THE IMPACT OF MANAGERIAL CHANGE ON THE PERFORMANCE OF SOCCER TEAMS – AN EVENT STUDY ON THE TWO TOP TIER SWEDISH DIVISIONS

by

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A thesis submitted to the faculty of
The University of North Carolina at Charlotte
in partial fulfillment of the requirements
for the degree of Master of Science in
Economics

Charlotte

2017

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ABSTRACT

ANDRÉ ROSKORS. The impact of managerial change on the performance of soccer teams – an event study of the two top tier Swedish divisions. (Under the direction of DR. CRAIG A. DEPKEN, II)

This research examines the impact of managerial changes on Swedish soccer teams from the first and second Swedish soccer league. The research is conducted similar to an event study and regression analysis is employed to investigate the impact of the focus event, managerial changes. The variable of interest for the regression analysis is the odds to win a match. The study uses data for both Swedish leagues for the period from 2010 to 2016. The research finds a positive impact of managerial changes on the team performance in the short-term.

ACKNOWLEDGMENTS

I wish to express my sincere gratitude to Dr. Craig A. Depken II for his continued investment and advice during the course of this research. I would also like to acknowledge the owner of bookiebacker.com, Vincent van de Ven, who gave me generous access to the data and explanations of variables, necessary for the research. I should also like to thank Dr. Richard Buttimer and Dr. Matthew Metzgar for serving as members of my thesis committee. I would like to thank the Belk College of Business at the University of North Carolina at Charlotte and specifically the Economics Department for creating a robust learning environment and financial support. I would in addition like to thank for the opportunity to take part in the dual-degree program.

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1. INTRODUCTION

This chapter provides an introduction to the relevance of the topic and to Swedish soccer, specifically the Allsvenskan and Superettan. In this chapter the various research questions will be derived. The chapter will close by examining the purpose of the thesis as well as delimitations and definition of terms.

1.1 Background

In recent years a significant change of business models of sport clubs has been observed. The entire sports sector and especially the soccer industry have experienced increasing levels of internationalization, commercialization, and professionalization (Lund, 2011). Lund identifies various socio-political changes as key drivers for this development. Two key drivers, for commercialization in particular, are the privatization of state-owned television broadcasting firms, which resulted in the emergence of pay-TV and advertising-funded television companies, and the change in ownership of soccer clubs. Ownership change began in Italy with previously non- profit firms altering their ownership structure to limited companies in the 1960s.

This change lead to the new objective of soccer clubs to generate profits for the owners. English clubs and Spanish clubs picked up the trend in the 1980s and 1990s (Lund, 2011). Sweden followed these examples to a certain degree. The Swedish soccer system differs from the unified system for professional soccer clubs that was developed during the 1980s in Europe. This unified system made it common for European soccer clubs to be listed in the stock market, which had the impact that soccer clubs had more capital at their disposal (Skännestig & Karlsson, 2011). The Swedish soccer system still employs a

partially different set of rules compared to the standard rules. One significant deviation from the standard is that Swedish soccer clubs that want to be listed on a stock market are

Studies by KPMG indicate how these developments altered the relevance of formerly non-profit sport. The global sports industry, which includes sports infrastructure, sports events, sports hospitality, training, and manufacturing and retail of sports goods for all types of sports disciplines, is estimated to be worth between USD 600 and USD 700 billion. That amount compares roughly to one percent of the global GDP (KPMG, 2016).

Another report by KPMG shows how soccer clubs today are comparable to relatively large companies. A valuation of the 32 most successful and prominent soccer teams from eight European soccer leagues resulted in aggregate valuation of EUR 26.3 billion. The seven selected clubs from England had aggregate value of EUR 10.17 billion. This study shows that there are significant differences in the values of soccer clubs. Real Madrid CF from Spain and Manchester United FC from England, are valued at EUR 2.905 billion each whereas ACF Fiorentina, from Italy, has an Enterprise value of EUR 156 million, highlights these differences (KPMG, 2016). Although the values of Swedish soccer clubs are most likely lower than the valuation of ACF Fiorentina, the study shows what top performing soccer clubs are able to achieve and are expected to achieve by investors, owners, and sponsors in terms of financial value creation.

The study compares the value of the selected soccer teams to the enterprise values of manufacturers of sports apparel. The largest sports apparel manufacturer is Nike with an enterprise value of EUR 92.5 billion, and the aggregated value of the 32 teams compares roughly to 30% of that value. The combined value of all 32 clubs of EUR 26.3 billion is higher than the enterprise value of Adidas with EUR 18.3 billion. In addition, the value of

either of the two most valuable teams is higher than the enterprise value of Puma at EUR 2.5 billion (KPMG, 2016). These valuations illustrate that soccer clubs are companies of significant value which need to generate profits, attract customers, and show a positive performance financially and on the pitch.

Parallel to the sports industry itself is the betting industry. One of the largest betting markets is the soccer betting market. The betting market for sport-matches is estimated to be worth around USD 700 billion, which includes legal and illegal betting (Small, 2013). Betting on soccer has a long history of approximately 90 years. With the recent development of online betting, betting all around the globe on every match in every league became more easy and convenient. The most recent development is the trend of mobile betting which increased the reach of the betting industry and leading to significant growth numbers (KPMG, 2010). Bookies in Europe offer bets for more than 200 markets (Small, 2013).

The betting market provides an opportunity for soccer clubs but is also a source of pressure. The opportunity arises from soccer clubs being seen from sponsors as a tool to increase profitability, therefore betting companies sponsor soccer clubs and buy advertisement (Söderman & Jansson, 2012). This is a source of capital for clubs but puts them under pressure as popular and successful clubs receive sponsorship and due to the reach of the betting industry clubs compete with clubs from all over the globe. The significant growth of the betting market has led to a vast amount of research on the efficiency of the betting market as a predictor of match outcomes. Research indicates that the betting market shows deviations from the weak-form of efficient market hypothesis and that betting strategies can yield significant profits (Vlastakis, Dostis, & Markellos,

2009). Due to extensive research on the betting market efficiency, this paper will only examine how betting quotes serve as a predictor of performance after a managerial change.

The digitalization and the increasing connectivity has impacted soccer clubs directly. The recent developments pose opportunities to soccer clubs but also can threaten the financial performance of clubs in case trends are missed. Sports and entertainment are ever closer and the soccer experience is no longer just 90 minutes. Social media representation is today a crucial part of maintaining a fan base (PWC, 2011). Consumer patterns and choices have changed and there is a shift of more power to consumers. Fans want a holistic entertainment experience. Not only must soccer clubs show performance on the pitch or via social media but they also need players who entertain fans. With rising player costs this is especially financially challenging (PWC, 2016). The digitalization also increased the audience of matches drastically; clubs can now attract fans on all continents and sell merchandize to a variety of fans. This requires clubs to develop integrated digital value chains, to monitor social media trends and consumption behavior of fans (PWC, 2016).

The following numbers show that social media are for soccer clubs more important than for companies and that soccer clubs have a vast potential of reaching consumers. The three large sports apparel manufacturers Nike, Adidas and Puma have 67 million followers on Facebook alone this is only a fraction of the 32 to clubs valued by KPMG, which have an aggregated number of 589 million followers. Manchester United FC alone has 69 million followers and hence more than all three companies combined. The club with the most followers is FC Barcelona with 92 million followers (KPMG, 2016). Although soccer

clubs compare roughly in values to companies, they far surpass companies in terms of social media reach.

From the above elaborated trends and developments the two most severe are commercialization and globalization. Soccer clubs today are valuable companies with a greater ability to interact with customers than non-profit sports clubs as they have more financial resources at their disposal. The need to be a profitable investment for sponsors requires soccer clubs to undertake any measures to increase their performance and hence the quality of entertainment delivered. Measures to increase performance can include hiring new players, employing the latest training methods, and changing the head coach.

There is a lot of research in general and in particular on that topic of head coach changes for top leagues like the English, Spanish or the German league, which will be introduced in section *2.2*. Due to the reason of extensive coverage for top leagues this piece will examine the Swedish league, as results for that league may be different and add to the overall research picture. In Sweden, soccer clubs are historically a significant part of the identity of small cities. Therefore, most clubs have a strong local fan base and a single local sponsor, but most Swedish soccer clubs do not possess a national or even international reach (Söderman, 2013). Hence, the identified developments are a more significant challenge for Swedish clubs.

Soccer is the most popular sport in Sweden it has been played professionally since the 1870s. The First Swedish championship was played in 1896 and the Swedish soccer association was founded in 1904. Today there are nearly 240,000 licensed adult players and the same amount of youth players in Sweden's 3,184 soccer clubs. There are around 7,900 soccer pitches in the country (The Swedish Football Association, 2017). Despite

Sweden's relatively low population these are impressive statistics and Sweden's men and women national teams have gained notable international recognition.

1.1.1 Allsvenskan

The first Allsvenskan, Swedish for "all Swedish", season was played in 1924. The format of league has changed several times. The league started with 12 teams and, after changing the number of teams several times and adopting and dropping play-offs, the league today consists of 16 teams. The league has 30 match weeks starting in Spring, usually in April, and lasting until autumn, usually September. The current format of Allsvenskan has been played since 2008. Today the winners of Allsvenskan are also the winners of the Swedish Championship but that changed over time so that the number Allsvenskan titles of some clubs is not identical with the number of their wins in Swedish Championship.

Teams play against each other twice and, as in most other leagues, match winners receive three points, draws yield one point for each team, and the loser of a match receives no points. The team with the most points in the end wins Allsvenskan. The winner of Allsvenskan qualifies for UEFA Champions league and the second and third team qualify for UEFA Europa league. Three teams get relegated in the end of each season to Superettan, while the first three teams of Superettan are promoted to Allsvenskan.

In the Swedish soccer league system there are eight tiers with Allsvenskan being the first tier, therefore, the winner of Allsvenskan is recognized as the best Swedish team of that season. Looking at a map of Sweden it is obvious that most teams of Allsvenskan

are located in the South of the country; only two clubs are located significantly north of Stockholm. The capacity of stadiums in Allsvenskan ranges from 5,500 to 54,000. The average attendance of Allsvenskan was 9,184 in the 2016 season. The club with most Allsvenskan titles is Malmö FF with 22 league titles followed by IFK Göteborg with 13 and IFK Norrköping with 13 too. Malmö FF is also the team leading the all-time Allsvenskan table with 3,390 points followed by IFK Göteborg with 3,362 and AIK with 3,233.

Overall there are 63 different teams in the all-time Allsvenskan table. All winning teams of Allsvenskan are located in or south of Stockholm. Five teams from Allsvenskan have participated in European competitions to date, and IFK Göteborg is the only Swedish club that won international titles. IFK Göteborg won the UEFA Cup twice in the 1980s. For the period examined in that work from 2010 to 2016 four different clubs won Allsvenskan, with Malmö FF winning Allsvenskan four out of seven times. Looking at that period only, Malmö FF appears to be the most dominant club in Allsvenskan. However, they have only been dominant since 2010. The time period from 2000 to 2016 saw eight different winning teams, Malmö FF with five titles, Djurgårdens IF with three titles and IF Elfsborg with two titles. Foreign players are allowed in Allsvenskan since 1974 but no foreign player made in the all-time top fives of most matches and most goals (The Swedish Football Association, 2017).

1.1.2 Superettan

Superettan, Swedish for the “Super One”, is the second tier of the Swedish soccer system. Superettan, like Allsvenskan, is played by 16 teams and teams playing 30 matches each. The league is played from April to October. The second tier of Swedish soccer has

existed since 1924 and in 2000 it changed names and formats. In 2000, Superettan was created by merging the former Division 1 series North and South. The format is the same as in Allsvenskan, the difference being that the two best teams get promoted automatically to Allsvenskan, with the third best of Superettan playing a promotion play-off against the third to last from Allsvenskan. The two last teams from Superettan are relegated to Division 1, while the two best teams from Division 1 are promoted to Superettan. The third and fourth worst teams from Superettan play a relegation play-off against the third and fourth best teams from Division 1.

As in Allsvenskan, the teams from Superettan are from the South of Sweden. The stadiums have a capacity between 1,250 and 18,416. The average attendance in Superettan varies significantly from year to year, in 2016 the average attendance was 1,727 and the highest attendance since creation of Superettan in 2000 was in 2014 with 3,267. Since 2000, 15 different teams won Superettan and ended the season on the first spot. The only teams which won Superettan more than one time are Kalmar FF and Östers IF with two times each. Since foreign players are allowed in Sweden since the 1970s, foreign players were allowed to play in Superettan since its creation. Looking at the statistics of most goals, most assist and best goal keepers per season, not only Swedish players but also a few foreign players can be found. The all-time record for most assists in one season is even held by a Czech player (The Swedish Football Association, 2017).

1.2 Research question

As elaborated before, Swedish soccer clubs followed the trend of shifting from a non-profit club to a limited company. When looking at Swedish football clubs today one

might not see many differences from other companies. In fact, soccer clubs have became companies, as they have a board, a management, and different departments such as marketing and economic department.

Although Swedish football clubs have fewer Facebook followers than top international clubs, their reach is still significant given Sweden's population of around 10 million. The three clubs with the most Facebook followers are Malmö FF with 181,400, IFK Göteborg with 152,600 and Djurgårdens IF 127,100. Sweden's soccer clubs are "outlets for commercial messages", and through sponsorships, they become vital parts of other firm marketing efforts (Söderman & Jansson, 2012). Hence it holds for Swedish soccer clubs what holds for other soccer clubs, they have the objective to earn money, be profitable, and serve their sponsor's profitability (Skännestig & Karlsson, 2011). Swedish soccer clubs however, due to the lack of international popularity, face severe problems in achieving these objectives. Especially in the last decade the relevance of Swedish soccer in comparison to other major European soccer leagues decreased, as could be observed in lower performance in international games in European competitions. A consequence of this development is that Swedish soccer clubs have difficulties keeping their talented players. It often happens that clubs from abroad hire the top players from Swedish clubs. The loss of top players hinders the continued performance of the team and can affect the revenues of a team as top players foster interest of fans in certain clubs. Overall the lower competitiveness compared to top European leagues influences Swedish soccer clubs economically as, for example, broadcasting deals are less favorable, attendance to matches decreases, and sponsors can be harder to attract (Skännestig & Karlsson, 2011).

Swedish clubs are negatively affected by the exposure to international competition, hence boards and owners of Swedish soccer clubs should be vigilant about the team's performance and measures to enhance performance. The measure of changing the head coach and its effectiveness is hence a topic of concern. For the scope of this work 21 managerial changes were identified, eight of them during seasons and 13 off-season. In the examined period many more changes happened Göteborgs Atletoch Idrottssällskap (GAIS) had in the examined period seven managerial changes alone, as information availability made it often impossible when the changes occurred exactly, the 21 identified changes will be the subject of this work's research.

1.3 Research approach

This work will focus on the two top tier leagues in the Swedish soccer league system in order to assure availability of data and in order to compare results for both leagues. The research will be conducted for the seasons 2010 until 2016. For each team that was part of these two leagues one managerial change will be considered. The betting market will be considered a market consensus about future expectations similar to the stock market for companies. The quotes and especially the change of quotes after certain events, for the purpose of this work the event is managerial change, will function as an estimate whether future performance of teams is expected to increase or decrease. For example, a market consensus of expected lower performance for a certain team in the next match would a priori lead to a higher quote for that team and vice versa.

1.4 Problem definition

This section will present the main research question and additional research questions. The main research question defined here will function as guidance during the research. The additional research questions will add further depth to the analysis conducted.

The main research question for this work will be "*How do managerial changes impact the performance of Swedish soccer teams*.' To assure that this research question is answered thoroughly and in depth three further research questions will be examined. The first additional research question will be "*Do impacts of off-season managerial changes differ from in-season managerial changes*". This question is in addition to the main research question of special interest as team owners might or might not reconsider the dismissal of a coach during a crisis. Findings for this questions could have financial implications as management dismissals are often connected to severance payments. Further insight will be gained by answering the question "*Do managerial changes in Allsvenskan have a different impact than managerial changes in Superettan*." The final research question will be "*How does the betting market react to managerial changes*."

Special interest in this question lies on potential findings as it might be concluded whether betting companies include managerial change in their calculations. Again this question could have financial implications for consumers of bets and companies offering bets. It basically serves as a check of the accuracy of market expectations with respect to managerial change. In the further course of this work the main research question will be referred to as either main or first research question. The additional research questions will be referred to as research question two to four.

1.5 Purpose

The purpose of this research is to shed light on the question whether managerial change improves the performance of Swedish soccer teams. By providing answers to the four research questions this work will contribute insight for owners of soccer teams for strategic decisions and crisis management.

1.6 Delimitations

This work will focus on clubs that played at least one season in either of the considered leagues. In addition, only the first team of each soccer club is recognized for the research. Due to the limited scope of this work, the relatively low information coverage for Swedish soccer teams, and the language barrier of coverage, the research will focus on one managerial change for each team. Although existing research indicates a distinction between managerial dismissal and consensual leave of a coach, this work will conduct the research with respect to managerial change in general. Further research could shed light upon the question whether the dismissal of a manager has a different impact on a team's performance than a simple change. One could argue that research question two makes that distinction as in-season changes are more likely to proxy for dismissals. But due to the low accessibility of information and in order to assure the quality of potential findings no assumptions will be made and research will be conducted without a distinction between dismissal and change.

1.7 Definition of terms

For the purpose of this work *managerial change* is defined as the simple change of the head coach of a soccer team. The term *off-season* refers to events that happen before the first match of a season or after the last match of the previous season. The tem *in-season* refers to events that take place between the first and the last match of a season, which includes the summer break.

The term *performance* with respect to a soccer team is in this piece defined as a discrete variable measuring the outcome for a team in a match. The variable will take the value zero in case of a loss, the value one in case of a draw, and the value 2 in case of a win of the respective team. In other words, this variable is used to measure the likelihood of teams winning matches. This performance variable is used as the dependent variable in the estimation of the impact of managerial change on team performance. Exceptions of this definition are the various definitions of performance in the existing research examined in the literature review section.

In addition to the dependent variable there are three more variables that proxy team performance. These three variables are the Rankscore, the Powerscore, and the LeagueStandings. Theses variables are not used as dependent variables to measure the impact of managerial change on team performance. Rather, these variables are used to establish the relation between managerial change and previous defined team performance.

The Rankscore was obtained from the website bookiebacker.com together with the data for this research. Paul Steele (2002) developed the variable. The score can be explained with an example of two teams A and B. Prior to the match of team A against team B both team have a score of 1,000. For each match a jackpot is created, it contains

7% of the home team's score, let's say team A, and 5% of the away team's score, team B. After the match the winning team receives its own and the opposing team's stake. Assume team A wins, then A has a score of 1,050 and B has a score of 950. In case of a draw the teams receive the stake of the opposing team, team A's score would amount to 980 and team B's score to 1020. Hence the away team receives a higher reward in terms of the Rankscore for a draw (Steele, 2002). A detailed example can be found in the appendix (Appendix I).

The Powerscore is also a creation of Paul Steele (2002). In contrast to the Rankscore it is not dependent on the result of a match, it only depends on goals scored and conceded. The calculation of the Powerscore is more complex than the calculation of the Rankscore, a detailed calculation can be found in the appendix (Appendix II). Imagine a scenario of team A, the home team, playing team B, the away team. In order to calculate the Powerscore after this match the Powerscore prior to the match and the goals scored in that match are needed.

Assume both teams have a Powerscore of 20 each prior to the match, and team A (the home team) scores 3 goals without conceding any goal during the match. The calculation consists of three parts. First calculating the home advantage, calculating the so-called margin, and then adjusting the Powerscores of both teams with the margin. The home advantage is calculated by subtracting the Powerscore of the away team from the home team's Powerscore, then 0.2 is added to the difference. In the example, the home advantage is simply 0.2, as both teams have the same Powerscore.

The margin is calculated as the sum of negative one multiplied to home advantage and the difference of the home team's and away team's goals. In this example, the margin

is 2.8. The margin is then divided by ten, yielding a margin of 0.28. The margin is then used to calculate the after-match Powerscore. The home team's new Powerscore is obtained by adding the margin to its previous Powerscore. The away team's margin is calculated by subtracting the margin from its previous Powerscore. Hence the results for team A and B are 20.28 and 19.72 respectively (Steele, 2002).

The LeagueStandings is a relative measure of performance. It compares the position of the home team to the position of the away team in the league table. If team A plays team B and team A has a LeagueStandings value of -1 then it is one position behind team B in the league table. This variable only provides information on the relative performance of two respective teams playing in a match.

These three variables capture the ability of a team to score more goals relative to goals conceded, the relative performance of teams over the current season relative to each other, and a proxy variable for the odds of winning matches. It is assumed that there is a significant positive relation between the explanatory variables and the dependent variable.

1.8 Thesis outline

This work will proceed with a literature review. The methodology section will explain the model and the analyzed variables. The fourth section will present the research findings. The conclusion section will summarize and provide conclusions and in addition provide suggestions for further research.

2. LITERATURE REVIEW

This section will introduce the existing research on the topic of managerial changes.

2.1 Managerial change in general

Boeker (1992) conducted a study of 67 semiconductor manufacturers spanning 22 years in order to examine the probability of top executive dismissal and its relation to performance of the respective organization. The measure of firm performance employed was annual sales growth. Boeker used maximum-likelihood logistic regression. He finds that firms with lower than average performance are more likely to dismiss their top executives. He also examined ownership structure and the power of top executives and found that the composition of the board and ownership structure influence the likelihood of dismissal. Top executives, who have relatively more power than their peers, show a lower likelihood of being dismissed after low performance. They tend to dismiss lower executives instead (Boeker, 1992).

Conyon and Florou (2002) conducted a study in order to identify the reasons for managerial change. Their study covers the period from 1990 to 1998. The subject of their research werethe top 460 UK companies listed on the London Stock Exchange, ranked by market capitalization. They used a probit model to estimate the probability of managerial dismissal based on stock and accounting-related performance measures. They differentiate in their study between forced and unforced managerial change of top executives. Forced managerial change is the dismissal of top executives through the board and this is the dependent variable in this study, as they call it the most senior executive change. They identify, in accordance with previous research, that there is “a robust inverse relation

between top executive turnover and pre-dated firm performance." In other words, they find that top executives get dismissed for poor performance. In addition, they also identify that top executives with significant holding of shares in the company are not protected from being dismissed for poor performance (Conyon and Florou, 2002).

Fee and Hadlock (2003) conducted a study of 443 large companies from 1993 to 1998. Their aim was to examine the relationship of CEO dismissals compared to non-CEO dismissals. They also wanted to identify reasons for the different types of dismissals. Their study covers the top five executives of the S&P 500 companies for the stated period, except financial and utility companies, as they argue that results for these companies may be affected by regulatory reasons. They use a logit approach and find that non-CEO dismissal occurs at least as often as CEO dismissal. However, they point out that low performance is a stronger trigger for non-CEO dismissal than for CEO dismissal. They also examine the succession of a CEO and its effect on the other top executives and find that top executives are more likely to leave a firm in case the successor of a CEO is an outsider (Fee and Hadlock, 2003).

Denis and Denis (1995) conducted an event study of 1,689 firms for the period of 1985 to 1989. They examine the firm performance before a forced managerial change and after the change. They employ a standard event-study methodology measuring the impact of forced managerial change on the stock price of the respective firms for a 250-day period starting two days after the announcement of the managerial change. In addition to stock prices they also use operating income as a performance measure. They also examine the relation between top executives and lower level management changes and how governance factors such as monitoring change after the forced managerial change. They find that

managerial changes for the examined companies are often preceded by significantly lower operating performances. They also find that forced managerial changes are followed by significant increases in performance. At the same time, forced managerial changes are often accompanied by increased monitoring, control activity and downsizing of operations. However, they find that the number of forced managerial changes is relatively low and that they occur due to outside pressure such as block-holder interests or attempted takeovers. Whereas normal managerial change is more common and only show a small increase of operating income and monitoring activity (Denis and Denis, 1995).

Summarizing the findings of the large body of research on managerial change and turnover, low performance is definitely a trigger for managerial changes, which is a finding that can likely be applied to soccer clubs. In addition, a positive relationship between managerial changes and firm performance has been established. This relationship will be closely examined in the following section and also the reasons leading to managerial changes.

Other findings such as that powerful top executives are less likely to be dismissed compared to lower level managers or how the succession of a top executives effects the management team are findings worth examining on the example of soccer clubs. Especially since some head coaches bring their own management/ coaching teams with them to new teams. Another finding that can probably be applied to soccer clubs is that low performing executives are relatively easy to identify and replace in homogenous industries compared to heterogeneous industries (Parrino, 1996). Since soccer clubs and leagues are fairly easy to compare and similar this finding should be applicable to soccer clubs. It is hypothesized that soccer clubs change head coaches after low performance, as it is easy to observe their

performance and compare it to other soccer clubs, the replacement of head coaches is assumed to be relatively easy. Among the examined research logit and probit models as well as cross-sectional analysis were employed frequently.

2.2 Managerial change in sports

Audas, Dobson and Goddard (1997) conducted a study on the reasons for managerial change and their impact on performance of English soccer teams. In contrast to most other research, they examine data on lower leagues and not only on top leagues. They examine data for the first to forth English division for the period the season 1972/1973 to 1992/1993. They measure team performance in a win ratio for six, twelve, and eighteen matches each before and after the managerial change occurred. They find that decreased recent performance triggers managerial dismissal. In lower divisions management turnover is more rapid than in higher divisions. They introduce the two schools of thought existing in this field of research. First, managerial change increases team performance when unpopular and unsuccessful coaches are dismissed, as players and fans receive a morale boost. However, this mostly leads to a short-term increase. The second school of thought posits that managerial change has a disruptive impact on the team overall and hence there is a short-term dip in team performance. Audas, Dobson and Goddard find evidence for the latter school of thought: managerial changes have significant harmful effects on the performance of a team immediately after a managerial change (Audas, et al., 1997).

Audas, et al. (2002) conducted another study on the impact of managerial change on team performance for the English Premier League. They examine the period from the

1972/73 season until the 1999/2000 season, covering in total 28 seasons of the Premier League. They use an ordered probit regression to identify the impact on performance. They measure team performance with a so-called win and managerial changes are represented by dummy variables. They find that, on average, teams that change head coach within a season have lower performance for a period of three months. In addition, they find that in the short-run managerial changes have the impact of an increased non-systematic component of the team performance. As the absolute number of in-season changes in the Premier League is relatively high, they conclude that owners of teams are aware of the increased variance. Therefore, they pursuit in-season changes in an attempt to gamble on improved performance in order to circumvent potential relegation (Audas, et al., 2002).

Bruinshoofd and ter Weel (2003) conducted a study on the Dutch KPN Eredivisie, the highest Dutch soccer league with 18 teams. Their aim is to find whether forced managerial changes improve or decrease the performance of a team. Their study covers the period from 1988 to 2000. They identify a total of 125 managerial changes for the 12 season period, with three out of ten managerial changes being forced changes or dismissals. They use the average of gained points per match as a measure of performance. They find that forced managerial changes are preceded by decreasing team performance. However, in contrast to the previous findings they find that improvements under new head coaches do not exceed the seasonal average of the old head coach. By using control groups, they show that in case that forced managerial changes would not have occurred, the performance of the teams would have recovered in a shorter period of time. Hence, they conclude that managerial dismissal is neither effective nor efficient, when the aim of the dismissal is to increase team performance (Bruinshoofd and Weel, 2003).

De Dios Tena and Forrest (2007) examine the causes and consequences of within-season managerial changes in the Spanish top tier soccer league. Their study covers three seasons from 2002 to 2005 of the Spanish top tier division. They employ an ordered probit model to estimate the impact of coach dismissals for the 20 teams of the Spanish soccer league. The major reasons that lead to in-season managerial changes are the threat of potential relegation and financial considerations for soccer clubs in the top half of the league table. In addition, they find that teams that dismiss their coaches during the season have, on average, a significantly lower budget compared to teams without in-season managerial changes. That finding supports the idea that the threat of relegation will foster in–season managerial dismissal. They also find that clubs that change head coaches within a season experience a short-term increase of performance that is limited to home matches only. They conclude that the increase in performance justifies the decision by the club owners of an in-season head coach dismissal, in order to achieve increased performance. They attribute the increased performance not to the new head coach directly but rather to appeasing the fans of the clubs, which is why the increased performance is observed mostly for home matches. They argue that their conclusion is in accordance with literature on crowd support on the home advantage in sports (Tena and Forrest, 2007).

Frick, Barros and Prinz (2010) examine reasons for head coach dismissal in the German "Bundesliga," the top tier German soccer league. They examine the period from the 1981/1982 season to the 2002/2003 season, giving them data on 39 soccer clubs and 398 team-season observations. They use a random parameter logit model to deduce what leads to coach dismissal. They measure team performance and team and coach efficiency. Team performance is measured by the last three lost matches and efficiency is measured

by their own created measure. They find that the factors affecting the dismissal of a head coach are the recent performance, remuneration, and team efficiency. They find significant evidence that higher recent performance and higher team performance decrease the probability of a managerial change. They find that the higher the salaries of players and coaches, the higher is the probability for the head coach to be dismissed. With their work they confirm other existing research that the more experience a head coach has the less likely is his dismissal and that team performance is a significant trigger for head coach dismissal (Frick, Barros, and Prinz, 2010).

Ter Weel (2011) studies the impact that managerial change has on the performance of Dutch soccer league teams. He examines the period from 1986 to 2004. He employs "difference-in-difference" and a 2SLS strategy to estimate the impact. He employs a performance measure that gives the points collected on average during the last four matches. He finds support that there are no statistically significant improvements to team performance after managerial change. He also included measures for the quality of a head coach and finds that they are not relevant in predicting managerial change. Ter Weel set his work on Dutch sport teams in contrast to work on managerial change on companies and finds that sports data is more transparent as manager quality and performance can be observed more direct. But he also mentions that findings for publicly traded firms find a small performance increase after managerial change (Weel, 2011).

Muelheusser, Schneemann and Sliwka (2015) study the impact of managerial change of soccer teams, especially focusing of the heterogeneity of teams. They examine the seasons 1994/1995 to 2009/2010 of the "Bundesliga", giving them a total data set of 4,896 matches. During that period, they identified 184 managerial dismissals, of which 137

dismissals appeared during the season. Performance is measured by average collected points per match. Their hypothesis is that the dismissal of a coach will improve team performance for teams with high homogeneity. Team heterogeneity is measured by ranking individual player's performance. The theory behind their heterogeneity research states that a manager's key task is to assign tasks to subordinates and that there is competition among subordinates for more desirable tasks. According to previous research this allocation mechanism is said to be a powerful incentive mechanism. In teams after a managerial change, a new coach can give rise to increased performance as players compete again for the desirable roles under the new coach, which has less information on individual performances of players. They find significant evidence that improvements of performance after managerial changes can be observed for teams that are sufficiently homogenous. They also find that there is a negative bias of board members or owners dismissing coaches when it comes to selecting a successor. They argue that typical regression models underestimate the true effect of managerial change and hence results of previous research, stating that managerial change has adverse or no effects, cannot be supported (Muehlheusser, Schneemann, and Sliwka, 2015).

The existing research offers a vast diversity of findings, there is evidence for negative, positive, and no impact of managerial change on team performance. Furthermore, it seems that low performance is a main reason for managerial change and especially dismissal of a head coach. Research also identified financial considerations as a reason for managerial changes of teams with a relatively high performance. In addition, factors such as the experience or skill of the coach, the budget and remuneration of players and coach, as well as the homogeneity of a team, are important to understanding and estimating the

impact of managerial change on team performance. An important finding is also that managerial changes are different depending on the division of a team. This finding is of special relevance for the analysis in order to answer research question number three. Logit and probit models are very popular among researchers to examine this kind of problem. When examining the existing research, it is apparent that the majority of research focuses on top European leagues.

3. METHODOLOGY

3.1 Research strategy

This paper uses the concept of an event study to conduct the research. Fischer, Jensen and Roll developed the event study methodology in 1969. It is a statistical approach to estimate the impact of a certain event. The approach is mainly used in finance to assess the firm value after the occurrence of a merger or to detect abnormal returns after announcement to stockholders. In general, a period after the event is defined and the data for the period is analyzed using various statistical models (Binder, 1998). For the purpose of this work, the event of interest is the change of the head coach for teams in the first and second Swedish soccer league in the period from 2010 to 2016. The period that is examined is the ten first matches after the occurrence of the event. Regression analysis is employed to estimate the impact of the managerial changes on the likelihood of teams winning matches. The findings are used to answer the research questions and are compared to findings of existing research.

3.2 Data description

The complete dataset contains 4,694 observations on match data for the two Swedish top leagues Allsvenskan and Superettan for the period from 2010 to 2016. In the seven-year period there were a total of 2,347 matches, in the dataset are two observations for each match as each observation is from the perspective of the home or away team. At the time the dataset was obtained fourteen matches were not yet included in the match data. These matches are the last fourteen matches of the 2016 season. As no results for these

matches are included in the dataset, these matches are excluded, reducing the number of observations to 4,666.

Managerial changes are represented in the dataset by dummy variables. The variable Managerial_change_10 takes the value of one after a managerial change occurred for the respective team. The variable Managerial_change_10 marks ten matches after the managerial change by taking the value one for these ten matches. The dataset contains 21 managerial changes. All these managerial changes occurred with 21 different clubs, a detailed list of the managerial changes can be found in section B of Table 1. Out of the identified managerial changes, eight occurred during the season and thirteen occurred outside a season. During the year 2013 one managerial change is identified, in the year 2014 there are five changes, for the year 2015 six managerial changes are identified, and the year 2016 has with nine managerial changes the most changes.

The focus variable of this piece is the performance of soccer teams; the respective variable is called Result_id. It is a discrete variable taking the value of zero for a loss, one for a draw and two for a win. The variable indicates the likelihood of teams winning matches. Table 1 presents the mean statistics for the dependent variable Result_id. The mean of Result_id is 1.0, the standard deviation is 0.8617, and the minimum is zero and the maximum is two.

In section A of Table 1 the mean statistics for the explanatory variables are presented. The Powerscore measures the ability of a team to score more goals than conceding goals, it is independent of a team's ability to win matches. Hence it measures the quality of a team's offensive and defensive. The mean Powerscore is -0.017, the standard deviation is 0.713, the minimum is -2.509, and the maximum is 2.383.

The Rankscore measures the ability of a team to score points from matches, the Rankscore increases with a team winning or achieving a draw. The mean Rankscore is 3.287, the standard deviation is 305.003, the minimum Rankscore is -1074.45, and the maximum Rankscore is 1144.37. The Rankscore shows that in the Swedish soccer leagues examined in this piece there are teams that clearly dominate other teams. LeagueStandings measures the overall performance of a team for the current season relative to another team's performance.

LeagueStandings measures how many positions in the league table are between two teams playing a match. The variable, due to its setup, has a minimum of -15.0 and maximum of 15.0. The mean LeagueStandings is zero and the standard deviation is 6.47.

The variable Odds_Draw is similar to Odds_Win it is obtained from the same source, but it indicates how likely a draw in the respective match is from the betting company's perspective. The higher the Odds_Draw, the higher is the likelihood that the respective match will end with a draw. The mean Odds_Draw is 3.763 and the standard deviation is 0.608. Odds_Draw has a minimum of 1.0 and and a maximum of 8.5.

For the purpose of this work, several additional dummy variables are used. The variable Managerial_change_10 takes the value 1 for then matches immediately after the change of a head coach. This variable is essential to answer the main research question. The mean Managerial_change_10 is 0.042, the standard deviation is 0.202, and the minimum and maximum are zero and one respectively.

Table: 1

Section A: Mean Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Independent				
Result_id	1.0	0.8617	0.0	2.0
Odds	3.212	1.925	1.0	23.0
Odds_Draw	3.763	0.608	1.0	8.5
Explanatory				
Managerial_change_10	0.042	0.202	0.0	1.0
Powerscore	-0.017	0.713	-2.509	2.383
Rankscore	3.287	305.003	-1074.450	1144.370
LeagueStandings	0.0	6.470	-15.0	15.0
Managerial_change _offseason	0.028	0.165	0.0	1.0
relegated	0.059	0.236	0.0	1.0
promoted	0.130	0.336	0.0	1.0
Division	0.508	0.500	0.0	1.0
Home_Away	0.5	0.500	0.0	1.0

Section B: Managerial Changes

Team	Year	First Match After Change	Off-season	In-season
Orgryte	2013	7/20/2013		Yes
Varbergs	2014	5/7/2014	Yes	
Jonkopings	2014	5/7/2014	Yes	
Varnamo	2014	5/8/2014	Yes	
Orebro	2014	7/6/2014		Yes
Mjallby	2014	8/4/2014		Yes
Atvidabergs	2015	4/29/2015	Yes	
Elfsborg	2015	4/29/2015	Yes	
Kalmar	2015	4/29/2015	Yes	
Falkenbergs	2015	4/29/2015	Yes	
Halmstad	2015	4/29/2015	Yes	
Goteborg	2015	4/30/2015	Yes	
GAIS	2016	4/2/2016	Yes	
Assyriska FF	2016	4/3/2016	Yes	
Ljungskile	2016	4/3/2016	Yes	
Dalkurd	2016	4/3/2016	Yes	
AIK	2016	5/16/2016		Yes
Gefle	2016	7/9/2016		Yes
Norrkoping	2016	7/9/2016		Yes
Degerfors	2016	8/1/2016		Yes
Sundsvall	2016	9/21/2016		Yes

The variable Division takes the value zero for teams in Allsvenskan and the value one for teams in Superettan. The mean and the standard deviation for Division are 0.508 and 0.5 respectively. Division has a minimum of zero and a maximum of one. The variable

Managerial_change_offseason takes the value zero for managerial changes occurring during a season and the value one for changes occurring off-season. The mean Managerial_change_offseason is 0.028, the standard deviation is 0.165, the minimum is zero, and the maximum is one. These two dummy variables will help answering the research questions two and three.

The variable "relegated" takes the value zero for teams that have not been relegated from the last season their respective current league. "Relegated" takes the value one for teams that played the previous season in a higher league, in this case Allsvenskan, as the two top leagues are examined in this work, and have been relegated to Superettan. The mean "relegated" is 0.059, the standard deviation is 0.236, the minimum is zero, and the maximum is one. The variable "promoted" takes the value zero for teams that have not been promoted from the previous season, in other words they are playing the same league as the previous season. The variable takes the value one for teams that played the previous season in a lower league, that means they either played in Superettan and have been promoted to Allsvenskan or they played in Division1 and have been promoted to Superettan. "Promoted" has a mean of 0.13 and a standard deviation of 0.336. The minimum is zero and the standard deviation is one.

The variable Home_Away takes the value zero for teams that played an away match and one for teams that played a home match. Including this variable gives the possibility to check whether the employed model can approve that teams playing home matches have an advantage and hence will be more likely to win matches. This is not a core part of this work but validates the findings to a certain degree, as it would be align with existing

research. Home_Away has a mean of 0.5 and a standard deviation of 0.5. The minimum is zero and the maximum is one.

3.3 The model

The model used to answer the main research question, research question two, and research question three is the ordered logistic or also called ordered logit model. The model was first considered by Peter McCullagh (1980) and it is designed for regressions with ordinal dependent variables. The ordinal scale allows for a rank order of polytomous data, the data is ranked first, second, third etc.. The polytomous variable used in this work is result_id. The variable has the values of win, draw, and loss, which are coded into two, one, and zero respectively. The ordered logit model has the advantage that it allows for polytomous dependent variables, variables that can take more than two possible values, as needed for this work. The model uses the cumulative standard logistic distribution. The model is based on the proportional odds assumption, the assumption states that numbers added to each of the logarithms, in the set of equations (1), in order to get the next has to be the same. X_1 to X_3 represent the proportions of the members of the statistical population, which represent the respective outcomes loss, draw, and win. The values zero to two represent the respective rank order.

Set of Equations: (1)

$$\text{Loss, } \log\frac{X1}{X2+X3}\text{ , } 0$$

$$\text{Loss or Draw, } \log\frac{X1+X2}{X3}\text{ , } 1$$

$$\text{Win, } \log X_1 + X_2 + X_3\text{, } 2$$

The logarithms represent the odds of a certain outcome. The assumption can also be described as the logarithms describing an arithmetic sequence. A number added to the logarithms has to be a linear combination of the observed variables. The coefficients of the linear combination cannot be estimated with ordinary least squares. Therefore the maximum likelihood approach is used, iteratively reweighting the least squares. The set of equations (2) show the typical ordered logit equation (McCullagh, 1980) (Torres-Reyna, 2017). P represents the odds of Y, the dependent variable, taking the value one. β_0 to β_n represent the estimation coefficients and X_1 to X_n represent the different independent variables.

Set of Equations: (2)

$$(2.1)\ P(Y= 1 \mid X_1, X_2, \ldots X_n) = F\ (\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots \beta_n X_n)$$

$$(2.2)\ P(Y= 1 \mid X_1, X_2, \ldots X_n) = \frac{1}{1+e^{-(\beta 0 + \beta 1 X1 + \beta 2 X2 + \ldots \beta n Xn)}}$$

$$(2.3)\ P(Y= 1 \mid X_1, X_2, \ldots X_n) = \frac{1}{1+(\frac{1}{e^{(\beta 0 + \beta 1 X1 + \beta 2 X2 + \ldots \beta n Xn)}})}$$

The set of equations (3) presents the model used in this work. The model uses result_id as dependent variable to estimate the odds of the outcome of the highest rank, which is a win, coded as two, for the respective team.

Set of Equations: (3)

$$(3.1)\ P(Y= 2 \mid X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) = F\ (\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9)$$

$$(3.2)\ P(Y= 2 \mid X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) = \frac{1}{1+e^{-(\beta 0 + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \beta 4 X4 + \beta 5 X5 + \beta 6 X6 + \beta 7 X7 + \beta 8 X8 + \beta 9 X9)}}$$

$$(3.3)\ P(Y= 2 \mid X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) = \frac{1}{1+\left(\frac{1}{e^{(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9)}}\right)}$$

$$(3.4)\ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \varepsilon$$

The equation (3.4) shows the regression equation with β_0 to β_9 being the estimation coefficients and X_1 to X_9 being the independent variables. The independent dummy variables are Managerial_change_10, Division, Managerial_change_offseason, relegated, promoted, and Home_Away. Managerial_change_10 is included in order to estimate the impact of changing the head coach on the odds of the respective team to win matches for the period of ten matches after the change. Managerial_change_offseason is included to answer research question two, whether the impacts of the managerial change vary with the point in time of the managerial change. The independent variable Division is included to answer research question three, whether the impacts of the managerial change vary with the league of the respective team. The variables “relegated” and “promoted” are included to examine whether previous low or high performance of the team affects the odds of the outcome. The variable Home_Away is included to verify whether there is a home advantage.

The additional independent variables included are Powerscore, Rankscore, and LeagueStandings. These variables represent as described above other measures of team performance, however these measures represent the long-term previous performance of a team and are highly affected by players’ individual and coach’s previous performance, as they do not cover only ten matches after but they already are on a certain level depending on the previous performance. Therefore, it is legit to include them in order to see how the

development in these variables affects the odds of a certain team to win matches. The error term is ε.

In order to answer research question four, whether managerial changes have an impact of the odds assigned by betting companies to soccer teams, two linear regressions are used. Equation (4) shows the linear regressions employed. The regression models are simple, with the continuous variable Odds_Win and Odds_Draw respectively being the dependent variables. The independent variables are the same variables as in the ordered logit model except the Managerial_change_offseason, relegated, and promoted. These two regressions are intended to shed light on the question how managerial changes affect the odds and what other variables impact the odds.

Equation: (4)

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

The excluded variables cover the performance of the previous season and events potentially long prior to the respective matches. It is assumed that betting companies rather analyze factors of the current season; therefore, these three variables will not be included in the linear regression models.

4. DISCUSSION OF RESULTS

Table 2 shows the results of the ordered logit regression. The estimate for Managerial_change_10 is 0.5145 indicating that there is a positive relationship between the managerial change and the odds of teams winning matches. This result is statistically relevant, as the P-value is smaller than 0.05. Hence, it can be established for Swedish clubs between 2010 and 2016 that changing the head coach has a positive impact on the team's odds to win a match. However, this finding is only valid for the ten first matches after the change of the head coach, a statement about the long-term impact is not possible. This finding is in line with the research of Tena and Forrest (2007). They identified a short-term increase in team performance.

Table: 2

Regression analysis: Ordered Logit model

Name	Variable	Estimate	P-value
Managerial_change_10	X_1	0.5145	0.0302
Division	X_2	0.00285	0.9607
Managerial_change_offseason	X_3	-0.6083	0.0356
relegated	X_4	0.1043	0.399
promoted	X_5	-0.2956	0.0006
Home_Away	X_6	0.9409	<.0001
Powerscore	X_7	-0.00334	0.9685
Rankscore	X_8	5.131E-06	0.9794
LeagueStandings	X_9	-0.079	<.0001

The coefficient for Division is 0.00285 and the P-value is 0.9607. For the Division the findings indicate a minor increase of the team performance after managerial changes for Superettan, the second tier. Audas et al. (1997) find that in lower leagues managerial turnover is more rapid and frequent. These two findings combined could mean that owners

of clubs know that managerial changes in the second league or lower leagues are more powerful and hence they use that approach to increase team performance. However, the impact is not statistically significant; no different relationship can be established between the team performance and managerial changes in different leagues. The answer to research question three is that no difference between managerial changes in Allsvenskan and Superettan can be identified.

In contrast to Audas et al. (2002), who identified a negative relationship between managerial changes during a season and team performance, here managerial changes that occur outside a season have a negative impact on the team performance. The coefficient for Managerial_change_offseason is -0.6083 and the finding is statistically relevant as the P-value is 0.0356. Although the finding contradicts some of the existing research, it also supports other research. Tena and Forrest (2007) find that the short-term improvements of team performance occurs for managerial changes during an ongoing season. They attribute the impact to the change being a signal to fans and hence there is a home advantage for teams. Muelheusser, Schneemann and Sliwka (2015) find also that performance improvement after managerial changes are due to the new competition amongst players to get a better position under the new head coach. During the season, the competition starts right with the next match. However, with managerial changes that occur off-season one could conclude that the competition happens in training sessions and friendly matches but not in the league matches. Hence, the answer to research question two is that there is a difference between in-season and off-season managerial changes. It appears that off-season managerial changes have a negative impact on the team performance.

The findings on "relegated" indicate that teams that dropped to a lower division are on average more likely to win a match. This fits to the intuition that a team that played in a higher league has better players, more fans, and more capital and so should perform higher than the teams in the lower league. However, the finding is not statistically relevant as the P-value is 0.399. Teams that have been promoted to a higher league are less likely to win a match. The odds of winning a match decreases for teams coming from Superettan to Allsvenskan. That finding is statistically significant and is supported by the intuition of a team joining a higher league being on average worse equipped for the competition in the higher league. The research also confirms that teams that are playing a home match have the so-called home advantage and are thus significantly more likely to win matches. The estimate for the variable is 0.9409 and that finding is statistically significant with the P-value being less than 0.0001. That finding supports Tena's and Forrest's (2007) findings of the short-term improvement of team performance due to the home advantage. For Powerscore and Rankscore the findings are not statistically significant and the impact is only marginal. That LeagueStandings has negative impact on team performance indicates that teams that are ahead of their opposing team are less likely to win. The implication contradicts intuition but it is not crucial for answering the research questions.

The two sections of table 3 show the results for the linear regressions with the variable Odds_Win and Odds_Draw being the dependent variables. The findings for the first linear regression examining the impact of independent variables on the odds assigned to teams by betting companies for wining matches are in the first section of table three. Managerial changes have a positive impact on the odds of winning, meaning a team that changes the head coach is regarded by betting companies as less likely to win and hence

they offer higher bets on these teams. That finding is line with the finding of Audas et al. (1997), who find that immediately after managerial changes performance of team's decreases. It appears that betting companies follow that school of thought. However, the finding is not statistically significant; therefore, not much emphasis can be put on this finding.

Table: 3

Regression analysis: Linear Regression - Odds_Win

Name	Variable	Estimate	P-value
Managerial_change_10	X_1	0.24098	0.1208
Division	X_2	-0.25816	<.0001
Home_Away	X_3	-1.7766	<.0001
Powerscore	X_4	0.34126	<.0001
Rankscore	X_5	0.00072787	<.0001
LeagueStandings	X_6	0.1596	<.0001

Regression analysis: Linear Regression - Odds_Draw

Name	Variable	Estimate	P-value
Managerial_change_10	X_1	0.22405	0.0005
Division	X_2	-0.09952	<.0001
Home_Away	X_3	0.00077069	0.9598
Powerscore	X_4	0.25611	<.0001
Rankscore	X_5	0.00044057	<.0001
LeagueStandings	X_6	-0.00068625	0.5676

The regression on Odds_Draw yields a statistically significant result that the variable Managerial_change_10 has a positive impact on the odds of a draw. The answer to the research question four is that Swedish soccer teams are expected by betting companies to be less likely to have a draw after managerial change. The variable Division has a negative impact on both dependent variables and both impacts are statistically significant. The implication of that is assumed to be not that teams in Superettan are less

likely to win or have a draw but rather that betting quotes in the second league are lower on average. The regression shows a clear home advantage for teams that are playing a home match. The coefficient for Home_Away with respect to Odds_Win is -1.7766 and it is statistically significant. That means odds on home teams are lower and hence, betting companies expect them to win matches. The finding for the impact of home matches on Odds_Draw is not statistically significant and not part of the research questions. The Powerscore has a positive impact on both Odds_Win and Odds_Draw. Both impacts are statistically significant. The implication is that teams with higher Powerscores are perceived as being less likely to win and have a draw. That contradicts the natural intuition that teams that are able to score more goals than they concede are more likely to win matches. The Rankscore has a statistically significant and positive impact on both variables. However, the impact can be neglected, as it is small. LeagueStandings has statistically relevant and positive impact on Odds_Win and a non-statistically significant negative impact on Odds_Draw. The former although being significant has a contradicting implication. Whereas, the latter has an implication that is aligned with intuition but not statistically significant.

5. CONCLUSION

This work examined the current trends and threats faced by soccer clubs in general. The ongoing commercialization and globalization of soccer increases competition for soccer clubs about fans, players and financial resources. The Swedish soccer league is relatively small league that is not able to compete with top European soccer clubs. Therefore, the work examined whether managerial changes are an approach for club owners to increase the performance of their teams. The research finds that there is a short-term increase in performance of soccer teams after managerial changes occurring during an ongoing season. The research does not find results implicating that there is a difference between Allsenskan and Superettan concerning the impact of managerial change on the odds of the respective team to win matches. Managerial changes lead to the betting quotes on draws for the respective teams to increase. Hence, the betting companies expect that teams after managerial changes are less likely to have a draw.

Future research could examine a larger number of managerial changes to validate the findings. The event study set-up of this research of this work could be extended to examine the impact of managerial changes on the value of teams or their sales of merchandize and tickets. Another idea for further research is to investigate whether coaches with different characteristics have different impacts on the team performance, for example, how the nationality or the years of experience affect the performance of respective teams.

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Apendix I: Second example of the Rankscore calculation

Home/Away Team:		Rankscore before the match:	
Home team	Team A	Team A	950
Away team	Team B	Team B	1200

Points at stake:

	in Percent	Absolut
Team A	7.0%	66.5
Team B	5.0%	60

Scenario I: Home team wins

Team A :	950 + 60 (team B stake) =	1010
TeamB :	1200 - 60 (team B stake) =	1140

Scenario II: Away team wins

Team A :	950 - 66.5 (team A stake) =	883.5
TeamB :	1200 + 66.5 (team A stake) =	1266.5

Scenario III: Draw

Team A :	950 - 66.5 (team A stake)+ 60 (team B stake) =	943.5
TeamB :	1200 - 60 (team B stake)+ 66.5 (team A stake) =	1206.5

Appendix II: Second example of the Powerscore calculation

Home/Away Team:		Powerscore before the match:	
Home team	Team A	Team A	40
Away team	Team B	Team B	38

Calulation of after match Powersc Previous Powerscore +/- Margin (Winning team + ; losing team -)
Calculation of Margin: (-1*(Home_Advantage) + (Home team goals - Away team goals))/10
Calcultaion of Home_Advantage: 0.2 + (previous Powerscore of Home team - previous Powerscore of Away team)

Scenario I:		Scenario II:	
	Goals		Goals
Team A	5	Team A	4
Team B	3	Team B	1

Home_Advantage:	2.2	Home_Advantage:	2.2
Margin:	-0.02	Margin:	0.08
Powerscore after Match:		Powerscore after Match:	
Team A	39.98	Team A	40.08
Team B	38.02	Team B	37.92