COMPETITIVE BALANCE AND DEMAND FOR FOOTBALL: A COMPARATIVE STUDY OF IRAN'S PRO LEAGUE AND FOUR EUROPE'S BIG LEAGUE

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Abstract

Competitive balance is what turns football industry into an attractive event and in lack of this charming factor, the competitions will be boring and consequently their economical aspect will be disappeared and getting football out of industries will be likely. Therefore competitive powers of teams should be narrow and show appropriate balance. Then such competitions benefit from ambiguous final outcomes, and this ambiguity in outcome will be the main factor of the competitions' attractiveness that is the main factor of overflowing income resources like sponsors, spectators, etc. toward these competitions. The present article aims at observing rate of competitive balance using 3 important indices of estimation of this criterion and its relation with procedure of spectators' presence using Granger causality test, during 10 current courses of Football Champion League of Iran and compares its results with similar results obtained from 5 great leagues of Europe. The results show that Football Champion League of Iran, not only has structural similarity with league of France and A Class of Italy, but also the highest level of incomes has been obtained from selling tickets because of high competitive balance in the seasons of 2006-2007 and 2007-2008.

Key words: Sports Economy, Ambiguity in Outcome, Competitive Balance, Champion League, Football Demand

JEL Classification: L83, L22, C39, C23

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1. Introduction

From the beginning of progress of sports economy, the relation between fans' presence and ambiguity in outcomes plays an important role in experimental research as it was Rotenberg (1956) who stated for the first time: "ambiguity in outcome is necessary, especially when spectators pay entrance fee". So theory of the ambiguity simply says that: 1- Uneven distribution of resources between teams will result to uneven competition. 2- When ambiguity of outcome decreases (theory of ambiguity in outcome) the spectators' interest in watching such sports and the sponsors' interest in protecting financially and advertising will decrease dramatically. 3- Re-distribution of income may be a good strategy to operate the chain of even competition distribution, more ambiguity in outcome, more spectators, and high income resources resulted from selling tickets, more distribution between teams, etc. In fact this article focuses on the second hypothesis which follows by the third hypothesis. In this regard, we consider theoretical literature of competitive balance in the first part and then we present an explanation for the scales used for calculation of competitive balance in the next part. The third part reviews the reports of researchers about competitive balance and its different relations with different types of economical motives briefly and to the point. The fourth part defines used model and data and finally the results of above mentioned research will be presented considering the results obtained by foreign researches on European leagues.

2. What is competitive balance and how does it happen? (Theoretical literature)

As mentioned above, competitive balance indicates teams' competitive powers against each other. In fact, when teams confront each other with equal competitive powers, you won't predict the competition's outcome assuredly i.e. the competition benefits from ambiguity in outcome. High attractiveness of such competitions will attract a lot of spectators toward stadiums. Most of well-known European leagues, as the cradle of football, try to actualize and increase the attractiveness using different strategies like establishment of well-equipped stadiums for spectators which cost a lot. But as if there is a simpler solution which can be analyzed and studied and finally effective strategies and policies will be developed and executed. The simple way is that income sources are redistributed and most of other income resources are recognized specially in Iran, like TV broadcast fee and conferring it to the clubs and equalizing teams' competitive powers, because

teams that benefit from high incomes, afford to hire more professional players, technical cadre and better structure and this factor will result to more competitive power (Dashtbani, 2011).

Competitive balance scales

In a total balanced league, each team will have an even chance of wining each competition and each team will have an even chance of winning championship, in other word, in a total balanced league, the prediction that which team might win championship of the next season and next years will be impossible. Therefore we can conclude that competitive balance has 3 dimensions: Ambiguity of competitions, ambiguity of seasons, long-term ambiguity (from this view point, competitive balance is called dominance and control in literature). However all 3 dimensions are followed by competitive balance and ambiguity in outcome. If there is ambiguity in the outcome of individual competitions, the outcome of league in the current season will be ambiguous too. Any one of scales of competitive balance may include one of these dimensions and show the results conforming that dimension. There are several scales of competitive balance, 3 well-known commutative ones of which are used in this article.

These scales include:

C5 Index (Long term ambiguity index)

Control index is a simple index which is familiar for most of champion league fans and equals to level of championship control by a few special and powerful teams. Dominance and superiority of 5 teams are considered in this index. This index is calculated as follows:

$$C5 = \frac{\sum_{i=1}^{5} Sit}{\sum_{i=1}^{n} Sit}$$

$$C5ICB = \frac{C5}{5/N} * 100$$

In fact, total points of 5 top teams by the end of season is divided by total points of all teams on that season (formula 1) but as number of teams changes during champion league seasons, it is divided by $\frac{5}{n}$. Considering that competitive balance ideal in each champion league is 100, we multiply this figure by 100. If the competitive balance is more than its ideal value, it might show concentrated power between 5 teams. As a result, competitive powers of teams benefit from less

balance in the mentioned season. For example, if competitive balance decreases as 25%, C5 of competitive balance will be 125 (Michi and Agton, 2004).

Herfindal Criterion

It seems necessary to have an index to measure difference of competitive power between all teams because we can just calculate difference of competitive power between 5 top teams with other teams using C5. This criterion is called Herfindal which is calculated as follows:

$$H = \sum_{i=1}^{N} Si^2$$

$$H = \frac{H}{1/N} * 100$$

It is clear that in this formula, total square of points between teams is calculated and then divided by number of teams, as $\frac{1}{N}$, and finally multiplied by 100 which is ideal value of competitive balance in a total balanced league. The result obtained from the above mentioned formula is as follows: If supposedly the result figure is 135, we say competitive balance between all teams is far from its ideal value as 35% (Brandes and Frank, 2006).

SDW (Standard Deviation of Win Percentages)

SDW is another index of calculation of competitive balance. One of the main reasons of selecting this index is its easiness to use. The formula is as follows: (Michi and Agton,2004)

SDW= Standard deviation of real wining percentage/ Standard deviation of wining percentage in an ideal league

This criterion calculates percentage of competitions won by each club in a season and standard deviation of this distribution is used to present a determined figure in the league and after that this standard deviation is compared with an ideal standard deviation, based on distribution of wining percentage in a total balanced league, in which each club benefits from probability of wining of 0.5 in each competition. The dominator is calculated as follows:

$$\frac{0/5}{\sqrt{N}}$$

N shows number of teams participating in each season.

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3. Background of the research

Several studies have been done on competitive balance and its relation with lots of economical variables and even non-economical variables. In fact, researches on competitive balance changes, considering changes in researches on the subject, were more than researches on competitive balance. We carry on by mentioning several researches on relation of independent economical variables with competitive balance and presenting obtained results and then we briefly mention other researches.

For example, Balfore and Porter (1991) studied on the effect of independent agencies in the National Football League (NFL) and Major League of Baseball (MLB) on competitive balance changes. These agencies do marketing and attracting sponsor for teams and absorbing income resources for teams participated in the league. The same factor plays an important role in economical progress of teams and improves their financial power and competitive level. The results show that there is a positive relation between these two factors and this factor may be an appropriate strategy to increase the teams' competitive power and the league's competitive balance. Veroman (2000) studied on the effects of salary of players and independent agencies' policies on competitive balance in the Major League of Baseball, National Football League and National Basketball Association (NBA). (Cral, 2009)

Michi and Agton (2004) studied on competitive balance in Football League of Britain from 1948 through 2004 and the research results show that uneven distribution of incomes between the teams participated in the league is considered as one of factors of decrease in competitive balance. So that necessity of redistribution of incomes was propounded in order to move toward increase of competitive balance, as income gap between teams resulted to increase in control of special teams throughout the league. Also, according to the results of these two groups in 1992, ratio of the most costs to the least costs was 4 which increased to 8 in 2003. In this situation, it is clear that we should expect to see a decrease in competitive balance in the league.

Borland and Lay (1992) studied on the subject of uncertainty of outcome in competition of two teams with different levels in the classification table in Football of Australia. The results showed that uncertainty in outcome impacts positively on the presence of spectators.

Pill and Tomas (1988) predicted uncertainty of Football of Britain. The results showed that presence of spectators reached to its peak when probability of winning of the host team was only 0.6. Rascher (1999) tested the matter in Football of Britain using more independent variables and

high samples. The results showed that presence of spectators reached to its peak when probability of winning of the host team was only 0.66. In fact, findings of both researches show that the more probability of the host team's wining, the less numbers of spectators are seen. This positive relation was shown by Martin Schmitt and Berry (2001) through a case study on Baseball League of USA, not definitely. The sample course of this group is related to 1991.

Brandes and Frank (2006), through an experimental analysis in Bondesleagua of Germany, supposed that how the spectators may increase competitive balance. They found opposite relation between competitive balance and average of spectators calculating C5 and stated that in case there is no ambiguity in outcome, the spectators and sports fans will loss their interest in football.

4. Empirical Results

The results of calculations of competitive balance criteria are presented as descriptive and detailed statistics in Football Champion League of Iran through the current decade, i.e. from 2002 through 2011. Meanwhile, the results of Football Champion League of Iran will be compared with 4 well-known leagues of Europe, in addition to presentation of statistics and calculation results of competitive balance criteria. This comparison in relation to type of causality between two above mentioned variables and status and competitive balance of Football Champion League of Iran will be compared with similar results of 4 great European leagues of Germany, Italy, Britain and France.

At first, we review the results of Football Champion League of Iran based on 3 indices at issue. It is worthy to note that selection of 5 teams in the above mentioned team was as follows: Nine current seasons of each league was considered and teams which showed more presence in the first and 2nd levels in these seasons were selected. Table 1 shows all results of competitive balance based on all 3 above mentioned indices beside average of spectators during 9 current courses of champion league.

Table 1- Results of Competitive Balance Based on 3 Indices

Season	Average of Spectators	C5	H	SDW
2002-03	7518	1.26	1.11	1.18
2003-04	9221	1.31	1.07	1.48
2004-05	9262	1.24	1.08	1.68
2005-06	9351	1.21	1.51	1.33
2006-07	9849	1.14	1.05	1.47
2007-08	11704	1.18	1.02	1.13
2008-09	8162	1.27	1.06	1.36
2009-10	11201	1.26	1.03	1.14
2010-11	7927	1.29	1.06	1.45
Minimum	7518	1.14	1.02	1.13
Maximum	11704	1.31	1.51	1.68

Notes : Average of Spectators during 9 Current Courses of Football Champion League of Iran

According to the Results of Table 1

- Maximum average of fans is related to season 2007-08 with number of 11704 and minimum of which is related to season 2002-03 with 7518 fans. According to this result, the most level of competitive balance is 1.02 and 1.13 based on Herfindal and SDW indices, in season 2007-08.

- As C5 is a long term index, it affects by delay and according to the table the most level of competitive balance happened exactly in season 2006-07 and the same reason affects on the number of spectators in the next year.

- In the 3 beginning seasons of the champion league, the least average of spectators and the least level of competitive balance are observed.

Table 2 shows percentage of increase in incomes resulted from selling tickets in each year in relation to the last year. It is worthy to note that price of ticket has been adjusted according to the inflation (Ghahfarokhi, 2010).

Table 2- Percentage of Increase in Incomes

Season	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Increase %	48%	2.9%	6.6%	85%	77%	54%	65%	71%

Notes: Resulted are from selling tickets in each year in relation to the last year during 9 current courses of football champion league of Iran

- According to above mentioned, the most income leap resulted from selling ticket happened in 2006-07 in relation to 2005-06 with an amount of 85% and in 2007-08 in

relation to 2006-07 with an amount of 77%. Comparison of table 2 with table 1 shows a positive relation between competitive balance and presence of spectators and increase in incomes of selling tickets as a result. This relation is confirmed based on C5 and Herfindal indices.

After review of the results of competitive balance in football champion league of Iran and type of its statistical relation with presence of spectators and resulted income of selling tickets (as one of 3 main resources of income of football industry), we compare the results with similar results of 54 European leagues studied by Kringsted and Gerard (2002) and then compare causality relations between two variables of spectators and competitive balance in football champion league of Iran, obtained according to Granger causality test, in 4 great European leagues. Table 3 compares average of competitive balance resulted from Herfindal Index in 54 European leagues during the season with its amount in football champion league of Iran in 9 courses.

Table 3- Comparison of Average of Competitive Balance

Average of competitive balance	Season	Country	Average of competitive balance	Season	Country
1.78	40	Netherlands	1.11	28	Yugoslavia
1.79	40	North Ireland	1.19	30	Czech
1.79	10	Ukraine	1.24	34	Netherlands
1.81	40	Portugal	1.25	40	Romania
1.82	39	Malta	1.30	40	France
1.88	10	Serbia	1.30	40	Sweden
1.91	8	Wales	1.31	40	Island
1.92	13	Georgia	1.31	35	Israeli
1.96	40	Scotland	1.31	29	Sawit (California)
2.09	11	Kazakhstan	1.32	40	Norway
2.15	13	Lithuania	1.34	39	Albania
2.22	7	Andorra	1.34	40	Spain
2.26	11	Maldives	1.36	40	Denmark
2.28	7	Azerbaijan	1.36	39	Germany
2.33	12	Estonia	1.36	8	Saint Marino (California)
2.46	12	Lithuania	1.37	29	East Germany
2.51	11	Armenia	1.43	40	Bulgaria
1.11	9	Iran	1.43	39	Turkey

Not's: The calculation are based on Herfindal Index in Football champion league of Iran with 35 European leagues

The main resources of income are as follows: 1- Selling tickets, 2- sponsor and advertisement, 3- TV broadcast fee

The results interestingly show that younger and less experienced leagues have the worst and the weakest competitive balance and all 5 great European leagues are located in the higher half and the average was 1.80 for 5 leagues with less competitive balance. Although football champion league of Iran and Yugoslavia showed the best level of competitive balance and obtained index of 1.11, i.e. 11% difference from ideal competitive balance of a balanced league.

Table 4 shows a comparison of causality relation, resulted from Granger causality test, between presence of spectators and competitive balance, according to Herfindal Index (because of its high reliability) with the same relation between 4 great European leagues.

Table 4- Granger Causality test between presence of spectators and competitive balance

Football League	P-value of the first hypothesis	P-value of the 2nd hypothesis	Refuse of the first hypothesis	Refuse of the 2nd hypothesis
Iran	0.0436	0.3188	Yes	No
Germany	0.7634	0.0672	No	Yes
Iran	0.0436	0.3188	Yes	No
Britain	0.973	0.3387	No	No
Iran	0.0436	0.3188	Yes	No
A Class of Italy	0.0520	0.2436	Yes	No
B Class of Italy	0.6830	0.4156	No	No
Iran	0.0436	0.3188	Yes	No
France	0.0093	0.1811	Yes	No

According to the results obtained from table 4, the first hypothesis indicates lack of causality from competitive balance to the fans and the 2nd hypothesis indicates lack of interaction direction as vice versa. The results of Granger causality test show that the champion leagues of football are different because of type of interaction of 2 variables at issue, as causality direction is from the fans to competitive balance in football champion league of Iran according to this index and vice versa in Bondesleagua of Germany.

Also according to the results, football champion leagues of Iran and Britain are common in accepting the 2nd hypothesis, i.e. in both league, direction of interaction is not from the fans to competitive balance.

According to above mentioned table, in football champion leagues of Iran and A class of Italy, direction of interaction is accepted from competitive balance to the fans, but vice versa is not

accepted. Therefore in both leagues, one of affecting factors on decision of fans to attend in the stadiums for watching the sport is level of competitive balance. Also similarity of football champion leagues of Iran and B class of Italy is like as the result obtained from its comparison with champion leagues of football of Britain.

And finally total similarity between 2 football champion leagues of Iran and France: in both leagues, direction of interaction is accepted from competitive balance to the fans and the first hypothesis is refused but direction of interaction from the fans to competitive balance is not confirmed.

5. Conclusion

The results of research on the level of competitive balance as an economical motive in football leagues may provide better attitudes toward making and executing policies in order to increase competitive balance between teams attending the league. This wider insight and execution of such policies may provide appropriate motive toward increasing level of ambiguity in the competitions' outcomes and attracting more spectators toward the stadiums or sponsors toward different advertisements for the league. That definitely means that we can benefit from its positive relation with most economical variables and improve economical dynamism of the league by promoting football league to more competitive balance, i.e. economical dynamism resulted from actualization of potential resources of incomes. In the present study, we analyzed level of competitive balance in football champion league of Iran during 9 current courses and studied its relation with number of spectators by Granger causality test in order to analyze its interaction type. Then in the most important part of this research, we compared the findings with 35 European leagues and then with 4 great European leagues and analyzed differences and similarities of the leagues' competitive balance. As mentioned above, football champion league of Iran, with an average competitive balance of 1.11, showed a level near the ideal level of competitive balance in a balanced league and shows only 11% difference from the ideal level. Also direction of interaction in football champion league of Iran is from competitive balance to the spectators, according to Herfindal Index, the most reliable index of competitive balance. According to these results, football champion league of Iran comparing with 35 European leagues like France, Spain, Germany, Yugoslavia, etc. is located besides Yugoslavia with an amount of 1.11 based on Herfindal Index of competitive balance. Although some leagues like Germany,

Spain, and France, with an amount of 1.36, 1.34 and 1.30 respectively, show less competitive balance than Iran! But generally speaking, less experienced and younger leagues in comparison with experienced leagues show less level of competitive balance.

The results, concluded from type of interaction between presence of spectators and competitive balance, are as follows: football champion league of Iran shows structural similarity with A class league of Italy and France from viewpoint of interaction between 2 above mentioned variables and in all 3 leagues, competitive balance is one of effective factors affecting on presence of spectators.

According to the results, we can conclude that whether in football champion league of Iran or in both leagues of Italy and France, in addition to increase of spectators' presence, the initial policy should be made toward increase of competitive balance so as to this factor attracts spectators and sponsors to the plays by increasing ambiguity of outcomes. Then after these two factors may affect on each other by infinite series and improve economy of the leagues.

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