linfield Department of Economics • Spring 2014

I. Abstract

This paper studies the demand-side factors that determine NFL teams' ticket prices from 2009 to 2012 using a panel model. Our model specifies NFL teams' average ticket prices as a function of metropolitan area GDP per capita, number of competing professional sports team, whether or not there has been a stadium renovation within the last two years, the average winning percentage from the previous three seasons, and Pro Bowl players each team had from the previous year. We find that a team's winning percentage and having a stadium renovation have the largest impact on average ticket prices. We also find that the number of Pro Bowl players is an insignificant determinant of NFL teams' ticket prices.

II. Theory

Our goal is to study the demand-side factors that affect National Football League ticket prices. With a fixed supply of stadium seating, we know that any change to the price would be attributable to a change in demand; this theory is shown graphically below.



III. Model and Hypotheses

$$\text{Log}(\text{Price})_{it} = F(\text{Log}(\text{GDP}/\text{Population})_{it}, \text{AVGWin}_{it}, \text{Star}_{it-1}, \text{Stadium}_{it-2}, \text{Multiple}_{it})$$

$\text{Log}(\text{Price})_{it}$ is the log of average ticket price.

$\text{Log}(\text{GDP}/\text{Population})_{it}$ is the logged per capita GDP of the surrounding metropolitan area of the NFL team. We hypothesized that GDP per capita would have a positive impact on ticket prices.

AVGWin_{it} represents each team's average winning percentage from the previous three seasons. We hypothesized that winning percentage would have a positive impact on ticket prices.

Star_{it-1} represents a count variable for number of Pro Bowl players there are on a team's roster from the previous year. We hypothesized that the number of Pro Bowlers would have a positive impact on ticket prices.

Stadium_{it} represents a dummy variable for teams that are in the first two years in a new stadium or stadium renovation. We hypothesized that a new stadium/stadium renovation would have a positive impact on ticket prices.

Multiple_{it} represents a count variable for the number of professional sports teams in the same metropolitan area as the NFL team. We hypothesized that the number of professional sports teams would have a positive impact on ticket prices.

IV. Dataset

- A panel dataset was used to observe changes in NFL ticket prices in cross-section and in time-series analysis.
 - 32 Teams over 4 years (2009-2012): Sample size = 128.
 - Due to data availability, our dataset was limited to 2009-2012 seasons.
- The average ticket price is an average for general admission seats in each stadium and excludes suites, season tickets, and other special seating not available to the general public. Removing those seats provides the best representation of an average ticket price a typical consumer would pay.

V. Empirical Results

Variable	Model 1	Model 2
Constant	4.159346 (0)	4.158152 (0)
Log(GDP/Population)	0.100034 (0.0002)	0.100048 (0.0002)
Winning %	0.552104 (0)	0.55755 (0)
Multiple Pro Sports Teams	0.050779 (0)	0.050913 (0)
New Stadium Dummy	0.210444 (0.0003)	0.210289 (0.0003)
Star Player	0.0000554 (0.9307)	—————
Adjusted R-Squared	0.614623	0.617732

**P-values in parentheses

VI. Summary

- Our model estimated the effect of five different variables on NFL teams' average ticket price: GDP per capita of the metropolitan area, average winning percentage from the previous three seasons, number of competing professional sports teams in the same metropolitan area, if the team had built or renovated their stadium within the last two years, and the number of Pro Bowl players on a team's roster from the previous season.
- We found that four of the five explanatory variables were statistically significant. An increase of 1% in GDP per capita results in an increase of .1% in ticket prices. A 1% increase in winning percentage increases ticket prices .5%. An increase in the number of competing professional sports teams increases ticket prices .05% per additional team and a new stadium or renovations accounts for a .2% increase in ticket prices. The number of Pro Bowl players from the previous season was found to be statistically insignificant with a p-value of .93. We ran the regression a second time omitting the number of Pro Bowl players and found that the other four variables had better p-values, no change in coefficients, and were statistically significant.