

The analysis of factors influencing CSL teams' market value

Qilin Dai(Darren), Yuhang Jiang(Steven), Sijie Yang(James), Yanming Zhang(Zakry)
G11 AP Statistics from section 2 and 5, Iris Wang
Beijing National Day School, Beijing, China

PROPOSAL

1. Research question

Whether the market value of Chinese Super League teams will be affected by a number of factors. After the opening of the Chinese Super League in the new season, as loyal fans, we have a keen interest in the relationship between the market value of the Chinese Super League teams and the strength of the teams, the development degree of the cities where the teams are located and the popularity of different teams.

2. Background research

According to The Economics Theory of Professional Team Sports written by Stefan Késenne, the market value for a sports team is often related to various factors, such as the local economic level and popularity of the team (2014). Two relevant studies discuss the factors that relate to the market value of a team. A recent study conducted by Carol Pina examined the multi-factors that influence the professional sports franchise amongst teams in different sports leagues, including the Major League Soccer, the National Basketball Association, etc (2018). The study figured out several factors for the franchise values of teams in different professional sports leagues through linear regression analysis. Besides, an article published by David Butler mainly discusses the relationship between the salary caps and the points of the teams in La Liga (2021). The result reveals the log of salary caps has a moderately strong and linear correlation with the points of La Liga teams.

3. Sampling and experimental design

- **Variables:** League points / Nominal GDP of the city where the team is based / Attendance
- **Type of study:** Observational study. This is an observational study where no treatments are designed. We collected the data from internet and official website of Chinese Super League(CSL).
- **Data collection:** Data that related to the market value, attendance rate, and Pts are collected from the website transfermarkt; the GDP of the corresponding city is collected from the CEIdata. Details are in the appendix.
- **Scope of inference:** We have evaluated the true population of the CSL in 2023 season, consequently, our conclusions can be applied from the present to the future.

4. Exploratory data analysis

We collected data from the true population of 16 CSL teams in 2023 season. We compared

the teams' market value with the league points, nominal GDP of the city where the team is based, and attendance. The following plots visualize the data we collected for different explanatory variables.

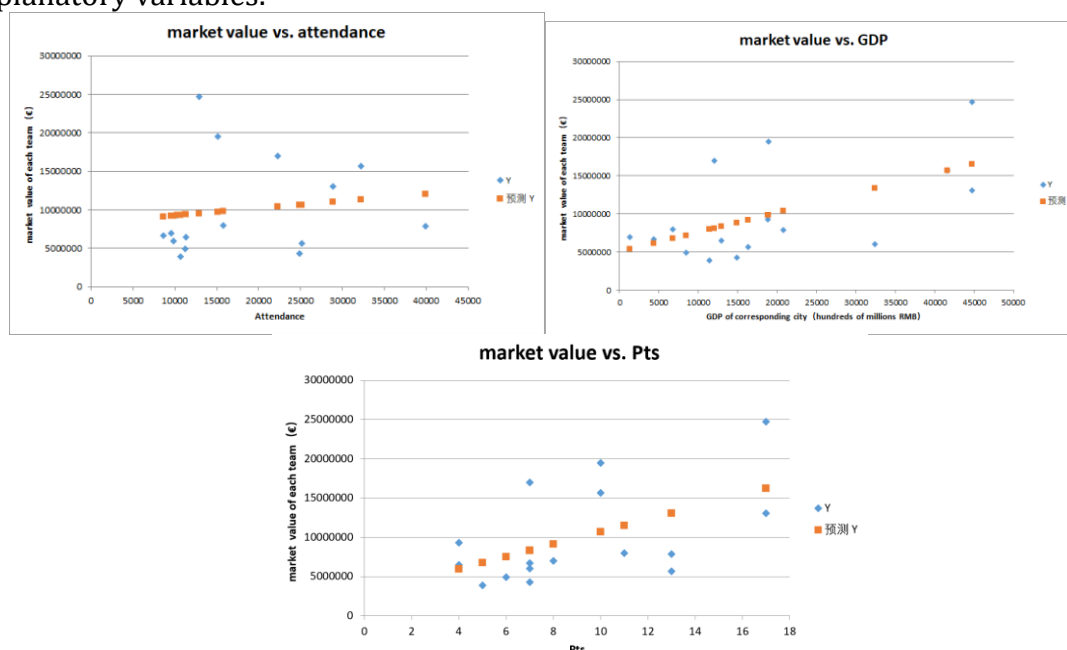


Figure 1 Scatter Plot for Market Value Versus Three Explanatory Variables with Predicted Values

With the data collected, we will construct inference for slope of relationship between teams' market value and several factors. On top of that, we are able to tell whether the slope is significant or not by calculating the p-value. We can also test whether the correlation between market value and explanatory variable is significant or not based on the R^2 . By comparing statistical values, we can figure out significant factors that influence the market value.

The only condition must be met is the linear relationship between the market value and the explanatory variables since we collected the population data.

5. Group task assignments and timeline.

In this project, Darren is response for collecting and analyzing the data; Zakry will design and conduct the study; Steven is response for backgroud searching and test the reliability of data; James will search information and state the conclusion of the project. We plan to divide the work into in-class assignment and out-class meeting. In the class time we will mainly do calculations and researches, while in the meeting we will discuss the reliability of the model and potential improvements.

6. Data:

market value(€)	GDP of corresponding city (hundreds of millions RMB)	Pts	attendance
24710000	44700	17	12901
13080000	44700	17	28879
7880000	20800	13	39920
5650000	16300	13	25154
7950000	6744.6	11	15733
19480000	18900	10	15133
15680000	41600	10	32239
7000000	1318.2	8	9568
16980000	12000	7	22317
6700000	4388.2	7	8587
4300000	14900	7	24865
6000000	32400	7	9825
4930000	8430.9	6	11237
3890000	11400	5	10696
6480000	12900	4	11292
9280000	18800	4	10329

Figure 2 Table of original data

Figure above are collected from websites in the appendix.

The table includes each team's attendance, market value, points, and GDP of corresponding city where the team is located.

References:

Butler, David. "La Liga Salary Caps." The Economics of Sport,

www.sportseconomics.org/sports-economics/la-liga-salary-caps. Accessed 17 May 2023.

Kesenne, Stefan. Economic Theory of Professional Team Sports: An Analytical Treatment. Edward Elgar, 2015.

Pina, Carlos. "DETERMINANTS OF SPORTS FRANCHISE VALUES: HOW DOES MLS HOLD UP AGAINST THE BIG FOUR? ." California State Polytechnic University, Pomona , 2018.

Appendix:

<https://ceidata.cei.cn/new/ShowTabsByInterface?from=ceidata&key=GDP>

<https://www.transfermarkt.com/chinese-super-league/marktwerteverein/wettbewerb/CSL>

<https://www.transfermarkt.com/chinese-super-league/besucherzahlen/wettbewerb/CSL>

<https://www.transfermarkt.com/chinese-super-league/startseite/wettbewerb/CSL>