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Evaluating the Competitive Balance of the Premier League

Bachelor's Thesis
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Abstract

In recent years, the Premier League has been the richest football league in the world due to its worldwide popularity and lucrative broadcasting deals. Simultaneously, the champion of the Premier League has been almost exclusively one of the richest clubs in the league. The disparity between the budgets of teams in the Premier League makes it difficult for smaller teams to challenge for the championship and the positions enabling the participation in different European competitions. In American sports leagues, this problem has been mitigated with the use of a salary cap system, which levels the spending of the teams. The aim of this thesis is to evaluate the current competitive balance of the Premier league and determine if implementing a salary cap system to the Premier League could improve the competitive balance of the league. A secondary objective for this thesis is to determine if the American sports leagues have been able to improve their competitive balance by implementing a salary cap system into the leagues.

This thesis consists of a literature review of the various theories in sports economics, such as competitive balance and uncertainty of outcome. The findings indicate that increasing the uncertainty of outcome is beneficial for the league, as fans are not interested in leagues with low championship uncertainty. The literature review also shows that the historical circumstances during the creation of different sports leagues in the 19th century affected the structures of the leagues and those structures are still prevalent in the leagues today.

In addition to this, a quantitative analysis was carried out to determine and compare the levels of competitive balance across the Premier League, the NBA, the NHL, and the NFL. For thise analysis, data was derived from the league tables of the last 14 seasons, and for the American leagues, from the 14 seasons prior to the implementation of salary cap systems in these leagues. The results point toward the Premier League having the worst competitive balance of these leagues, judged by the metrics used in this thesis. The results also show that the competitive balance of the NFL is on a higher level than prior to the implementation of its salary cap, and there are some indicators that the competitive balance of the NHL has improved as well. According to the data analysis of this thesis, the competitive balance of the NBA is currently on a worse level than it was prior to the implementation of its salary cap system.

Keywords competitive balance, salary cap, uncertainty of outcome, sports, Premier League

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1 Introduction

The Premier League is the top-flight football league in England, and simultaneously the richest league in the world due to its lucrative broadcasting deals all over the world. The total value of the league's latest broadcasting deal, which covers the seasons from 2022-2023 up until 2024-2025, is estimated to be valued at around 5,1 billion British Pounds (Ford Rojas, 2021). The broadcasting revenue of the Premier League is greater than the two next most popular football leagues, La Liga and Bundesliga's, combined revenue (Football Benchmark, 2022).

Although the Premier League is the richest football league in the world, the teams in the league have greatly varying spending possibilities. According to Deloitte (2023), in 2022 the league's richest team Manchester City spent 57 % of its yearly revenue to cover the team's wage costs while a mid-table team Everton spent 96 % of its revenue for its wages. With Manchester City's annual revenue being 731 million euros compared to Everton's 213,7 million euros (Deloitte, 2023), this means that the richer clubs have a major financial advantage compared to the clubs that are trying to close the competitive gap of the top clubs in the league.

Currently the Premier League distributes its broadcasting revenue by dividing 50 percent of the total sum equally to all the clubs, 25 percent based on how often a club's match is being broadcasted in the UK and the remaining 25 percent based on the position in which the team finishes in the Premier League (Premier League, 2020). The top teams of the league will also get more revenue from different commercial deals as they are better known globally. This helps them create a larger fan base and enhanced possibilities of getting sponsorships with global companies. Although it is understandable and fair that the clubs are rewarded for their athletic achievements, this results in a situation where the top clubs of the league will constantly gain more revenue than the other clubs. This further makes it harder for other teams to compete for the title and for the positions which enable the clubs to compete in different lucrative European competitions.

The disparity of operating budgets has been a long-term problem in many sports leagues since it creates unequal opportunities for truly competing for the championship. In most North American sports leagues, this problem has been mitigated by implementing different variants of salary caps. In its essence, a salary cap is a concept that, by using some kind of method, restricts sports teams from spending freely and it prevents rich teams from hoarding multiple superstars to their roster, thus balancing the competitive balance of the league (Andreff, 2011). In the Premier League, the league does not have a salary cap system implemented for the teams,

so their spending restrictions are determined by UEFA's (Union of European Football Associations) Financial Fair Play regulations.

According to UEFA's Financial Fair Play (FFP) regulations, a club's maximum aggregate break-even deficit for a three year monitoring period is five million euros, but it can exceed up to 30 million euros "if such excess is entirely covered by contributions from equity participants and/or related parties" (UEFA, 2018, p. 40). Therefore, the current spending restriction in the Premier League does not help in leveling the competition of the league because broadcasting and commercial revenues continue to grow, hence allowing all the teams to continue to grow their spending. Consequently, this thesis will examine if implementing a salary cap system to the Premier League would improve the competitive balance of the league.

1.1 Research objectives and research questions

The objective of this thesis is to determine if implementing a salary cap system, such as the ones used in different sports leagues in the USA, to the Premier League could enhance the competitive balance of the league. To examine this question further, academic literature from the field of sports economics is reviewed, as well as some statistics from the Premier League and different leagues from the USA operating under salary cap systems. Therefore, the main research question of this thesis is:

- How could implementing a salary cap system improve the competitive balance of the Premier League?

Because the American sports leagues are used as an example of leagues with salary cap systems in this thesis, the objective of this research is also to determine if these leagues with salary cap systems are more competitive in comparison to the Premier League. All the American sports leagues discussed in this thesis have implemented salary cap systems after the creation of these leagues, therefore allowing for a comparison between the leagues' competitive balance before and after the implementation of salary cap systems. Thus, the secondary research question of this thesis is:

- How has the implementation of salary cap systems affected the competitive balance in the American sports leagues?

By examining these two questions, this thesis strives to form a coherent summary of the strengths and weaknesses of salary cap systems, thus enabling a better understanding for the effects which implementing a salary cap system could create.

1.2 Scope of research

As mentioned earlier, the scope of research of this thesis will be limited to examining the effects that the implementation of a salary cap system could have on the Premier League and what effects it has had on the sports leagues in the USA. This thesis will not analyse the effect that implementing a salary cap system to the Premier League could have for the other European football leagues with less restricted spending. Because the best performing teams of every European league compete in various European competitions, such as the Champions League and the Europa League, the top teams in the Premier League also have to consider their competitiveness against teams from other leagues.

In addition to this, the research will not consider the effect that implementing a draft system (a system used for allowing teams exclusive rights for making contracts with young players) simultaneously with a salary cap system could do to the Premier League as it would broaden the scope of research tremendously. In American sports leagues, the use of a salary cap system is combined with an annual draft where teams draft young players who have made themselves available to be drafted. With many European teams competing for the same talents, the draft system would have to be implemented for the entire footballing world for it to have any greater significance for the recruitment of European football teams. Also, the role of youth academies is more important for sports organizations outside of the USA, so a draft system could stop teams developing their academies if there is a possibility that the talent they have produced is then drafted to another team.

As the implementation of the draft system is not included in the scope of research for this thesis, this thesis also will not analyse the effects that different draft picks had on the success of various American sports teams. For instance, the current NFL draft system allows each of the leagues' 32 teams to draft seven players and this number can be increased by trading for more picks for the team from other teams (NFL, n.d.-a). Analysing the effect that new players had on their new teams would be a challenging task and doing it to all the analysed leagues in this thesis would require expert knowledge of the all the leagues and the particularities of the different sports.

Finally, the scope of this research will not include the in-depth analysis of player and coach performances in different teams, which are both crucial for a team's success. There are multiple examples of teams in different sports which have statistically been favourites to win championships but have not been able to fulfil this potential because of certain variables such as team spirit, playstyle, and player performance. The scope of research on team performances in this thesis will be constrained by the data analysis methods of this thesis that are further explained in chapter three.

1.3 Methodology

The two main methodologies used in this thesis were literature review and data analysis. Literature review is an appropriate methodology to use when collecting existing knowledge from the field of the thesis and by aiming to conclude it into a cohesive summary (University of Illinois Springfield, n.d.). The summary made from the literature also helps in writing one's own argument from the topic (University of Illinois Springfield, n.d.) which is a key objective in this thesis.

The reviewed literature mainly included journal articles that were gathered from Scopus and Google Scholar, in addition to internet articles, books, and publications which were used at determining the background for the financial rules and other concepts of the analysed sports leagues. Also, different internet publications and databases are used in gathering the information for the data analysis.

In addition to reviewing the relevant literature for this thesis, data analysis was also used when determining the competitive balance of the leagues. For this analysis, a database was gathered comparing the league tables of each league from different seasons and the leagues' competitive balance were then further examined. All the parts of the data analysis were done in Microsoft Excel. In order to determine the necessary data for this thesis, competitive balance was analysed with an emphasis on the best performing teams of the leagues instead of analysing the difference between the best and worst performing teams of the league. This subject will be explained further in chapter three when discussing the data analysis.

1.4 Structure of the research

The thesis will have the following structure. Chapter 2 introduces the theoretical background for the thesis. It will explore the main concepts discussed in this thesis and explain their use for further discussion.

Chapter 3 will explain the methodology used in the data analysis of this thesis. This chapter will explain the specifics of each data analysis method used in the data analysis as well as showcase their previous use in the literature.

The results from the data analysis will be discussed in chapter 4. These results will be presented by grouping them with the findings of the same method of analysis.

Lastly, in chapter 5, the findings of this thesis will be discussed, and the thesis will be concluded. These will include discussing about the practical and theoretical relevance of findings. In addition, the limitations of the research are discussed and suggestions for future research of the topic are given.

2 Theoretical background

In this chapter, the theoretical background for this thesis is introduced. Firstly, the main concept of competitive balance is examined. After this, the concept of salary caps is explained further. Finally, the concepts of the different league formats are discussed. These concepts are important to understand since they are used later in this thesis when discussing the findings of the data analysis and the literature review.

2.1 Competitive balance

The theory that excessive dominance in sports leagues will diminish the public's interest of the league has been discussed for decades (See Rottenberg, 1956 and Neale, 1964) and it has inspired countless research papers to try to determine the optimal competitive balance for a sports league. The typical argument of teams and league organisers wanting to improve the league's competitive balance has been that nonrestricted competition will result in dominance by teams with vast resources (Szymanski, 2006a). This hypothesis has led to various actions for adjusting the league's competitive balance from different leagues wanting to ensure the constant growth of the league's revenue and popularity.

The two main theories of research on the uncertainty of outcome in sports that are focused on in this thesis are the theory of championship uncertainty and the theory of match uncertainty. Championship uncertainty can be viewed as the likelihood that either one or a few teams dominate the battle for a championship for a certain period (Szymanski, 2006a). If the championship uncertainty is high and multiple teams can be considered to be viable challengers for the championship, typically the league enjoys higher interest from the public than with a low level of championship uncertainty.

Match uncertainty focuses on the uncertainty of outcome for a specific matchup and the uncertainty is nowadays often determined by betting odds on the game (Szymanski, 2006a). One of the most researched concepts of this theory has been to try to determine the relationship between the uncertainty of outcome and the attendance. Contrary to the theory of championship uncertainty, there is empirical evidence from various leagues that higher uncertainty of match outcome actually decreases the match attendance (Buraimo and Simmons, 2008; Szymanski, 2006a; Jane, 2014). This can be reasoned by the concept that home fans prefer to see their team win rather than lose or tie and this affects the attendance of

home games negatively for games with higher uncertainty of outcome (Buraimo and Simmons, 2008).

Although the research indicates that higher match uncertainty can reduce match attendances, the championship uncertainty grows with greater match outcome uncertainty. This will subsequently attract more people globally to watch these matches from various broadcasting services. As more championship uncertainty results in more interest on the league, research indicates that the administrators of sports leagues should make decisions in order to increase the competitive balance of the league (Jane, 2014).

2.2 The salary cap system

As already mentioned in the introduction of this thesis, a salary cap system is meant to restrict the free spending of the teams and balance the competition by making it more difficult to create teams with multiple star players (Andreff, 2011). After few shorter trials in different American sports leagues, the modern salary cap system was first fully implemented in the NBA (National Basketball Association) for the 1984-85 season (Marburger, 2006). After that, the NFL (National Football League) and the NHL (National Hockey League) have also implemented the use of salary caps in their leagues. There are a few variants to the salary cap system, the most famous ones being the soft and hard salary caps.

A soft salary cap, which is used in the NBA, restricts teams' spending capabilities to a certain limit but there are numerous loopholes in the rules that allow the teams to spend more than this limit (Marburger, 2006). The most notable way of exceeding a soft salary cap is called the luxury tax. In this system, a team pays a luxury tax for the amount that is exceeding its salary cap which is then redistributed to all the teams of the league who have kept their spending under the limit (Gustafson, 2006). The tax gets progressively more expensive as the luxury tax limit exceeding spending increases. Currently, the taxed amount is between 1,5 USD and 4,75 USD for every dollar exceeding the limit (Deeks, 2022). For the 2021-2022 season, the champion of the NBA for that season, Golden State Warriors, paid 170 million dollars of luxury tax and the other luxury tax paying teams increased the luxury tax payments to a total of 481 million dollars for the league (Deeks, 2022). For comparison, the official salary cap imposed by the NBA for the 2021-2022 season was 112,4 million dollars per team (NBA, 2021).

A hard salary cap, which is used in the NHL and the NFL, restricts the salary spending of the teams to a limit which is possible to exceed in very few circumstances, if any (Marburger, 2006).

Whereas in the soft salary cap system exceeding the cap limit results to standardized financial sanctions, in hard salary cap systems the penalties are more severe. These include losing draft picks, being imposed substantial fines and, in most extreme cases, voiding the team of all of its accomplishments from the time period it has breached its salary cap. For instance, in 2010, an Australian rugby team, Melbourne Storm, was found out to have breached the league's hard salary cap limit, which resulted to the league taking away their championships from the time period of the incident as well as having the team to return all of the prize money they accumulated during those seasons (NRL, 2010).

2.3 League formats

The American leagues who have implemented salary cap systems are closed leagues, meaning that the number of teams in the league remain constant if the majority of the existing teams in the league do not vote teams out of the league or agree on an expansion team to the league (Andreff and Szymanski, 2006). The American model of closed leagues results to a situation where the teams in the league can remain the same for decades, whereas in leagues with relegation and promotion, such as the Premier League, some teams change every season.

2.3.1 Closed leagues

The history of the closed league format stems from baseball organizations in America being prone to match-fixing and corruption in the 1850s-1870s. As a result of this, the owner of the Chicago White Stockings, William Hulbert, decided to start his own closed league called the National League in 1876 in an effort to compete with teams with no ties to the match-fixing of the past few decades (Szymanski, Zimbalist and Meier, 2005).

Nowadays, the format of closed leagues is still popular because of its financial benefits to the sports franchise owners. As teams in closed leagues do not get relegated, even the worst performing teams get steady yearly levels of income from different broadcasting deals and other incomes from the league. For instance, the top-revenue teams in the NFL earn about 1,6 times more than the bottom-revenue teams, in the NBA the ratio is roughly 3 to 1 and in the NHL, it is approximately 2,5 to 1 (Zimbalist, 2006). In leagues where teams do not gain significantly more revenue from being more successful, the owners of the teams have fewer financial incentives to win and thereby may not invest as heavily on a higher player payroll (Zimbalist, 2006).

Because the closed league system does not necessarily encourage investing to a higher payroll, some leagues have created a salary floor in addition to their salary cap systems in an effort to prevent team owners collecting higher profits with low player payrolls. The salary floor is the minimum level of spending that a team must have for their player payroll. For instance, the salary floor in NBA for the 2022-2023 season is 90 % of the salary cap (NBA, 2022). This forces teams to invest in their player payrolls, therefore trying to ensure a competitive balance throughout the league while simultaneously preventing team owners the possibility of getting abnormally large profits.

2.3.2 Open leagues

Whereas the closed league format was created to fulfil a need to expand the league with only certain teams, open league format was created for giving a theoretical opportunity for all teams to earn their place in the best division by judging them only on their sporting achievements. The first open league in football, the Football League, was created in 1888 in England by William McGregor, who was the director of Aston Villa Football Club (Szymanski, 2006). One of the main reasons for the league to operate with the open league format was that there was already a popular competition in England, called the FA Cup, in which all football clubs of the country competed in. Establishing a closed league and preventing many teams the possibility to get into the best league in the country would have resulted to multiple teams withdrawing themselves from the FA Cup and the creation of a competing league would have been inevitable (Szymanski, Zimbalist and Meier, 2005).

Open leagues operate in a way that every season the worst performed teams of the league are relegated into a lower division and the best performed teams of that division are promoted to the league. In some leagues, such as in Bundesliga and Veikkausliiga, there is a relegation playoff match played between one of the worst performed teams from the higher division and one of the best performed teams from the lower division for determining the last team that gets to the higher division for the following season (Bundesliga, n.d.; Veikkausliiga, n.d.).

Getting relegated to a lower division means significantly smaller revenue for the relegated team so teams in the relegation battle will try to do everything in order to stay in their division. Contrary to the closed league system, this results to a strong financial incentive for more wins which results to owners investing money during the season. To illustrate this, in 2019-2020 season the average revenue for a middle table Premier League team was 141 million British Pounds and the average revenue for a relegated team was 112 million British Pounds (Statista,

2022). The average revenue of a relegated Premier League team during their first season in the Championship was 51 million British Pounds (Statista, 2022).

Open leagues in football also operate with the transfer market system so the investments to the team are often done by buying players from the transfer market. In the Premier League, the transfer market is open during the summer transfer window and during the January transfer window (Premier League, n.d.-a). Most of the European top leagues are structured in a way that they have played roughly half the season when the January transfer window opens. This makes the January transfer window an important opportunity for the owners to invest more into the team in an effort of improving the performance of the team for the final part of the season.

3 Methodology

3.1 Data analysis on the competitive balance

For the analysis, information was gathered from the league tables of the Premier League, NHL, NBA, and NFL from the past 14 seasons, from the 2021-2022 season until the 2008-2009 season, to see how competitive the leagues have been. The statistics of each league have been collected from the websites of the leagues in this analysis (Premier League, n.d.-b; NBA, n.d.-a; NFL, n.d.-b; NHL, n.d.-a).

The possible effect that salary cap systems have had on the competitive balance of the American leagues was analysed by comparing the leagues before and after the implementation of salary cap systems. All the American leagues analysed in this thesis have implemented salary cap systems for different seasons. This results to a situation where the leagues are analysed for different time periods for the seasons prior to the implementation of salary cap system. This distinction makes comparison within the same league possible, but simultaneously comparison between the leagues will become less accurate for seasons prior to the implementation of salary cap systems. The analysing period of 14 seasons was decided because the NBA's conference structure of Eastern and Western conferences was implemented for the 1970-1971 season. This means that the comparable analysing period without the salary cap system starts from this season and spans for a total 14 seasons before the implementation of the salary cap system in the 1984-1985 season.

The NHL and the NBA were both expanding during the analysing period prior to the implementation of their salary cap systems, so the number of teams competing in the leagues were determined by the maximum number of teams in the leagues during the analysing period. Because league expansions in American leagues include the use of an expansion draft where the expansion teams can select players from other teams in the league (see NBA, 2004 and NHL, n.d.-b for specific expansion draft rules), the effect on these expansions on the competitive balance of the league has to be considered. This is taken into consideration when analysing the results of the data analysis in chapter four.

As mentioned earlier, measuring competitive balance in this thesis mainly focuses on the best performing teams in the league instead of the competitive balance of the whole league. This distinction is made to improve the focus of the analysis on the teams that can challenge for the championship. Levelling the competitive balance of the league in a way that as many teams as

possible can challenge for the championship is ultimately the aim of a salary cap system, hence analysing the best performing teams can be deemed to be a sufficient viewpoint of comparing competitive balance. Mainly focusing on the best performing teams also greatly decreases the amount of data that must be analysed by decreasing the analysed teams to only four per season for each league, which enables a longer analysing period because of a more manageable data amount.

The limitation to four best teams of the season in the analysis was decided by evaluating an objective measurement for a successful season in each league. Although the leagues in the analysis are rather different from each other, in every league getting into the four best teams of the season can be viewed as having had a successful season. In the Premier League, the four best teams get into the Champions League for the following season, which is a lucrative deal for the teams. According to Statista (2022), the average revenue for Premier League teams competing in the Champions League was 444 million British Pounds whereas teams who did not take part in any European competition had an average revenue of 141 million British Pounds for the same season. In American sports leagues, getting into the best four teams of the season means that the teams have advanced into the conference finals in their playoff runs.

As the data analysis constructed in this thesis uses the results of the playoff games to determine the best performed teams from the American sports leagues, it is also important to recognize the differences in the season formats of the leagues. In American sports leagues, the regular season is used in determining the teams that can get into the playoff-games and can challenge for the championship. In the regular season, all teams play against each other and in the playoff games, the best performed teams of the regular season play against each other in different playoff series. For instance, in the NBA, the teams for the playoffs are decided from the ten best performed teams of the regular season from each conference (NBA, n.d.-b). This means that 20 out of the 30 teams of the league can theoretically challenge for the championship after the regular season has ended.

While teams in the American leagues are certainly trying their best to win games in the regular season, the playoff format makes the regular season games less important compared to the Premier League. In the Premier League, no playoff-games are played, therefore the season ends after the regular season. This forces the teams to be consistent throughout the season in order to truly challenge for the top 4- positions and the championship.

In order to simplify the visual appearance of some tables that are shown in chapter four, the runner ups of the AFC and the NFC Divisions of the NFL are shown in the same columns as the

third and fourth positions of the Premier League. In addition to this, the runner ups of the Western and the Eastern Conferences of the NBA and the NHL are also presented in this similar manner. This does not imply that either the NFC Division or the AFC Division is better than the other, nor does it imply that the any of the conferences of the NBA or the NHL are superior to one another.

3.2 Using the regular season winning percentage in the analysis

In the analysis, four best performing teams of each season were analysed by their regular season winning percentage. The winning percentage is calculated by dividing the amount of regular season wins with the total number of played games of the regular season. Because this calculation results to a ratio, it is then multiplied by 100 to get the regular season winning percentage. This was done to every top 4- position team of each league and the average regular season winning percentage of each position for the whole analysing period was then calculated.

For the Premier League, the four best performing teams were determined by the final standings of the league table. For NHL, NBA, and NFL, the four best performing teams were determined by the four teams that played in the conference finals. The measurement of regular season winning percentage was decided instead of the total winning percentage of the season because the Premier League does not have playoff series after the regular season, unlike the American sports leagues in the analysis. Including the playoff winning percentage in the analysis would result to inaccuracies within the comparison of the leagues since playoff-matches are played against teams that have performed well in the regular season. As the best performed Premier League teams do not have to play more games against each other after the regular season, the measurement of regular season winning percentage is used in order to get more comparable results between the leagues.

3.3 Analysing the change in the best performing teams

In addition to using the measurement of a winning percentage, a quantitative analysis was produced by counting how many times each team have been in different top 4- positions during the analysing periods. This measure shows how much change there is within the best performing teams of the leagues. Only focusing on the winning percentages could hide the issues in leagues' competitive balance if the same teams end up in the top positions every season (Kesenne, 2007).

Because the number of teams that compete in the leagues vary, the measurement is represented by having a percentage of teams in different positions from the total amount of teams in the league. For instance, if a league with a total of 20 teams has had 10 different champions, the percentage of different teams that have won the championship would be 50 percent. This distinction is made in order to make the results from each league comparable with each other.

The total number of teams for the Premier League was determined by the number of teams competing in the league for each season instead of the total number of teams that have been in the Premier League during the last 14 seasons. This distinction was made because most of the teams that are promoted to the Premier League are relegated back to the lower division within a couple of seasons from their promotion (Premier League, 2022). The only promoted team that was able to get into any of the top 4- positions during the analysing period is Leicester City, who won the Premier League in the 2015-2016 season after being promoted to the Premier League one season earlier (Premier League, n.d.-b). Therefore, the total number of teams of the whole analysing period does not heavily affect the top 4- positions and including those teams to the total number of teams in the calculation would make the percentages considerably smaller.

3.4 Analysing the standard deviation of total points

Finally, the last method for the data analysis is a standard deviation of total points which is adjusted by the total number of played games in the league. Standard deviation measures how much the values of a certain dataset deviate from the mean of the dataset. It is a useful method when determining the possible disparity of points within a sports league. If the standard deviation of points within a certain league is large, the teams in the league have big differences in their point totals, thus meaning that there are competitive gaps between the teams.

Contrary to other measurements in this thesis, the point totals of every team in each league were collected in order of getting a standard deviation of points for the whole league instead of only the top 4- positions. This distinction was made to get a measurement which shows the competitive balance of the whole league, thus allowing for a broader understanding of the level of competitive balance in the analysed leagues.

To make the analysis on the standard deviation comparable between the leagues, all the league tables were adjusted to a form in which wins account for three points and ties count for one point. The Premier League operate in this manner, so no adjustments had to be made for the

league tables of the Premier League. For the NBA, this was achieved by multiplying each teams' number of wins by three and getting the total number of points from this. For the NHL and the NFL, the number of wins were multiplied by three while ties and overtime losses accounted for one point.

The standard deviation of points was then calculated for each season and this measure was then divided by the total number of played games for the whole league for the respective season. The measurement was furthermore multiplied by 100 in order of getting a more easily comprehensible measurement. This was done to the last 14 seasons for all the leagues and the average of each league was calculated. For the American leagues, the same calculations were done also for the 14 seasons prior to the implementation of salary cap systems for each of these leagues.

4 Results

The following chapter will present the findings of the data analysis and it will also compare them with the consensus of the literature of this area of study. The first section will focus on analysing the regular season winning percentage and the second section will analyse the change in the best teams in each league. Finally, the third section will cover the findings from the analysis on the standard deviation of points.

4.1 The analysis on the regular season winning percentage

Table 1 shows the results of the analysis on the regular season winning percentages of the last 14 season. On average, the champions of the Premier League have been the most dominant teams of all the leagues analysed in this thesis. In addition of having the largest average winning percentage of any champions of the analysed leagues, the differences between the champions of the Premier League and all the other teams in the top 4-positions of the league were also the largest within the analysis.

As the top 4- positions of the American leagues were determined by the best performing teams in the playoff tournament, the analysis shows that the most dominant team of the regular season did not always end up winning the championship. As seen in Table 1, the winners of the Superbowl in the NFL averaged a worse regular season winning percentage compared to the runner ups for the championship and the runner ups for the NFC Conference. It is also notable that in both the NBA and the NHL, the runner ups for the championship had a worse regular season winning percentage on average than the runner ups of either the Western or the Eastern Conference.

Table 1. Regular season winning percentages of the last 14 seasons

	Champion	Second Place	Third Place [a]	Fourth place [b]
Premier League	73.7	65.8	57.1	54.7
NBA	72.2	66.2	67.3	68.0
NHL	60.1	57.1	58.7	57.9
NFL	72.9	77.0	69.8	74.3

a. Third place also contains the runner up for the Eastern Conference in the NBA and the NHL as well as the runner up for the AFC Conference in the NFL
b. Fourth place also contains the runner up for the Western Conference in the NBA and the NHL as well as the runner up for the NFC Conference in the NFL

The results of the analysis of regular season winning percentages in the American leagues prior to the implementation of salary cap systems can be seen in Table 2. When comparing these results to the winning percentages of the last 14 seasons, the winning percentages of all the top 4- positions both in the NBA and in the NHL have increased from the winning percentages of 14 seasons prior to the implementation of salary cap systems. In addition to this, on average, the runner ups for the championship in the NHL had a worse regular season winning percentage than the runner ups for either conference.

Table 2. Regular season winning percentages of the 14 seasons prior to the implementation of salary cap systems

	Champion	Runner-Up	Second in the Eastern Conference [a]	Second in the Western Conference [b]
NBA	69.7	63.7	66.5	61.6
NHL	55.5	49.7	52.7	54.0
NFL	80.9	75.2	67.3	72.6

a. The column also contains the runner up for the AFC Conference in the NFL
b. The column also contains the runner up for the NFC Conference in the NFL

In the NFL, contrary to the results on the analysis of the last 14 seasons, the winners of the Superbowl were on average the most dominant teams of the top 4- positions also during the regular season in the analysing period prior to the implementation of the salary cap system. In this regard, the implementation of a salary cap system has increased the championship uncertainty in the NFL while in the NBA and the NHL it has not created a similar outcome.

While the analysis indicates that the champions of the NBA and the NHL were less dominant prior to the implementation of salary cap systems, it is also necessary to consider the effect of the changing league structures of both leagues during this time period. In the NBA, there were three expansion drafts during these 14 seasons prior to the implementation of its salary cap system and in the NHL, there were six expansion drafts during the equivalent time period. As teams lose some of their players in these expansion drafts, the expansion drafts will have an impact on the stability of the teams.

4.2 The analysis on the change of the best performing teams

In Table 3, the results of the analysis on the change of best performing teams of the last 14 seasons are presented. As mentioned in chapter three, the results were calculated as the percentages of teams in certain positions divided by the total number of teams in the league. During the last 14 seasons the Premier League has had the smallest percentage of different teams as champions, in addition of a considerably smaller percentage of teams getting into the top 4- positions compared to other leagues in the analysis. Most change of the top 4- positions happened in the NHL where 80,6 % of the teams in the league advanced into the conference finals during the analysing period of 14 seasons.

Table 3. Percentages of the total number of teams in different top 4- positions in the last 14 seasons

	Champions	Runner up	Somewhere in the top 4
Premier League	25.0	30.0	35.0
NBA	26.7	26.7	66.7
NHL	25.8	35.5	80.6
NFL	37.5	37.5	59.4

Winning a championship was similarly difficult in the Premier League, the NHL, and the NBA where roughly every fourth team in the league managed to win a championship during the last 14 seasons. In the NFL, a higher percentage of teams were able to win the championship and become runner ups in it than in other, but fewer teams were able to get into the conference finals in comparison to other American leagues.

While these measurements were changed into percentages in order of making comparison between the leagues possible, there were a total of five different champions in the Premier League during the last 14 seasons. From these five champions, Leicester City is the only team that does not belong into the group of the wealthiest teams in the league. In their championship season of 2015-2016, Leicester City had the 15th highest player payroll costs in the league with 80 million British pounds (Deloitte - Sports Business Group, 2017). For comparison, the four teams with the biggest wage spending during the same season spent an average of 220 million British Pounds on their wages (Deloitte - Sports Business Group, 2017). These four clubs (Manchester City, Manchester United, Chelsea, and Liverpool) are also the four other teams that have won the Premier League championship during the analysing period of 14 seasons.

In comparison to the last 14 seasons, the analysis on the 14 seasons prior to the implementation of salary cap systems in American leagues produces similar results to the results of the regular season winning percentage. As Table 4 shows, the percentages of the NBA and the NHL are either similar or higher than in Table 3. This means that the change in the teams in the top 4-positions has not improved in these leagues with the implementation of salary cap systems.

Table 4. Percentages of the total number of teams in different top 4 – positions in the 14 seasons prior to the implementation of the salary cap system

	Champions	Runner up	Somewhere in the top 4
NBA	39.1	34.8	69.6
NHL	26.7	46.7	83.3
NFL	21.4	25.0	75.0

However, in the NFL, the change in the best performing teams has improved for winning the Superbowl and for being runner ups to it while it has simultaneously become more difficult to get into the conference finals. This means that the NFL has had more teams as champions after the implementation of its salary cap system, thus indicating that the championship uncertainty of the league has increased from the levels prior to the implementation of the salary cap system.

4.3 The analysis on the standard deviation of points

Finally, the results of the analysis on standard deviation of points are presented in Table 5. During the last 14 seasons, the Premier League has had the biggest standard deviation of points for the whole league when adjusting the measurement to the number of played games. From the American leagues in the last 14 seasons, the NHL has had the most competitive league by having the smallest standard deviation measurement of all the leagues.

Table 5. Standard deviation of points adjusted with the total number of played games

	14 seasons prior to the implementation of the salary cap system	Last 14 seasons
NBA	1.403	3.113
NHL	2.350	1.829
NFL	4.098	3.680
Premier League	N/A	4.704

Compared to the results of the 14 seasons prior to the implementation of salary cap systems, both the NFL and the NHL have been to able increase the competitive balance of their leagues in the last 14 seasons by having a smaller standard deviation of points throughout their leagues. In the 14 seasons prior to the implementation of salary cap systems, the NBA had the smallest standard deviation of all of the leagues in this analysis, but the standard deviation of NBA has more than doubled when comparing to the result of the last 14 seasons.

5 Conclusions and discussion

This thesis set out to answer the two research questions that were introduced in the beginning of this thesis. The following research questions are the ones that were aimed to be answered in this thesis:

- How could implementing a salary cap system improve the competitive balance of the Premier League?
- How has the implementation of salary cap systems affected the competitive balance in the American sports leagues?

For the first research question, evidence was found in favour of the implementation of a salary cap system both from literature and from the data analysis of this thesis. The data analysis showed that the competitive balance of the Premier League was the lowest of all the leagues of the analysis. As low levels of championship uncertainty could hinder the growth of popularity of the league, improving the competitive balance of the league should be a long-term objective for the league. Research indicates that this is not possible to do only by restricting the spending of the larger teams. An analysis made by Dietl et al. (2010) indicates that revenue sharing in a league which has a binding salary cap for the large teams but does not include a binding salary floor for the small teams decreases the competitive balance of the league while increasing the profits of the small teams. Therefore, only restricting the spending of top teams of the Premier League potentially would not result to greater competitive balance.

In his book, Kesenne (2007) concluded that despite the problems of implementing a salary cap system to a league, the hard salary cap system can be seen to have a favourable effect on the competitive balance of the league. For the Premier League, these problems could include matters such as how implementing a salary cap system could affect the role of the transfer market and how to determine the precise level of the salary cap. The differences in operating budgets of Premier League teams are primarily a result of differences in commercial and broadcasting revenue from competing in different European competitions. A salary cap system should strive to find possibilities of how teams can benefit from competing in European competitions while simultaneously improving the competitive balance of the league.

The answer to the second research question is rather complicated. The findings of this thesis suggest that the hard salary cap system used in the NFL standardized the spending of all the teams in the league while also increasing the competitive balance. The NHL also uses the hard salary cap system and findings of the data analysis showed some positive effect of the salary cap

system on the competitive balance of the league, but it was not as clearly convincing as it was for the NFL.

However, in the NBA, a soft salary cap system is imposed to the league and its balancing effects for the competitive balance of the league were not able to be explicitly found from the literature or from the data analysis. The findings of the data analysis suggest that the competitive balance of the NBA has gotten worse after the implementation of the soft salary cap system. This effect could be caused by the luxury tax, which offers the teams a possibility to substantially increase their spending on the player payroll, therefore voiding the restriction of the soft salary cap.

5.1 Implications to practice

This thesis aimed to show the effects that implementing a salary cap system can have on a league. The findings of this thesis should be used as a basis for new specified research in this topic that can cover the gaps which the limitation in the scope of research of this thesis produced. In addition to this, this thesis can be used to help understand the different aspects of salary cap systems. As the subject of implementing a salary cap system is multifaceted, the findings of this thesis cannot be used directly for decisions on salary cap systems without some further research.

5.2 Limitations and future research

The scope of this research limited the analysis of many aspects that are important to the success of different sports teams. These included matters such as the effect of draft picks on the success of the team, the performance of players and coaches, and how implementing a salary cap system into the Premier League could influence the spending of other European football leagues. Analysing these aspects would be important in order to evaluate the true impact of a salary cap system on the competitive balance of a league.

There are also multiple important structural differences between the Premier League and the American sports leagues analysed in this thesis. The most obvious ones are the league structure itself with the open league format, the absence of a draft and a playoff system, and the concept of promotion and relegation. Also, contrary to the American leagues, the international competitions, such as the Champions League and the Europa League, are important competitions for the Premier League teams. This forces the top teams of the league to evaluate their competitive balance against other European teams in addition to the teams in their own

league. For a more accurate analysis, all these aspects should be taken into consideration in future research on the topic and new methods for data analysis should be considered with improved metrics for evaluating competitive balance.

The leagues analysed in this thesis were all from different sports, which makes accurate comparison of the leagues difficult. Future research should try to determine how the characteristics of different sports affect the methods of the analysis and how to take them into consideration. These characteristics include such details as team roster size, the impact of single player performance on the team performance, and how conferences and divisions affect the competitive balance of a league.

In addition to these, research should delve into the soft salary cap system of the NBA and how it effects the competitive balance of the league. The methods used in the data analysis of this thesis suggested that the use of the soft salary cap system with the luxury tax does not improve the competitive balance of the league. This is an interesting hypothesis that could be researched further with more league-specific analysing methods. For instance, currently the luxury tax payments are redistributed between teams that have been able to keep their spending under the salary cap limit. Analysing if redistributing luxury tax payments help the competitive balance of the league more than paying them creates inequalities between the teams would provide valuable insight into the effect of this system.

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