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Managing victory

The effects of managerial change on performance - an analysis in the world of football

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Thesis submitted to obtain
the degree of

MASTER OF BUSINESS ECONOMICS
Major International Business, Strategy and Innovation

Promoter: Prof. Dr. Toivanen
Assistant: Jurriën Bakker

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The effect of a managerial change on performance is the subject of ongoing debate in both the world of sports and the science of management. No general consensus has arisen just yet and all directions of an effect – positive, negative and insignificant – have already been suggested. Despite the popularity of sports settings for research, one particular area remains unstudied. We study the effect of CEO changes in football. Both CEO changes in business and managerial (i.e. coach) changes in football have been studied in the past. Our aim is to build a bridge between both streams of research. Besides our general research question - the effect of a CEO change on performance - we want to study how these effects differ according to type of change, country and club size. The data set consists of over 100 clubs, 59 of them experiencing a managerial change between the year 2000 and 2014 while taking part in one of the six competitions we study. We use a matching technique to do a difference-in-difference analysis and run regressions to check the robustness of our findings. These findings reveal that a CEO change does not have a significant impact on performance.

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Content

1. Introduction

How does managerial change affect performance? Recently, football's upper management has received considerable attention and has been under increased scrutiny from press and fans. In order to answer the question above, specific data concerning performances and managerial changes are required and often these data are elusive to researchers. In the world of football, however, managerial change is better documented and performance is more easily assessable. An additional advantages is that here, organizational structures and objectives are similar in most cases. Therefore, in this study we focus on managerial changes in football. In particular, changes in CEO in the 21st century in the British Premier League, La Liga, Ligue I, the Bundesliga or Serie A. These five competitions are considered the five biggest competitions in the world in terms of turnover and reach (Deloitte, 2013). The Dutch Eredivisie was added as well to improve statistical significance and generalizability.

Despite widespread interest in this debate, empirical research is scarce. Most research either focuses on the football manager – the coach - thus ignoring upper managerial changes, or studies CEO change outside the world of football. This paper aims to combine both streams of research. We believe that the effects of changing coach tend to be visible substantially faster than the effects of other managerial changes since the coach is immediately able to influence tactics, whereas the effects of the CEO's decisions concerning the general strategy of the club only become apparent after some time.

Most previous team sports studies have focused on the effects of changing coach and although no general consensus has arisen, it appears that changing coach either impacts negatively upon performance or has no significant effect on performance. Audas, Dobson and Goddard (2002) argued that football teams that changed management within-season experienced a downturn in results for three months. Grusky (1964) came to a similar conclusion when studying baseball teams: within-season succession by outsiders decreased performance. Also studying baseball teams, Gamson and Scotch (1964) argued that succession had no relationship with performance. This point of view was later on confirmed by Brown (1982), who studied 26 professional football teams. Research where managerial change was said to be followed by a positive impact is scarce and either criticized or marginalized. For instance Koning (2003) first argued that managerial succession was followed by an ameliorated performance but nuanced this notion later on in his paper. He argued that when one takes into account the differences in order of play, no significant improvement in performance is apparent.

Flint, Plumley and Wilson (2014) concluded that managerial change does lead to an increase in points. However, they pointed out that this increase in points does not automatically translate into an improved final league position.

When reviewing the literature on CEO change, a different belief seems to prevail. Here it is often argued that top management dismissals do lead to improved performances. The highly influential research paper by Denis and Denis (1995) concluded that in case of forced resignations, performance decreased significantly preceding the managerial change and increased significantly afterwards.

In case of retirements, no significant decline was apparent foregoing the managerial change and only a minor increase in performance was displayed after the succession. Later on, Leker and Salomo (2000) confirmed these beliefs. Interestingly, they claimed that the effects of CEO change are only significant for at most two years after the change. Trow (1961) suggested that organizations that plan for succession increase their performances. Unfortunately, data on the extent to which football clubs had planned their succession is impossible to find.

Whether inside or outside succession is most beneficent remains unclear. There is, however, some consensus: in general, outside succession leads to bigger changes. The issue is that these changes can at times be disruptive (Zhang & Rajagopalan, 2010).

The few studies in sports that focus on upper managerial change tend to believe that in team sports, the coach has substantially more impact than for instance the general manager. In addition, the general manager has significantly less impact in team sports (e.g. football) than in individual sports (e.g. baseball) (Brian, 2013).

As should be clear by now, an issue rarely addressed in literature on sports is the effect of CEO succession. Our study aims to shed light on this neglected part of literature. Specifically, the key research question is: How does CEO change in football affect the performance of a team? In addition, the following sub-questions are posed:

1) Do the effects of managerial change vary according to the type of change?
2) Do the effects of managerial change differ or do they converge geographically?
3) What is the impact of club size/ranking on the effects of managerial change?

Sub-question 1 concerns specific types of managerial change. Three types of managerial change were included in this research: insider succession vs outside succession, managerial change accompanied by coach dismissal and managerial

change accompanied by a substantial increase in transfer expenditures. Note that these categories are neither exclusive nor exhaustive.

Building on conclusions from previous research, we argue that CEO succession generally increases performance, although the magnitude of this increase remains unpredictable. If anything, we are led to believe that the effects are of a lesser magnitude than those of a change in coach. Therefore, we hypothesize as follows:

Hypothesis 1:
CEO succession has a minor positive impact on team performance.

Furthermore, we suggest that the extent of this increase depends heavily upon the type of managerial change. In case of outside succession, a bigger change is expected than for inside succession – regardless of the direction. When managerial change is followed by an increase in transfer expenditures, a substantial increase in performance is expected although this effect might only become truly visible after a few years. For the clubs where CEO change is accompanied by managerial (coach) turnover, it could be that the negative effect of changing coach overturns the effects of CEO succession. To conclude, we hypothesize as follows:

Hypothesis 2a:
The effects of CEO succession on performance vary according to the type of managerial change.

Geography and club size too should impact upon the extent of the effects, although the direction of this impact is currently unclear. Hence, we hypothesize as follows:

Hypothesis 2b:
The effects of CEO change on performance differ geographically.

Hypothesis 2c:
Club size has an impact on the effects of CEO change on performance.

The main source of data will be transfermarkt.com. This website provides information about team performance, staff change (often including CEO change), transfer expenditures, … In addition to this, newspapers and club websites will be used to determine the type of managerial change.

In order to measure performance, the results of a team were recorded for a period of up to seven years: two years before the managerial change and two to five years after the managerial change.

As mentioned before, note that previous literature suggests that the effects of CEO change are only significant for no more than two years (Leker & Salomo, 2000). Nevertheless, we included additional data in an attempt to potentially come across different results. Our focus will be on the amount of points earned in the domestic competition. Changes will be categorized according to the type of managerial change and dummy variables will be employed to do so. Furthermore, dummy variables will be applied to distinguish between different club sizes – measured as the average league position over the two to five years prior to the managerial change – and to indicate the club's country of origin.

We'll be employing a matching technique using nearest neighbor estimators and a difference-in-difference analysis. This should allow us to study the effect of a CEO change by comparing clubs that did change CEO with similar clubs that did not. Afterwards, regression models will be used to test whether our findings hold. A first model will focus on general managerial change and a second model will distinguish between the different types of managerial changes. In addition, regressions will be ran to study the significance of the country and club size dummies.

Section 2 presents a more elaborate overview of the already existing literature. Section 3 describes the data collection and lays out the methodology. Section 4 discusses the results, section 5 provides a conclusion and section 6 presents an outlook.

2. Literature review

This section attempts to discuss the foundations we will build upon. Research on managerial succession and related changes in performance is widespread. Furthermore, much of this research is situated in the world of sports. Nevertheless, research on CEO turnover in football appears to be a niche research area close to non-existent. First, we briefly discuss the three main theoretical streams that dominate contemporary research on managerial turnover. The second subsection focuses on management changes in non-sports related organizations and the final subsection presents research on managerial turnover in sport organizations.

2.1 Dominant theoretical streams

One of the key questions in the literature is whether managerial change has an effect on performance and whether this effect is positive or negative. Three theoretical streams seem to dominate this managerial turnover literature.

First, and most straightforward, is the common sense theory (Gorden & Rosen 1981). This theory argues that managers, CEOs, … are hired because their abilities allow them to improve the performance of an organization. This is the most positive theoretical stream since it argues that managerial change is supposed to improve performance. Closely linked to this theory is the concept of organizational learning: managers need time to learn about the organization before they are able to truly make a difference in terms of performance. This can in part be explained by the concept of time compression diseconomies (Dierickx & Cool, 1989):it takes time for managers to understand the functioning of an organization, come to conclusions about the problems that need to be tackled and collectively decide on how to deal with those problems. In light of organizational learning, Crossan, Lane and White (1999) presented the four i's that are important for organizational learning to take place: "intuiting, interpreting, integrating, and institutionalizing". Organizational learning allows for effective strategic change to take place.

A second theoretical stream believes in the phenomenon of ritual scapegoating (Gamson & Scotch, 1964) and is particularly relevant in the world of sports. Unlike common sense theory (cfr supra) or vicious circle theory (cfr infra), this theory advocates that there is no causal relationship between managerial turnover and performance. Here, it is argued that the only true reason for managerial change is the signaling function it offers: by firing the coach or manager, the board is showing that they are aware of the fact that the current situation needs improving and that they are working on it.

Gamson and Scotch (1964) argued that in sports, the short term performance is determined by the current players abilities and that the long run performance is affected more by upper management levels than by the coach. In most of the literature on managerial change in sports, this implied that the ritual scapegoating theory was correct when there was no significant difference in performance after managerial change took place since most of the literature focused on the coach being fired. In our case, however, this is not true because we are researching the CEO who is substantially higher in the organizational hierarchy. Gamson and Scotch (1964) believed that the CEO will have a substantial influence, yet they did not test this hypothesis. Therefore, our research might be able to confirm Gamson and Scoth's believes or we might be able to extend their theory of ritual scapegoating to upper management levels as well; arguing that even CEO change is actually ritual scapegoating.

The last theoretical stream is based on the vicious circle theory (Grusky, 1963): succession has a negative impact on performance. The vicious circle refers to the situation where a firm changes management in response to poor performance, leading to even more poor performance, potentially leading to a new managerial change and so forth. The reasons for the negative impact are suggested to be the disruptive effects and subsequent organizational instability caused by the managerial turnover.

2.2 Managerial change outside of sports

The importance of the CEO has been subject to debate as well and Mackey (2008) presented findings which show that the influence of CEOs should not be underestimated and explains a substantial part of a firm's performance variance. Carnall (2007) agreed with this notion and stressed the importance of an "organization-wide approach" (Carnall, 2007, p. 46). Additionally, he highlighted the fact that all employees are involved in change and should be managed appropriately (by the new CEO). Furthermore, Trow (1961) pointed out that, apart from the aspects discussed below, planning for succession also impacts upon performance. When succession takes place without planning, subsequent decreased performances are likely.

Research on managerial succession outside of sports seems to focus on two core topics. The first is the direction of the impact of managerial change on performance, which is considered positive in most cases thus disproving the vicious circle theory and the scapegoating theory. The second topic concerns the distinction between inside and outside successors.

2.2.1 Positive impact

Interestingly, most research on the effects of managerial turnover on corporate performance seems to report somewhat converging findings: performance increases after managerial change. Leker and Salomo (2000) studied German companies who experienced CEO turnover between 1987 and 1993. Out of the 274 companies that were looked at, all of whom major companies in the industrial sector, only 120 had experienced a managerial change within the given timeframe. A questionnaire, which included questions about the type of managerial change, was sent to all those that had experienced a managerial change and 88 of the 120 companies responded. These were the companies that were studied: all companies were classified (e.g. voluntary vs involuntary CEO turnover) and both performance before and after the change were looked at.

Leker and Salomo (2000) explained managerial turnover through agency theory (Jensen & Mecklin, 1976), also known as the principal-agent problem. This problem refers to a situation where the principal employs the agent. In addition to the goals of the principal, the agent also strives to achieve its own goals (e.g. not putting in too much effort or making sure that his job is never in danger). The principal then faces issues related to the fact that he is not able to supervise all actions taken by the agent, i.e. "the actions taken by the agent are inherently nontransparent"(Leker & Salomo, 2000, p. 2). It is then argued that when the discrepancy between expected and actual performance is too large, the principal will often fire the agent since he is not able to observe the true actions and effort put in by the agent.

The findings of Leker and Salomo's research (2000) confirm this theory: performance deteriorates prior to managerial change and improves afterwards. One remark, however, has to be made: the performance is affected by "discretionary actions taken by the CEO" (Leker & Salomo, 2000, p. 13). Therefore the 'real' effects, although still apparent after controlling for those discretionary actions, are substantially smaller than the effects originally reported.

Finally, Leker and Salomo (2000) distinguished three different periods: two years before the managerial change (i.e. the downturn), the period immediately after the change (i.e. the adjustment period) and the two years after this period (i.e. the consolidation). Note that the learning effects discussed above primarily take place during the adjustment period. The findings suggested that the discretionary actions influenced both the first and the last phase. Additionally, a distinction was made between three different types of CEO turnover ("retirement, resignation and dismissal") but particularly resignations are less relevant to our research since they seem to occur less in football.

Although interesting, a critical reflection upon all these findings is necessary before we are allowed to integrate them into our own research. It could for instance be argued that the use of the agency theory is very useful in sports when studying coaches but to a lesser extent when studying CEO changes. Often when performance decreases, the coach is fired and the CEO is not. Nevertheless, if the president or owner of a club has the feeling that the CEO is not allowing the club to realize its true potential, the CEO might still be fired, thus still becoming subject to the principal-agent problem.

Denis and Denis (1995) came to conclusions similar to those of Leker and Salomo (2000). They too proposed that performance increases after managerial turnover. Additionally, they made a distinction between forced resignation and retirement. Substantial decreases prior to managerial change and significant increases in performance afterwards seem to be what characterizes forced resignations whereas retirements don't appear to show deteriorated performances before and only exhibit minor improvements in performance afterwards (Denis & Denis, 1995). These results seem to be consistent with the agency theory: managerial change occurs because performance is decreasing and improves afterwards. In the case of retirements, the managerial change was probably not initiated by the principal and accordingly those managerial changes do not display the pattern suggested by the agency theory.

Likewise, Huson, Malatesta and Parrino (2002) identified a downturn in performance prior to the managerial change and an improvement afterwards. They found that their performance variable, the operating return on assets (OROA), negatively changed in the years prior to the change and this negative change was significant at the 1% level. Interestingly, the positive OROA change after the managerial turnover was only significant after adjustments were made to take general industry and group trends into account. If a football competition were to change its competition format, similar adjustments would have to be made in our research.

Hambrick and Fukutomi (1991)'s research focuses on the temporal aspect of the effects of managerial change. Although not explicitly mentioned, Hambrick and Fukutomi (1991)'s findings are – at least partially – in line with the findings presented above. They too support the view that managerial change is followed by augmented performances, although they argue that after a while performances start to decrease again. According to their research, the process after the change includes five distinguishable chronologic phases: "response to mandate, experimentation, selection, convergence and dysfunction" (Hambrick & Fukutomi, 1991, p. 4). They argue that the highest performance is achieved somewhere in the middle of the five phases, thus leading to an inverse U-shaped performance graph.

Somewhat in line with these findings is Gabarro (1987)'s belief that all actions executed by a new manager that have a substantial impact on firm performance are done within the first 2 ½ years after the change. After that moment, only marginal improvements are made.

2.2.2 Inside vs outside succession

A number of studies have compared inside successors with outside successors and studied how this distinction relates to the amount and the direction of subsequent change. Inside vs outside succession is certainly relevant in the world of football where successors range from football layman - whose prior experience is solely in business - to seasoned professionals who know their club inside out and have experience in playing and/or coaching football as well. We will first discuss the advantages and disadvantages of hiring outside successors before moving on to a discussion of the literature on the effects of hiring either an inside or outside successor.

It is often suggested that outside successors facilitate strategic transformations (Zhang & Rajagopalan, 2010). Karaevli (2007) highlighted the fact that new outside CEOs place less value on the current status quo and are more "cognitively open-minded". Moreover, outside successors don't have the tenure inside successors have and according to the upper echelon theory (Finkelstein & Hambrick, 1996) company tenure, along with industry tenure, is the most pronounced "source of strategic inertia in a firm"(Karaevli, 2007, p. 8). On the other hand, outside successors do cause increased disruptive effects (Zhang & Rajagopalan, 2010) since they require more time to become familiarized with the company's functioning etc. than inside successors do. Furthermore, the risk associated with hiring an external CEO is higher since there are more uncertainties with regard to his abilities, knowledge and expertise (Karaevli, 2007).

Zhang and Rajagopalan (2010) studied 193 CEO turnovers that took place between 1993 and 1998. They too discovered an inverted U-shaped relationship. However, instead of time being denoted on the x axis (cfr supra, Hambrick & Fukutomi, 1991), they used the degree of strategic change. Accordingly, performance was optimal in cases of moderate strategic change. Interestingly, this effect differed between inside and outside successors: outside successors displayed more steep increases in performance up to the optimal point and more steep decreases afterwards. Strikingly, these differences are only significant after the first three years. It can be argued that inside succession is the 'safe bet' whereas outside successions are more risky but can also lead to superior results.

In contrast to Zhang and Rajagopalan (2010) and most other researchers, Karaevli (2007) employs a continuous variable instead of a dummy variable to represent CEO 'outsiderness'. The continuous variable increases as the CEO becomes more different from his predecessor. This variable can for instance take industry expertise into account and is able to distinguish between inside successors who resemble the previous CEO in many ways and inside successors who follow a completely different approach. Karaevli (2007) believes the continuous variable overcomes the issues related to different conceptual definitions being employed in different studies. It is, however, worth questioning whether this can lead to a situation where an outside CEO has a lower coefficient on the 'outsiderness' variable than an inside CEO and whether this would not lead us away from the essence. In our research, dummy variables will be employed because of practical issues. The results of this study propose that the impact of outside vs inside CEO depends on the performance preceding the change (Karaevli, 2007). Outside CEO successors have a more significant, positive impact upon performance when performance was low before the change. To illustrate this, Karaevli (2007) employed an interaction term between the firm's performance before the managerial change and CEO 'outsiderness', which showed great statistical significance ($\beta = 0.6$ and $p < 0.001$)

Likewise, Huson et al. (2002) argued that outsider dominated boards improved performance in a statistically significant manner after managerial turnover. Case studies by Greiner and Bhambri (1989) are consistent with these findings. They believe that CEOs do make a difference and are able to improve organizational performance. The extent of this improvement does, in part, depend on whether a CEO is an insider or an outsider. By drawing upon successful examples from the past (e.g. Sculley of Apple), they present support for outside succession, particularly when major changes are required. Finally, Helmich and Brown (1972) too support outside succession, although their research focuses on a different aspect. Instead of performance, they focused on the amount of change. Firms where outside succession took place are expected to displayed a greater extent of organizational change (Helmich & Brown, 1972). Additionally, when explaining poor performances by outside CEOs, they draw upon the concept of social capital and argue that insiders have already accumulated firm-specific social capital before taking the position of CEO whereas outside CEOs might experience resilience from subordinates who were also hoping to become CEO.

However, not all researchers seem to believe in the importance of a distinction between inside and outside successors. Beatty & Zajac (1987) argued that the differences between both types are exaggerated and that, if there is a difference, this difference is only minor and not statistically significant.

2.3 Managerial change in sports

Much of the literature on managerial change is situated in sports. Researching sports has both benefits and drawbacks. First of all, the amount of data available to sports researchers is enormous and of great quality. Every weekend, thousands of games are played and the results are shared with the rest of the world immediately. Thanks to the rise in technology, data on several relevant statistics are gathered every single game. These data, as well as the standard performance data (points earned, win/loss ratios, league position,…) are objectively verifiable. Recall from Leker and Salomo (2000)'s research that in their case, managers were able to undertake discretionary actions to influence the performance measure they used (OROA). This can't happen in sports as long as the performance measure focuses on the performance 'on the pitch'. Additionally, the sports environment has been argued to resemble a laboratory setting, facilitating the testing of hypotheses (Wolfe, Weick, Usher, Terborg, Poppo et al. 2005).

Wolfe et al. (2005) researched how the field of sports could benefit organizational studies. They proposed that football teams produce a performance, just like other organizations produce e.g. a product. Quignon and Vettori (2012) argued that sports organizations resemble in particular firms competing in a certain competitive environment: the red ocean (Mauborge & Kim, 2005). Sport games are won by details and – although there are more and less talented players and coaches – the options available in terms of players and tactics are rather limited. Teams competing for a similar spot in the ranking tend to have players with more or less the same abilities and coaches with the same, limited amount of different formations and tactical alternatives.

Despite the similarities just discussed, there are still some differences that raise questions about external validity. If external validity is threatened, then this can be considered a serious disadvantage since most of the research is done to benefit all organizations, not just sport clubs. When discussing the differences between performance and production teams, Wolfe et al. (2005) stated that performance teams place a higher emphasis on ability whereas production teams place more value on effort. Furthermore, due to the increase in free agents, the reduced club loyalty of players and the ever growing transfer expenditures, football teams are showing less and less resemblance to permanent teams. The shift to temporary teams makes football teams comparable to flight crews (Wolfe et al., 2005) where individual relationships among team members are less important since they won't be spending that much time together. Although it is clear that players' mobility has increased, Rossi, Thrassou & Vrontis (2013) emphasize that relationships between players, the player and the team, the player and the coach, … should still be considered aspects that set sports organizations apart from other organizations.

Fans pose an additional challenge to football coaches and CEOs. Fans are often able to influence managerial decisions (cfr the scapegoating theory) and since results are objectively verifiable and immediately visible, sports fans will express feelings of discontent substantially more than most product fans.

More importantly and particularly relevant for our research, Wolfe et al. (2005) put forward the idea that the players in performance teams have a bigger impact on the total performance than members of production teams do, where the impact of upper management is more important. Cruickshanka & Collinsa (2012) explained that players in sports teams have more power as well because of their incredibly high wages, both absolute and relative to their superiors. This suggests that it might be the case that CEOs only have a minor impact on performance relative to both players and coaches. This view can be extended by drawing on Bryan (2013)'s research: he compared the NFL and the MLB and made the logical assumption that baseball (competition: MLB) is a more individualistic sport than (American) football (competition: NFL). His research concluded that in team sports (NFL) the GM has substantially less impact than in a more individualistic sport and substantially less impact than the head coach. This too confirms our previous suggestion that the effects of changing CEO in football (which can be considered a team sport just like American football) could be rather minimalistic.

Out of all sports, football clubs are considered the most representative of organizations, resembling non-sports related organizations in several ways. Quignon and Vettori (2012) extended this notion by arguing that football clubs can and should be viewed as "true global companies" (Quignon & Vettori, 2012, p. 21). Rossi et all. (2013) noted a similar trend and observed that, in part because financials are becoming more important, sport clubs are starting to have a structure and functioning very similar to that of actual businesses.

Having discussed the advantages and disadvantages of using sports in research as well as the similarities and dissimilarities between sports and business, we now turn our attention to the bulk of the literature. The following subsections discuss the advocates of the three main theoretical streams (cfr supra). Contrary to research outside of sports, much debate is still going on here and no general consensus has arisen about the direction and magnitude of the effects of managerial change on performance. Note that most of this research focuses on managers (i.e. coaches), not CEOs.

2.3.1 Vicious circle theory in sports

Grusky (1963)'s highly influential work on managerial succession favours the vicious circle theory. After studying the MLB's baseball teams for over 25 years (1921-1941 and 1951-1958), he concluded that there is a negative correlation between managerial turnover and performance. This correlation was even greater in the second, more recent period. Several factors influence organizational effectiveness and according to Grusky (1963), three factors have a direct influence on organizational effectiveness: clientele support, managerial role strain and particularly manager's expectation of replacement. All these factors are in turn also influenced by the organizational effectiveness, i.e. the relationship runs both ways. Contrary to our research, Grusky (1963) used league standing as the performance measure instead of points earned. Both measures have their advantages and disadvantages, which will be discussed in the section on data collection (cfr infra).

After Gamson and Scotch (1964) had commented on Grusky's paper (1963) and dismissed his theory (cfr infra), Grusky (1964) responded with some interesting statements. He argued that, contrary to the believes of Gamson and Scotch (1964), the disruptive effects would be the biggest in case of between-season managerial changes. Although somewhat controversial, he makes an interesting point. The main reason for this difference is that mid-season managerial changes are often cases of insider succession and the disruptive effects are considerably bigger in case of outside succession (Grusky, 1964). It can, however, be argued that this does not completely disprove Gamson and Scotch (1964)'s theory. Once controlled for insider vs outsider succession, within-season changes generally seem to be considered more disruptive than between-season changes. Additionally, Grusky (1964) disapproves of the techniques used by Gamson and Scotch (1964) to control for the slump-ending effect (they left out the two weeks prior to the managerial change). When using an alternative method (comparing the old manager's performances during previous seasons instead of during the season of the managerial change) he came to the conclusion that deterioration after the managerial change is more common - especially for outsider succession - and when improvement occurred, it was (almost) always a case of inside succession. This reiterated his beliefs in the vicious circle theory.

In line with Grusky (1964)'s findings are the findings of Allen, Panian and Lotz (1979): they too argued that outside successors cause more disruptive effects and that the frequency of managerial turnover impacts negatively upon team performance. However, their findings seem to suggest only an minor, yet still statistically significant, negative effect. Most of a team's performance is explained by prior performance (Allen et al., 1979). Contrary to their general findings, between-season changes are considered to improve performance.

Unlike the other studies discussed in this subsection, Audas, Dobson and Goddard (2002) focused on football. Their results are consistent with those discussed above: managerial succession harms performance. After a managerial change, it takes on average 16 games before a team is completely acquainted with a new manager and able to once again perform to its full potential (Audas et al. 2002). Audas et al. (2002) warn researchers for the problems associated with mean reversion. They propose that team performance converges to a mean and this convergence occurs both with and without managerial change and should therefore not be attributed to the managerial change. Moreover, the recovery from a performance downturn is negatively influenced by the presence of a managerial change (Audas, Dobson & Goddard, 1997). In addressing the issue of why clubs would then still opt to hire new managers, Audas et al. (2002) point to the increased variance in results after managerial turnover. When relegation is luring, club presidents are willing to take risks in order to remain in the competition. These presidents then probably reason that, although on average a club's performances decline after managerial turnover, the increased variances implies the chance for a substantial turnaround (Audas et al., 2002).

2.3.2 Ritual scapegoating theory in sports

Scapegoating theory is probably the theoretical stream that receives the least support since many argue that there will always be some – either positive or negative - effect. It does appear that most researchers, as well as most sports fans, agree that managers are at times fired for reasons that are actually not within their control. Nevertheless, most research seems to suggest that managerial turnover does have some impact.

Contrary to those researches, Gamson and Scotch (1964) support the theory of scapegoating (as well as the common sense theory to some extent) and disprove the vicious circle theory. They studied baseball teams and focused on twenty-two changes in management in the 1954-1961 period. The ratio of games won vs games lost was their dependent variable and they compared performance in the two weeks before, the game before, the two weeks after and performance at the end of the season. At first, their results indicated an improvement after managerial change. However, they argued that this improvement should not be attributed to the managerial change, but rather to the phenomenon of 'slump ending'. Slump ending is related to mean-reversion (cfr infra) and refers to the fact that most bad runs of form will eventually come to an end. Since most managers are fired after a period of deteriorated performance, performance tends to increase as the slump comes to an end. However, this performance improvement does not depend on the managerial change and is also apparent for clubs that did not change management (Gamson & Scotch, 1964).

These results are consistent with those of Brown (1982). He argued that, after controlling for several other factors including players turnover, no significant effect remains. Interestingly, the findings of Gamson and Scotch (1964) and those of Brown (1982) seem to converge despite the fact that the former focused on an individualistic sport (baseball) whereas the latter focused on a true team sport (American football).

The findings of Koning (2003) are somewhat in line with this. At first, he found a positive impact of managerial turnover on team performance. However, once differences in order of play were controlled for, this positive effect disappeared. This finding seems to correspond with a theory often suggested by football experts: if possible, upper management attempts to hire a new coach during a favourable period of the season. Thus, even if the new coach does not actually improve the team, fans will often still believe that he does improve the team since the team starts earning more points (because they are playing against weaker oppositions). This view fits perfectly with the scapegoating theory.

2.3.3 Common sense theory in sports

When studying English football manager turnovers in the 21st century, Flint, Plumley and Wilson (2014) came across some mixed findings. On the one hand, their research revealed that final league position was not statistically affected by managerial change. On the other hand, points earned per season did improve statistically under the reign of a new manager. Additional research also revealed that final league position did improve for clubs in the lower part of the table. Therefore, Flint et al. (2014) argue that in total, managerial succession does improve performance. Their distinction between high and low ranked teams will be researched in more detail in this thesis, where we distinguish not two but three groups in terms of league standing. One might argue that final league position is the most important performance measure since it determines who wins the title, who relegates and who is allowed to enter the European competition. Nevertheless, points earned seems appropriate to judge a club's performance since it is substantially less dependent on exogenous factors (i.e. the performance of other clubs).

In research on the German league, Frick, Barros and Prince (2010) found data supporting the common sense theory that managers are fired because of disappointing results and that the new manager should be able to improve performance again. In addition to performance before managerial change, Frick et al. (2010) highlighted the importance of the wages of both the players and the manager. It is suggested that the higher the wages, the faster managers are dismissed when performance is below-par.

This could imply that we find more cases of managerial succession in top teams because they often offer higher wages. Interestingly, they refuted the idea of a principal-agent problem (Jensen & Mecklin, 1976) in a sports setting for two reasons. Moral hazard is substantially less likely and the effort as well as the performance of both players and managers is more easily observable (Frick et al., 2010). Although interesting to the general discussion, this does not apply to our subject since the actual performance of a club's CEO remains unobservable.

Guermat, Hughes, Hughes, and Mellahi (2010) focused on the temporal aspect of the effects of managerial turnover. In general, their research supports long managerial tenures. Nevertheless, they present some results suggesting improved performance in the short run. Although performance deteriorates afterwards, these findings might still be of particular interest to clubs threatened by relegation who need a short term resurrection to remain in the league.

Finally, the article of Cannella, Gorman, Rankin and Rowe (2005) is of great relevance to our research. Cannella et al. (2005) researched data on managerial succession in the NHL for 60 years and included both coaches and general managers (GMs) in their research. They attempt to explain their findings through the concept of organizational learning (cfr infra) and the resource based view. The resource-based view contends that better resource management allows managers to establish a lower cost position, to distinguish its product offerings from rivals',… thus leading to an improved financial performance. A similar view can be employed in sports: more talented players allow managers to perform better.

Cannella et al. (2005) propose that all theories have some truth to them. In cases of within-season changes, the vicious circle theory is true and in cases of between-season theory, the scapegoating theory has their support. However, in the long run, they consider the common sense theory to be the correct one since managerial change does impact positively upon performance after a while. All findings are the same for both coaches and general managers. These three different cases are directly related to the concept of time compression diseconomies: a negative effect prevails in the short run, there's no positive nor negative medium term effect and in the long run after sufficient organizational learning has taken place, the positive effect overcomes the prior negative effects.

One peculiar finding stands out: Teams experiencing succession in the previous season performed better in the next season than both teams experiencing no managerial turnover (thus supporting the common sense theory) and teams experiencing between-seasons managerial change. This seems to confirm the idea that coaches and GMs need time to make a true difference. Cannella et al. (2005)'s logic behind this finding is that when coaches are able to work with the team during actual competitive games, they are able to get a better understanding

of which positions require strengthening. Likewise, the GM is better able to estimate the need for a new coach when he has seen the current coach perform in games that actually matter (i.e. non-friendly games).

2.4 Research methods

A plethora of research methods have been used. Regressions, probit models, logit models,… all have the support of some researchers. However, we decided to employ a matching analysis and more specifically a difference-in-difference analysis (cfr infra). Some other researchers have used a matching analysis as well. For instance, Leker and Salomo (2000) matched firms according to both industry and firm size. Studying baseball teams, Brown (1982) matched 'treatment' baseball clubs, i.e. clubs that experienced succession, with control clubs that did not experience succession within a given season. His main control variable was performance: clubs were matched according to their performance in the prior season. In cases of mid-season managerial changes, clubs were matched by performance prior to the change but still in the given season.

2.5 Author's contribution

As mentioned before, almost all previous research in sports focuses on coaches rather than upper management and none of the researches above focus on the CEO in football. Therefore we believe this thesis might offer a unique addition to the already existing literature. By studying CEOs, it is much easier to generalize to all CEOs in business, thus increasing our external validity. Furthermore, this research will be able to either confirm of disprove the presented theories about the importance of upper management in sports, thus making it relevant to the sports related organizational sciences as well. Finally, our research should be able to add some interesting distinctions to the already existing literature. We are the first to study inter-country differences and some of the distinctions in management change are novel as well.

3. Data collection and methodology

3.1 Data collection

To investigate CEO change in football, multiple sources of evidence were used. Nevertheless, our search was always structured in the same, methodological manner. Data were collected from a total of 106 cases, 59 of them experiencing managerial change. Some clubs were used more than once.

We limited our research to the 21st century (2000-2014) and included data from 6 competitions: the British Premier League (England), La Liga (Spain), Ligue I (France), the Bundesliga (Germany), Serie A (Italy) and Eredivisie (The Netherlands). The remainder of this section provides an overview of the data as well as a critical reflection upon our decisions concerning the data.

Points earned per season – not goals scored or club ranking - is our performance variable, the reasoning behind this decision will be discussed a few paragraphs later. We collected performance data before and after the managerial change. If possible, our timeframe was seven years: ranging from two years before the managerial change to five years after the managerial change. The observation unit that we used is a season. Additionally, we collected several dummy variables. Evidently, one of these dummy variables represented the presence of a managerial change. We included a variable indicating in which year this managerial change took place or, when no change took place, which year was chosen as the zero-point. Afterwards, we went into greater depth for the managerial change variables as well: we added dummy variables for: inside succession, a managerial change accompanied by the firing of the coach and managerial changes where transfer expenditures increased substantially. Last, we included dummy variables for the competition the club was playing in, whether this was a competition with 18 or 20 clubs and dummy variables to distinguish between top clubs, averagely placed clubs and bottom clubs. The actual data collection procedure, the criteria that were used and an explanation for each variable can be found in appendix 1.

To find all the data concerning points earned per season, transfer expenditures per season, a club's placement during any season, who was coaching the club at any time in the past,… we used transfermarkt.com. We only used other sources for two variables. For data on managerial changes, we used transfermarkt.com, news reports and club websites. Second, for information about inside or outside succession, we relied on multiple sources including news reports, club websites and sites offering a career overview of a particular manager. A comprehensive overview of all the websites and news reports used to check for managerial changes and whether they were cases of inside or outside succession is given in appendix 2. Appendix 3 offers an overview of every variable that was used and its source.

We decided to focus solely on the CEO because the true value and contribution of certain other managerial functions appears to differ too much by country. Terminology also differs per country and we only want to compare managers with similar responsibilities.

Furthermore, because of our focus on the CEO we wanted to study the long-term impact of managerial change. That is why – contrary to most previous research – we decided to include season-level data instead of match-level data. It is worth pointing out that because we chose season-level data, we have substantially less worries over mean-reversion than most previous researchers have had. Mean reversion refers to the fact that badly performing teams tend to improve performance after a while and extremely well performing teams won't be able to remain as successful. It is argued that most teams regress towards a mean, regardless of the presence of managerial change. In this case, one should be cautious when attributing improved or reduced performance to a managerial change when it might just as well be because of mean reversion. We believe this phenomenon occurs substantially less on the season-level since points earned per season is a less volatile variable than points earned per game and less subject to luck. Moreover, most teams don't regress towards a mean over seasons but often earn roughly the same amount of points each season. Because of these reasons, we believe mean reversion is not a point of concern in our research, although we are aware of the fact that it might not have disappeared completely.

An alternative long-term performance variable would have been league position and this would have reduced problems concerning the comparability of leagues with a different number of clubs. Nevertheless, we believe that points earned per season is a better performance variable since it reduces the impact of certain external causes, e.g. when a club achieves a record amount of points but is trumped by another record-breaking performance by a different club. In this case, points earned does show an increase in performance whereas attained league position does not. Additionally, points earned offers more variation in terms of performance and we therefore consider it to be more informative. Our decision to include data for up to five years after the managerial change could be considered controversial. Leker & Salomo (2000) argued that the effects of CEO change only last for up to two years. The reasoning behind our enlarged timeframe is that we believe that certain effects might only become visible after some time.

Some might argue that the use of a dummy variable for placement is inappropriate. Although dummy variables generally offer less explanatory power, we believe they offer sufficient information in this case. The placement dummy variable is designed to distinguish between high, middle and low ranked clubs and although the distinction might seem arbitrary, it is in truth logical. The top six teams are competing for the title and the spots that allow a club to participate in a European competition (e.g. the Champions League). Teams below place twelve, on the other hand, are battling to avoid relegation. Therefore, we believe this distinction is correct and appropriate.

A last limitation concerns the dummy variable for transfer expenditures: the required percentages to check whether a significant increase in transfer expenditures took place are arbitrary (see appendix 1). An alternative would have been to use a variable denoting the change in terms of percentage in transfer balance or an absolute figure but this would unnecessarily increase the complexity of our model. Moreover, our dummy variable allows us to analyze the change in transfer expenditures in the two periods after the managerial change, taking into account exactly at what time the new CEO joined while the alternatives would imply that we compare transfer expenditures between different seasons. This way, at times, we would've been be attributing changes to a CEO who was not yet in place.

3.2 Methodology

As mentioned at the end of the literature review (cfr supra), we will be using a matching analysis and more specifically a difference-in-difference analysis. The aim of this set-up is to match clubs that did receive a treatment – in this case a managerial change – with clubs that did not receive a treatment, i.e. 'control clubs'. The key assumption here is that if the treatment club were not to receive the treatment, it would follow the same trend as the control club. After matching the clubs, the difference between performance prior to the managerial succession and after the succession is calculated. For control clubs, this is the difference in performance before and after the zero point, without the required occurrence of a particular event. Afterwards, the difference measured for the treatment group is compared with that of the control group, hence the name 'difference-in-difference analysis'.

The major reason why we chose this particular research methodology is because it suits the data. We only have a limited amount of data available to us. Given the limitations our data impose on certain methodologies, this research set-up seems to be the best option. Additionally, a difference-in-difference analysis is sometimes able to reduce selection biases. In our research, this is because we use both performance before and after the zero-point. Nevertheless, matching and difference-in-difference analyses have their limitations as well.

Finding a good match is one of the potential challenges of our research methodology. It is not always easy to find a good match, certainly in the world of football where clubs can differ on so many aspects. Another key challenge of matching analyses is that it is hard to assure that the conditional independence assumption holds, i.e. that both the difference in performance (= the outcome) and the managerial change (= the treatment) are independent conditional on the observables.

Furthermore, matching analyses are considered time consuming because of the time spent on the actual matching process. A drawback of difference-in-difference analyses is that they can induce a bias, we should beware of this and aim to minimize it as much as possible. For example, we should beware of the potential occurrence of the mean reversion bias. We argue, however, that because our analysis focuses on the long run and uses performance per season as performance variable instead of performance per game, mean reversion is less of an issue. Since our data seem to be rather balanced – out of the 59 treatment cases, 29 experienced a drop in performance prior to the managerial change and for 26 clubs, performance went up – we argue that it is not necessary to take serious measures to eliminate the phenomenon of mean reversion. Bertrand, Duflo and Mullainathan (2004) offered a solution to another tricky problem with difference-in-difference analyses. In most of these analyses, the data are serially correlated and they revealed that it is of great importance to correct for the resulting underestimations of the standard deviations.

To actually match the clubs, we'll be using the Mahalanobis distance metric. This formula is designed to minimize the difference between a unit of the treatment group and a unit of the control group. The Mahalanobis distance metric looks as follows: $d(p,q) = \sqrt{S^{-1}[(p_1 - q_1)^2 + (p_2 - q_2)^2 + \dots]}$ P is an entity that has received a treatment, q is an entity that has not. The subscript indicates the variable on which they are being compared and S^{-1} is the inverse of the covariance matrix. We chose the Mahalanobis distance metric over the Euclidean distance metric ($d(p,q) = \sqrt{(p_1 - q_1)^2 + (p_2 - q_2)^2 + \dots}$) because it attempts to correct for the difference in scale between variables (e.g. Season's scale is substantially larger than that of the dummy variables) and takes the correlation among these variables into account. We did not want to put too much weight on the Season variable (cfr infra) and therefore we opted for the Mahalanobis distance metric.

In order to effectively match clubs, it is necessary for the matched clubs to be sufficiently similar. Therefore, we decided to opt for the following matching criteria:

- Country: if possible, we prefer clubs to be matched with a club from the same country/competition. If this is not possible, we prefer them to be matched to a club that is participating in a competition with an equal amount of opponents. The Bundesliga (Germany) and the Eredivisie (The Netherlands) have 18 competing teams, the other competitions all have 20.

- Comparable timeframes: we want the control club and the treatment club to be compared over a rather similar period, i.e. the difference (in years) between the zero-points should be minimal. On the other hand, we are

aware of the fact that matches where the zero-point is not the same for both clubs also have their advantages since this would imply less issues in terms of correlation. Therefore, we want to minimize the difference in years but we do not consider this a particularly important criterion.

- Similar performance: since it is possible that the extent of the effects depends on the performance, we prefer clubs to be matched to other clubs who earned a similar amount of points on average prior to the managerial change. Given that the variance in points earned is rather high, an alternative is to use the placement dummy variables (e.g. the team was part of the top 6).

In our matching and subsequent difference-in-difference analysis, we asked for exact matches on the variables 'bigcomp' and 'smallcomp'. This implies that a club is always matched with another club that takes part in a competition of equal size. In practical terms: teams from the Bundesliga and the Eredivisie will be matched to a team participating in one of those two competitions and teams participating in one of the four other competitions can't be matched to a team that participates in the Bundesliga or Eredivisie.

In our model, the first other matching variable was the placement of the team. Additionally, we included both season and country dummy variables. Note that because the placement and country dummy variables were used, two variables had to be omitted (e.g. Top6 and and the Netherlands) to guard against multicollinearity. This means that when for instance the placement dummy variables (top6, place 7-12 and place 13-20) are included in the model, only two of the three dummies are used and one is left out. We'll opt for a 1x1 matching method instead of e.g. a 1x5 matching method because we want our matches to be as accurate as possible. The difference between average amount of points earned before and after the zero-point is our dependent variable.

Afterwards, we'll do a difference-in-difference regression with the following formula:

$$\text{Points earned} = \beta T + \beta \text{After} + BT*\text{After} + \text{error}$$

T is a dummy variable that indicates whether the club is part of the treatment or the control group. After is a dummy variable that indicates whether we are studying a club's amount of points earned in a season prior or after the zero-point. T*After is an interaction term and the term we'll be most interested in: it indicates whether there is an effect of the treatment after the zero-point. Note that in order to run this regression, we had to rearrange our data, i.e. transform from wide to long. By doing this, we changed our data structure completely.

Instead of having one string of data per club, we suddenly had one string of data for every season per club. When, for instance, a club was studied for 6 periods, we will now study the club's performance in every period individually instead of taking the averages and subtracting them from each other. This drastically increases the amount of observations available since we no longer focus on an average but consider every season separately. Some variations of this analysis will be presented as well; we'll use different timeframes to study.

Last, we'll test the robustness of our findings by running several additional regressions. The basic formulation of these regressions is as follows: $\Delta P = c + \beta T + \beta$control variables, with ΔP denoting the difference in performance before and after the managerial change/zero-point, c being the constant and T representing the treatment dummy, i.e. whether a managerial change has occurred. Several control variables will be used; either separate, together or as an interaction. These control variables include: country, average league position (categorical variable), whether the coach was fired, whether transfer expenditures increased drastically and whether it was a case of inside or outside succession.

4. Results

This section presents the results from the matching analysis, the difference-in-difference analyses and the regressions ran afterwards. The results presented here will either allow us to confirm or disprove the hypotheses presented in the introduction. Since the dependent variable is the difference between the average performance before and the average performance after the zero point (i.e. the occurrence of a managerial change for the clubs in the treatment group), we will first present some summary statistics on this variable. Additionally, appendix 1 gives an overview of each variable's meaning.

Variable	Obs	Mean	Std. Dev.	Min	Max
Dif	106	.5570755	9.63935	-29.5	30.16667

Table 1a: summary statistics of Dif (= the difference between the average performance before and after the zero-point)

As table 1a indicates, the difference between the average performance before and after the zero point (= Dif) can differ substantially, it ranges from 29.5 (=Min) points worse to 30.17 (=Max) points better. On average, however, the difference is remarkably small: .55 points per season. Table 1b presents an overview of some summary statistics of our sample. Since the variables presented here are all dummy variables, we will only mention the count, i.e. the amount of times the variable equals 1 and the relative percentage compared to the total number of observation.

Variable	Count	Percentage
Number of observations	106	100%
ManChange	59	55.66%
England	17	16.03%
Netherlands	15	14.15%
Italy	11	10.38%
Germany	21	19.81%
Spain	19	17.92%
France	23	21.70%
BigComp	70	66.04%
SmallComp	36	33.96%
Top6	35	33.02%
MidClub	55	51.89%
LowClub	16	15.09%

Table 1b: summary statistics of the managerial change variable, the country variables, the variable for the size of the competition and the placement dummy variable

Now, we can present our findings concerning whether this mean differs between clubs that did receive a treatment and clubs that did not.

4.1 Results of the matching and subsequent difference-in-difference analyses

As discussed in the methodology section, we opted for a matching technique with a difference-in-difference analysis. The table below (see table 2) offers the following conclusion: a managerial change has an insignificant, negative effect on performance. This is somewhat in line with hypothesis 1 but it does not completely confirm the hypothesis. We hypothesized that a managerial change would have a minor (either small or insignificant) positive effect on performance but the table below shows a minor – even insignificant – negative effect.

As table 2 indicates; the managerial change coefficient is negative and insignificant ($z = -1.05$, $p > .05$). It seems that our matching has worked particularly well since we were able to match all the clubs with at least one other club.

Furthermore, not a single club had more than two equally good matches, which indicates that our matching criteria were sufficiently demanding.

```
Treatment-effects estimation                    Number of obs      =        106
Estimator      : nearest-neighbor matching      Matches: requested =          1
Outcome model  : matching                                   min =          1
Distance metric: Mahalanobis                                max =          2
```

Dif	Coef.	AI Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
ATE						
ManChange (1 vs 0)	-2.098192	1.998769	-1.05	0.294	-6.015708	1.819324

Table 2: the results of the difference-in-difference analysis after clubs were matched on season, country and placement

Our results do not change dramatically when we opt for different distance metrics or apply a 1x5 matching method instead of 1x1. This leads us to believe our findings are rather robust.

4.2 Results of the difference-in-difference regressions

We now turn our attention to the difference-in-difference regressions we conducted. Points earned in a given season was our dependent variable in every model. The first difference-in-difference regression is presented in table 3; it shows the basic regression that we mentioned in the methodology section with as only independent variables: the treatment dummy variable, the dummy variable that represented whether the season was before or after the zero-point and an interaction term of both variables. The number of observations (n=564) is drastically higher here than it is in the previous and next section because we are studying each season separately instead of focusing on the averages. The observation is now a single season whereas in the previous and next section, it was the average of all seasons. Our interest goes out to the interaction term and this term is clearly insignificant ($t(563) = -0.23$, $p > .05$)

Source	SS	df	MS		
Model	1154.68516	3	384.895052	Number of obs =	564
Residual	131395.74	560	234.635251	F(3, 560) =	1.64
				Prob > F =	0.1790
Total	132550.426	563	235.435925	R-squared =	0.0087
				Adj R-squared =	0.0034
				Root MSE =	15.318

Perf	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	2.885363	2.125756	1.36	0.175	-1.290066	7.060792
AfterChange	1.785079	1.995283	0.89	0.371	-2.134073	5.704232
InterAfterChange	-.6232216	2.683466	-0.23	0.816	-5.89411	4.647667
_cons	52.96809	1.579911	33.53	0.000	49.86481	56.07136

Table 3: the results of the difference-in-difference regression with performance as dependent variable and dummies for the treatment, whether the season was before or after the treatment and an interaction term between both as independent variables

As a way of both demonstrating the robustness of our findings and checking whether those who hypothesized that the effect of a managerial change was only visible for a limited time were correct, we ran two additional more regressions. The first regression (see table 4) shows the same model as the one used in table 3 but only studies the timespan from two seasons before to two seasons after the zero-point. Evidently, this implies a drop in number of observations (from n=564 to n=410). Although the interaction term exhibits a minor increase (in negativity), it remains insignificant (t(410) = -0.66, p > .05).

Source	SS	df	MS		
Model	551.805996	3	183.935332	Number of obs =	410
Residual	89701.0745	406	220.938607	F(3, 406) =	0.83
				Prob > F =	0.4766
Total	90252.8805	409	220.667189	R-squared =	0.0061
				Adj R-squared =	-0.0012
				Root MSE =	14.864

Perf	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	2.885363	2.062778	1.40	0.163	-1.169696	6.940422
AfterChange	1.943026	2.192096	0.89	0.376	-2.366249	6.252301
InterAfterChange	-1.95102	2.952704	-0.66	0.509	-7.755516	3.853477
_cons	52.96809	1.533105	34.55	0.000	49.95427	55.9819

Table 4: the results of the difference-in-difference regression with performance as dependent variable and dummies for the treatment, whether the season was before or after the treatment and an interaction term between both as independent variables. The observations were limited, ranging from two seasons before to two seasons after the zero-point

Table 5 goes even one step further and only includes one season before and one season after the zero-point. Although the interaction term increases in negativity once again, it is still insignificant (t(212) = -0.54, p > .05).

Note that the number of observations has reduced drastically (n=212) due to the fact that we only included one season before and one season after the change.

Source	SS	df	MS		
Model	120.531294	3	40.177098	Number of obs	= 212
Residual	47852.4263	208	230.059742	F(3, 208)	= 0.17
				Prob > F	= 0.9135
Total	47972.9575	211	227.359988	R-squared	= 0.0025
				Adj R-squared	= -0.0119
				Root MSE	= 15.168

Perf	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	2.027047	2.965503	0.68	0.495	-3.819248	7.873341
AfterChange	.8085106	3.128862	0.26	0.796	-5.359836	6.976857
InterAfterChange	-2.283087	4.193854	-0.54	0.587	-10.551	5.984822
_cons	53.61702	2.212439	24.23	0.000	49.25534	57.9787

Table 5: the results of the difference-in-difference regression with performance as dependent variable and dummies for the treatment, whether the season was before or after the treatment and an interaction term between both as independent variables. The observations were limited, ranging from one season before to one season after the zero-point

4.3 Results of the additional regression analyses

Afterwards, we conducted several regression analyses and their function was twofold. First of all, they should be able to confirm our findings regarding the insignificance of the treatment variable. Second, they should allow us to investigate several variables in greater depth and thus allow us to test the other hypotheses. In all of the regressions below, we included a constant term. An important difference with the previous section is that here, the dependent variable is the difference between the average performance before and the average performance after the zero-point whereas in the previous section it is simply the performance in one particular season. In both cases, performance was represented by points earned.

The first, basic regression is presented in table 6. It shows a regression with only one explaining/independent variable: the managerial change dummy. As could be expected, this dummy is insignificant ($t(105) = -0.20$, $p > .05$). Additionally, it is worth pointing out that the R-squared is remarkably low and the adjusted R-squared is even negative. This implies that this model does not explain any of the variance and is therefore not very useful.

Source	SS	df	MS	Number of obs =	106
				F(1, 104) =	0.04
Model	3.91289596	1	3.91289596	Prob > F =	0.8385
Residual	9752.37932	104	93.7728781	R-squared =	0.0004
				Adj R-squared =	-0.0092
Total	9756.29222	105	92.9170687	Root MSE =	9.6836

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	-.3867472	1.893288	-0.20	0.839	-4.141208	3.367713
_cons	.7723404	1.412504	0.55	0.586	-2.028708	3.573389

Table 6: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy variable for managerial change as independent variable

As shown in table 7, these results do not change significantly when the average performance after the change is calculated based on the average of two instead of up to five years after the zero point. The effect of a managerial change remains insignificant and negative ($t(105) = -1.08$, $p > .05$). This supports our findings in the matching analysis and helps us in responding to hypothesis 1: CEO succession does not have a significant effect on performance. Interestingly, the R-squared is almost thirty times as big as in table 6 and the adjusted R-squared is positive, which isn't the case in table 6.

Source	SS	df	MS	Number of obs =	106
				F(1, 104) =	1.17
Model	100.476258	1	100.476258	Prob > F =	0.2816
Residual	8919.59214	104	85.765309	R-squared =	0.0111
				Adj R-squared =	0.0016
Total	9020.0684	105	85.9054133	Root MSE =	9.261

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	-1.959791	1.810647	-1.08	0.282	-5.550372	1.63079
_cons	1.510638	1.350849	1.12	0.266	-1.168147	4.189423

Table 7: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy variable for managerial change as independent variable. Here, the average performance after the zero-point was calculated on the basis of the two years after the zero-point instead of five.

Before moving on to the more specific dummy variables, one peculiar finding is also worth presenting. Table 8 reports the findings of a regression where we opted for a lagged performance, i.e. the average performance after the zero point was calculated after eliminating the first year. This led to a reduced number of observations (from 106 to 94) since we were not able to find data for more than one year after the zero point for all clubs. Strikingly, although the managerial change remains insignificant ($t(93) = 0.83$, $p > .05$), it now suddenly has a positive

coefficient. The difference between the coefficient in table 7 is clearly significant: $t = \frac{1.896375-(-1.959791)}{\sqrt{\frac{2.278739^2}{94}+\frac{1.810647^2}{106}}} = 13.14$ ($p < .05$).

Source	SS	df	MS	Number of obs =	94
				F(1, 92) =	0.69
Model	83.8994575	1	83.8994575	Prob > F =	0.4074
Residual	11145.1937	92	121.14341	R-squared =	0.0075
				Adj R-squared =	-0.0033
Total	11229.0932	93	120.742937	Root MSE =	11.007

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	1.896375	2.278739	0.83	0.407	-2.629397	6.422146
_cons	.2751938	1.678478	0.16	0.870	-3.058409	3.608796

Table 8: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy variable for managerial change as independent variable. Here, the first year after the zero-point was excluded when calculating the average performance after the zero-point.

In hypothesis 2a, we suggested that the effects of CEO succession on performance vary according to the type of managerial change. In order to test this, we first ran an individual regression for every different type of managerial change and combined all changes afterwards. Since the conclusions remain the same, we will only show and discuss the latter (see table 9). The variables 'FinInj' ($t(105) = 0.80$, $p > .05$) and 'Insider' ($t(105) = -0.20$, $p > .05$) are clearly insignificant. The difference between both is insignificant as well ($F(1, 101) = 0.58$, $p > .05$). 'CoachFired', on the other hand, is already borderline significant on its own ($t(105) = 1.97$, $p = .051$). Strikingly, CoachFired is statistically significant at the 5% confidence level, firing the coach when changing CEO has an average positive impact of over five points per season. For some clubs, five points can be the difference between relegation and staying in the league or between champions and runners-up. One should, however, be cautious with these findings. This might be a textbook example of reverse causality: the coach was fired because performance was bad. In this case, the reason for the difference is not what happens after the zero-point but was had already happened before. A rather simplistic way to check whether this is the case is to compare the performance two seasons before the zero-point with performance one season before the zero-point. A pairwise comparison of means shows that teams where the coach is fired were performing less in the last season before the change compared to teams that did not fire their coach. The difference (2.175 points), however, was not statistically significant so although we should beware of reverse causality, it does not appear to be the case here.

Source	SS	df	MS	Number of obs =	106
				F(4, 101) =	1.10
Model	405.734319	4	101.43358	Prob > F =	0.3629
Residual	9350.5579	101	92.5797812	R-squared =	0.0416
				Adj R-squared =	0.0036
Total	9756.29222	105	92.9170687	Root MSE =	9.6218

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	-2.882166	2.640695	-1.09	0.278	-8.120596	2.356263
FinInj	2.329369	2.900733	0.80	0.424	-3.424905	8.083643
CoachFired	5.033341	2.551394	1.97	0.051	-.0279379	10.09462
Insider	-.501642	2.52192	-0.20	0.843	-5.504453	4.501169
_cons	.7723404	1.403489	0.55	0.583	-2.011805	3.556486

Table 9: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy variable for managerial change as well as the dummy variables for different types of managerial changes (inside vs outside succession, whether the coach was fired and whether transfer expenditures were increased substantially) as independent variables

Besides these general findings, two other peculiar findings stand out. First of all, as can be seen in table 10, the interaction between a financial injection (i.e. increased transfer expenditures) and the firing of the coach within six months after changing CEO is clearly positively significant ($t(105) = 2.44$, $p < .05$). On average, increasing transfer expenditures and changing coach after a CEO succession together increase performance with nearly eleven (10.77778) points.

Source	SS	df	MS	Number of obs =	106
				F(2, 103) =	2.99
Model	535.494807	2	267.747403	Prob > F =	0.0546
Residual	9220.79741	103	89.5223049	R-squared =	0.0549
				Adj R-squared =	0.0365
Total	9756.29222	105	92.9170687	Root MSE =	9.4616

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	-1.300118	1.887472	-0.69	0.492	-5.043474	2.443237
InterFinCoachF	10.77778	4.422927	2.44	0.017	2.005946	19.54961
_cons	.7723404	1.38012	0.56	0.577	-1.964801	3.509482

Table 10: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy variable for managerial change as well as an interaction term between the dummy variable for whether the coach was fired and the dummy variable that indicates whether transfer expenditures were increased substantially as independent variables

The second peculiar finding concerns the 'FinInj' variable. This variable represents whether the transfer expenditures were increased substantially when the new CEO arrived. In our introduction we suggested that the effects of increasing transfer expenditures might only become truly visible after some time because players need time to adjust.

Therefore we ran a regression using a performance measure that excluded the first year after the change, thus giving more weight to the long term performance. Although the coefficient increased, the difference is only minor and 'FinInj' remains insignificant ($t(93) = -0.87$, $p > .05$), as can be seen in table 11. In conclusion: not all the results presented concerning hypothesis 2a support the hypothesis nor do all results disprove it. Therefore, we believe our results indicate that the effects of CEO succession on performance vary according to the type of managerial change in some cases only.

Source	SS	df	MS	Number of obs =	94
				F(2, 91) =	0.73
Model	176.580303	2	88.2901513	Prob > F =	0.4862
Residual	11052.5129	91	121.456185	R-squared =	0.0157
				Adj R-squared =	-0.0059
Total	11229.0932	93	120.742937	Root MSE =	11.021

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
FinInj	3.020753	3.45804	0.87	0.385	-3.848219	9.889725
ManChange	1.067149	2.471267	0.43	0.667	-3.84172	5.976017
_cons	.2751938	1.680643	0.16	0.870	-3.063198	3.613586

Table 11: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy variable for managerial change and that for increased transfer expenditures as independent variables. Here, the first year after the zero-point was excluded when calculating the average performance after the zero-point.

Afterwards, we added an interaction term between each country dummy and the managerial change dummy to the first regression (see table 6) and this increased both the R-squared and the adjusted R-squared (see table 12). Nevertheless, the explanatory power of this model remains minimal. The managerial change dummy is still insignificant ($t(105) = -1.43$, $p > .05$) and none of the interaction terms is significant on the 5% confidence level – except for Italy ($t(105) = 0.019$, $p < .05$). Note that Germany has been eliminated to guard against the dummy variable trap. For instance the difference between Spain and Italy is clearly significant as well ($F(1, 99) = 4{,}13$, $p < .05$). It should be clear that this is not always the case: the difference between England, France and the Netherlands is particularly small. Therefore hypothesis 2b is supported only to some extent: there are differences between countries but not all countries differ significantly.

Source	SS	df	MS	Number of obs =	106
				F(6, 99) =	1.11
Model	616.570046	6	102.761674	Prob > F =	0.3602
Residual	9139.72217	99	92.320426	R-squared =	0.0632
				Adj R-squared =	0.0064
Total	9756.29222	105	92.9170687	Root MSE =	9.6084

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	-5.24109	3.674822	-1.43	0.157	-12.53273	2.050554
ManChange_x_ENG	4.676157	4.66882	1.00	0.319	-4.587794	13.94011
ManChange_x_FRA	6.197538	4.464619	1.39	0.168	-2.661234	15.05631
ManChange_x_ITA	12.38542	5.189103	2.39	0.019	2.08911	22.68172
ManChange_x_NET	5.411058	4.317595	1.25	0.213	-3.155987	13.9781
ManChange_x_SPA	2.624306	4.385593	0.60	0.551	-6.077662	11.32627
_cons	.7723404	1.401522	0.55	0.583	-2.008584	3.553264

Table 12: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy for managerial change as well as interaction terms between the dummy variable for managerial change and country dummy variables as independent variables

The last hypothesis to be tested is hypothesis 2c and concerns the impact of club size (as in ranking, e.g. top6) on the effect of a managerial change. Table 13 presents findings that do not seem to support hypothesis 2c, i.e. club size does not have an significant impact on the effects of CEO change on performance. The interaction term between 'LowClub' and the dummy for managerial change is close to significant ($t(105) = 1.73$, $p < .05$). 'Top6' and 'MidClub' are, however, clearly insignificant (for Midclub: $t(105) = 0.34$, $p > .05$) . Note that these results can't be presented in one table because of multicollinearity.

Source	SS	df	MS	Number of obs =	106
				F(3, 102) =	1.07
Model	296.332039	3	98.7773464	Prob > F =	0.3674
Residual	9459.96018	102	92.7447076	R-squared =	0.0304
				Adj R-squared =	0.0019
Total	9756.29222	105	92.9170687	Root MSE =	9.6304

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	-1.889765	2.487762	-0.76	0.449	-6.824229	3.0447
ManChange_x_MidCLub	.9359427	2.765982	0.34	0.736	-4.55037	6.422255
ManChange_x_LowCLub	6.340758	3.672892	1.73	0.087	-.9444072	13.62592
_cons	.7723404	1.404739	0.55	0.584	-2.013953	3.558634

Table 13: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy variable for managerial change as well as an interaction term between the managerial change dummy and the dummy variables for placement (whether a club was in the top 6, place 7-12 or 13-…) as independent variables. The highest placed clubs were left out because of multicollinearity.

If we include the interaction terms between country dummies and managerial change as well, the R-squared and adjusted R-squared increase substantially (see table 14), although both remain rather low.

The interaction term between Italy and managerial change remains significant ($t(105) = 2.51$, $p < .05$), the interaction term between 'LowClub' and managerial change is significant at the 10% confidence level.

Source	SS	df	MS
Model	952.800834	8	119.100104
Residual	8803.49138	97	90.7576431
Total	9756.29222	105	92.9170687

Number of obs	106
F(8, 97)	1.31
Prob > F	0.2465
R-squared	0.0977
Adj R-squared	0.0232
Root MSE	9.5267

Dif	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ManChange	-7.342559	4.138864	-1.77	0.079	-15.55706	.8719399
ManChange_x_MidCLub	.7698897	2.827275	0.27	0.786	-4.841468	6.381248
ManChange_x_LowCLub	6.866095	3.686254	1.86	0.066	-.4500983	14.18229
ManChange_x_ENG	4.403384	4.740371	0.93	0.355	-5.004939	13.81171
ManChange_x_ITA	12.95759	5.154158	2.51	0.014	2.728015	23.18717
ManChange_x_NET	6.041648	4.293452	1.41	0.163	-2.479666	14.56296
ManChange_x_SPA	3.768655	4.391503	0.86	0.393	-4.947263	12.48457
ManChange_x_FRA	7.254876	4.460672	1.63	0.107	-1.598323	16.10807
_cons	.7723404	1.389609	0.56	0.580	-1.985649	3.53033

Table 14: the results of the regression analysis with the difference between average performance before and after the zero-point (=Dif) as dependent variable and the dummy variable for managerial change, the country dummy variables as well as the dummy variables for placement (whether a club was in the top 6, place 7-12 or 13-…) as independent variables

5. Conclusion

In this section we will discuss the implications of our research, how these relate to the existing literature and reflect upon the limitations of our approach and how these limitations impact upon our conclusions.

5.1 General discussion

The first clear conclusion that our results presented is the fact that a CEO change does not have a significant effect on performance in our research. Based solely on these findings, we found support for the scapegoating theory although this remains disputable due to our limited amount of observations. Our findings are somewhat in line with the theory of Brian (2013): a coach has a bigger effect than a GM (Brian, 2013) or more generally speaking someone who is higher up the organizational hierarchy. This does not necessarily imply that a CEO has no impact whatsoever. First of all, a bigger population might have made our results less sensitive to outliers (cfr infra), thus making it easier to distill minor effects. Second, a CEO can have an impact on every aspect of the organization and we only studied one particular aspect (i.e. performance on the pitch). It is for instance possible that most of the CEOs we studied decided to focus on improving the financial performance of the company.

Moreover, a CEO can make decisions that have an impact on an even longer term than the one we studied. Several examples exist of visionary CEOs who for instance invested heavily in youth development, thus giving the club a competitive advantage and steady stream of both talent and income for decades.

The only time a managerial change exhibited a positive – but still insignificant - coefficient was when we opted for the lagged performance variable (i.e. calculated the average performance after excluding the first year after the zero-point). This is an interesting findings since it might be an indication of the fact that a change is disruptive at first but beneficial afterwards. Note that the managerial change dummy also had a positive coefficient in section 4.2, but here the relevant coefficient to look at is that of the interaction term (between managerial change and the dummy that indicated whether the season was before or after the zero-point).

Both insider succession and increased transfer expenditures did not show an impact on performance and we believe this is surprising, in particular for the increased transfer expenditures. Interestingly, however, when a new coach arrived and transfer expenditures were increased at the same time, the effect was substantial. Two potential explanations arise. First, one could suggest that the new coach might have actively participated in the discussions about potential transfer targets and was thus able to assemble a team that suits his skills and will perform better. The second explanation draws upon a remark made in one of the previous paragraphs. A CEO who hires a new coach and increases transfer expenditures is clearly devoting most of its attention to the performance on the pitch. It can therefore be argued that when a CEO focuses on this particular aspect, we will be able to notice considerable, positive effects. This, in turn, appears to support the common sense theory.

Firing a coach and hiring a new one within six months after changing CEO has a marginally insignificant / borderline significant effect. We therefore argue that hypothesis 2a can only be confirmed to some extent: differences exist according to the type of change but individually, every type of change was insignificant.

Surprisingly, Italian CEOs appeared to perform significantly better than several others. This confirms hypothesis 2b but only to some extent. The difference between several other countries is insignificant. Between-country differences make sense since every country has a different management culture. We should, however, not overstate the significance of this finding either. Because we only have a limited amount of data on Italian clubs, a few large outliers would be able to induce a substantial bias on the results.

Our findings concerning club size are more straightforward: only minor differences exist between low, middle and high placed teams. This does not supports hypothesis 2c. A CEO change is the most beneficial for low placed clubs. Interestingly, these findings seem to converge to some extent to what had been suggested about coach changes. In some previous researches it was argued that managerial change took place more often among teams in trouble (i.e. low placed teams) because of the increased variance, despite the expected outcome being negative. Here, however, the expected outcome for low placed teams is positive.

One last finding that is certainly worth discussing is that of the difference in R-squared and adjusted R-squared when we opted for the difference between before and after the zero-point as dependent variable. The R-squared indicates the explanatory power of a regression model. In our case, the R-squared was substantially larger when we opted for a performance measure going up to two years after the zero point ($R^2 = 0.0111$) than it was when we chose for a performance measure for up to five years ($R^2 = 0.0004$) or for a lagged performance measure ($R^2 = 0.0075$.). Additionally, the model in which we used a performance measure going up to two years after the change was the only one with a positive adjusted R-squared. This leads us to believe that the effects a CEO has on performance (as we defined it) are limited in time. Nevertheless, a managerial change does not exhibit a significant effect on performance in the first two years after the zero point.

5.2 Relevance in the existing literature

We believe our findings have relevance in several areas. First and most straightforwardly, they are relevant in the world of football. Our findings can help CEOs in football in understanding how a CEO can have an impact on the performance on the pitch. Furthermore, it highlights the performance of Italian CEOs in football and suggests that these CEOs have set an example that should be followed by those aiming to improve performance on the pitch. A second area of relevance is the sciences of management: our research was able to present findings of CEOs instead of coaches in sports, thus making it more interesting to generalize our findings to the world of business or study the differences between our findings and those of researchers who studied coaches.

As mentioned above, our results seem to either support the scapegoating theory or the common sense theory. Although insignificant, most of our results showed a negative effect of a managerial change. Therefore, we can't rule out the vicious circle theory completely either. If anything, this shows how difficult it is to give a uniform answer to a multidimensional question; the answer seems to depend on which particular aspect we are studying.

Our conclusions seem to converge to some extent with those of Flint et al. (2014): a managerial change does have a positive effect on performance for low ranked clubs. Differences existed between all three groups, although the difference between the two highest placed groups was only minor. One might argue that by distinguishing between only two groups, the true effect for the lowest placed groups is dampened. This illustrates the usefulness of our research set-up compared to that of Flint et al. (2014): a distinction in terms of placement between three instead of two groups of clubs seems preferable. The underlying logic is that a team placed in the middle of the table differs substantially from one at the bottom, fighting for relegation, or one at the top, battling for the tittle and the spots that give right to participate in a European competition.

Finally, our findings and those of Leker and Salomo (2000) have some common ground but also some areas of disagreement. The difference in R-squared seems somewhat in line with Leker and Salomo (2000)'s view in that the effects are more clear in the first two years after the change. Nevertheless, our findings suggest that the effect of a managerial change is minimal (i.e. insignificant) whereas Leker and Salomo (2000) believe it is significantly positive.

5.3 Limitations

Although we firmly believe in the quality and appropriateness of our research set-up, some limitations are certainly worth discussing. These limitations have an impact on our conclusions and we have identified some potential solutions that can be used in further research.

First and foremost, the peculiarities of the world of football impose some questions upon our research. Findings in the world of football cannot be transferred directly to the world of business without some critical reflection. The benefits and drawbacks of studies in the world of sports have already been discussed in the literature review (cfr supra). Since we are studying a CEO instead of a coach, some of the drawbacks already disappear. After all, a CEO in a football club is still a CEO managing some type of business. The range of goals a CEO in football attempts to meet remains an issue. As mentioned above, we focused solely on performance on the pitch and ignored the financial performance, the change in organizational structure and subsequent changes in a club's potential,… Therefore, in order to truly assess the impact of a CEO change, all other effects (e.g. the financial sanity of a club) should be measured as well.

Throughout all our regressions, one conclusion stood out. In every model, the R-squared was particularly low. This makes us question the value of our models. The issue in the world of football will always be the plethora of exogeneous factors that can't be taken into account and the many inter-club differences. Therefore, a low R-squared should not be too worrying.

Additionally, it should be clearly understood that the main aim of these models was not to be able to entirely explain the difference between performance before and after the zero-point. Rather, these models were included to check the robustness of our findings and help us in answering all sub-questions of hypothesis 2: whether there are differences between countries, differently placed teams and teams experiencing different types of change. Nevertheless, including additional explanatory variables might - at least to some extent - help overcome this limitation. We seem to lack explanatory variables and although it is very hard to come up with variables that explain the difference in performance, finding variables that do have substantial explanatory power would be a great addition to our research.

As mentioned in the first subsection, the limited amount of data and events recorded might be an issue. A bigger population would imply that our research would be less sensitive to outliers and potentially able to distill minor effects that would not be considered significant when the amount of data recorded is limited. The limited amount of data might have led to some significant data being reported as insignificant because of some outliers, the high standard deviation, … Clearly, it is very hard to collect data on every CEO change. We believe in order to overcome this limitation, the only solution is to spend a substantial amount of additional time on data collection. Additionally, we made an attempt to overcome this issue by rearranging our data set ("from wide to long") but our results remained the same.

Finally, we can link these limitations to the different sorts of validity. We believe internal validity is average: average points earned per season seems the most appropriate measure for performance on the pitch. It does, however, not take into account every type of performance (e.g. financial performance). Therefore, internal validity is only high when performance in clearly defined as only the performance on the pitch. External validity is average as well. As mentioned above, the peculiarities of the football world might make it hard to generalize our findings to other situations. On the other hand, the use of CEO change instead of coach change in sports already increases external validity substantially.

6. Outlook

As stated before, our main contribution comes from the fact that we were able to fill the void between research on CEOs in business and research in football on coaches by studying CEOs in football, which has been an unexplored research area up to now. Furthermore, we've been able to shed some light on how different approaches of new CEOs (e.g. firing the coach, investing in new players,…) impact upon performance.

Finally, the distinction between inside and outside successors is rather novel in the area of football since the bulk of newly hired coaches are outsiders.

We believe our research has opened doors for several other research questions. In general, a more extensive research on CEOs in football including more competitions, more control variables and a longer timeframe seems interesting. Increasing the amount of observations is paramount to improve the quality of this research. Research that combines a financial performance metric with an 'on the pitch'-performance metric could lead to novel, interesting findings as well. This would help us in getting a more complete overview of the impact of a CEO on performance in football. It should, however, be pointed out that it is not easy to find complete financial data for all clubs.

A completely different line of research that seems to deserve additional attention is that of Italian football CEOs. Since Italian CEOs appear to perform significantly better in terms of performance on the pitch than some of their foreign counterparts, we believe it might be of great interest to both researchers and CEOs in football to study these CEOs. Conducting some case studies should allow us to get an insight into what sets them apart from others. Note that, as mentioned before, our findings are based on a rather small data set. Therefore it might be recommendable to first find more data on both Italian and foreign CEOs and check whether the difference remains before conducting case studies.

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8. Appendices

Appendix 1

Our search for a club's managerial changes always starts at transfermarkt.com. This website offers you an overview of the current CEO's and when they were appointed (click on e.g. Arsenal -> History -> Staff -> CEO) . Unfortunately, this data is not available for every club. Therefore, step 2 differs according to whether we were able to find information on the latest CEO or not. Note that we do not limit our search to the last CEO but we use this as a starting point and if we find information on previous CEOs, we will go through a similar process for these CEOs as well. If we did find the necessary information, we would then search on Google.com for a news article with the key words: " 'club x' appoints CEO 'name of manager' " or – in case of non-English clubs when this didn't work - the translation of these key words. In the example of Arsenal this would be: "Arsenal appoints CEO Ivan Gazidis". The news articles or club websites we then find provide us with the date of the managerial change and often already mention whether it's a case of inside succession or not.

If there is no information on inside succession, an additional search is done. This search has the key words 'career' and the name of the manager (e.g for Arsenal and their CEO: "career Ivan Gazidis"). Inside succession is represented by a dummy variable with a value of 1 in case of inside succession. If we aren't able to find the current CEO's name on transfermarkt.com, we would go through the same procedure but we would just search for "new CEO" instead of using a particular name. For instance Liverpool's CEO is not mentioned on transfermarkt.com so we would then google "Liverpool appoint new CEO" and find out who the current CEO is, when he was appointed and often whether it was a case of inside succession or not. In almost all cases, this is sufficient. If, however, we aren't able to find the necessary information with these key words, we would just go to the club's website and look and their organizational structure. From that moment on, the process is the same as when we would find the name on transfermarkt.com.

The next step involves checking whether the managerial change was within our timeframe (2000-2014) and whether the managerial change happened while the club was in the first division. We already have the date of the managerial change from the previous step and to check whether the managerial change was when the club was in the second division we use transfermarkt.com again. For example for Arsenal: click on Arsenal -> History -> Placement, this offers an overview of a team's placement over the past twenty years and in which competition they were

for every season. Second and lower divisions are excluded because of two reasons. First of all, it is often the case that lower divisions contain more clubs, thus decreasing comparability. Second and more importantly, a club that is able to go from the second to the first division will probably earn less points because of the higher level of competition. This decrease in points would lead us to believe that a team is performing worse although they are probably performing at a higher level because they're in a better competition.

Additionally, we decided to exclude clubs who changed CEO multiple times during a short period (e.g. two CEO changes in subsequent years). We wanted to guard against an overriding effect where the effects of both managerial changes are present at a moment that we wanted to study. Remember that we are interested in the long term impact. Imagine for instance that a CEO change leads to an improved performance for two years, then the second CEO change might experience a twice as big improvement in the second years but only half of this effect is actually attributable to the last CEO change. A short period with multiple CEO changes won't be included as a control variable (cfr infra) either.

If the CEO change meets the above discussed requirements, performance data are included ranging from two years before the managerial change to up to five years (if available) after the managerial change. The exact amount of years included depends on the time spent in the first division, as just discussed above. The performance variable is represented by the amount of points earned per season in the domestic competition and these data are collected from transfermarkt.com as well. For example for Arsenal, we would click on Arsenal -> History -> Placement and here we are able to see how many points Arsenal earned in any season over the last twenty years. We just copy the data for the years we are interested in, being the two years before and (is possible) five years after the managerial change.

If the club decides to change coach within six months after changing CEO, the coach change variable has a value of 1. Once again, this information can be found on transfermarkt.com (e.g. For Arsenal, click on Arsenal -> History -> Staff -> Managers).

The transfer expenditure variable is less straightforward. The dummy variable for increased transfer expenditures is 1 when a club's transfer balance (expenditures minus revenues) in the season following the CEO change is 40% higher than the average balance over the past three years and 20% higher than the highest transfer balance of the past three years. A club's transfer balance can be obtained at transfermarkt.com (e.g. for Arsenal: Arsenal -> Transfers -> All transfers). We decided to use these particular percentages to account for the general trend of increasing transfer expenditures as well as the fact that a minor increase in transfer

expenditures would not be accountable to the CEO but simply to the volatility in most club's transfer expenditures. Note that although these are somewhat arbitrary numbers, the aim is simply to indicate whether transfer expenditures have increased substantially. In all but one case, the change in balance was clearly below or above the threshold we opted for.

If the CEO change does not meet the above discussed requirements, the data might still be included as control data. This means that the general CEO change dummy variable is 0. It is, however, worth pointing out that not all data are included. Only clubs who have been in the first division for at least three subsequent years can be included because we want to study a long term effect and need both a performance indicator for both before and after the zero point. The big challenge is to choose a moment in time that becomes the zero-point position. When a club was chosen in a period without managerial change, the attempt was to make sure that the studied period was removed at least two years from a prior or future CEO change. Moreover, if possible, a period without managerial – as in coaching – change was chosen (this too can be seen when looking at the placement overview) and we wanted a period as long as possible. Finally, given that the ultimate goal is to match these clubs with clubs that did receive a treatment, we opted for years in which similar clubs did experience a managerial change.

Stoke City, for instance, didn't experience a managerial (as in CEO) change since they entered the British Premier League. Given that they've only played in the British Premier League for six seasons, we marked the two first seasons as the seasons before the zero-point position and the other four seasons as the seasons after. Tottenham Hotspurs is probably a better example, they too didn't experience a CEO change for a while but in their case, we had more than seven years to choose from. In this case, we chose the zero-point position as a position where the coach wasn't just hired or about to be fired and a comparable club had experienced a managerial change. In this case the 2010/2011 season was chosen as the first season after the zero-point position because at that moment in time, Harry Redknapp had been Tottenham Hotspurs' coach for two seasons and he was only going to be fired two seasons afterwards. Moreover, Chelsea had experienced a CEO change at the start of the 2010 season.

The last step of the data collection includes some more dummy variables. Country dummy variables are used to study differences between competitions, a 1 in the dummy column of England for instance would represent the fact that the club takes part in the British Premier League. When a club takes part in either the Dutch or the German competition, they were labeled as taking part in a small competition (with only 18 clubs).

If a club took part in one of the other four competitions, a different dummy was used to indicate that they played in a bigger competition. In addition, position dummy variables are included to distinguish between differences in league positions of clubs. Three categories were used: position 1-6, 7-13 and 13-… The clubs were categorized according to their average league position over the past two to five years, depending on how long they had already been taking part in the first division. Once again, we used transfermarkt.com to gain this information. For example, for Arsenal: click on Arsenal -> History -> Placement, then take the sum of the league positions of the five years before the managerial change and divide it by five.

The table below shows each variable and its explanation:

Variable	Type	Explanation
Perf-2, Perf-1	Continuous	The amount of points earned in a given season before the zero-point.
Perf+1,Perf+2,…, Perf+5	Continuous	The amount of points earned in a given season after the zero-point.
AvgBefore	Continuous	The average amount of points earned in all the seasons before the zero-point: (Perf-2 + Perf-1)/2
AvgAfter	Continuous	The average amount of points earned in all the seasons after the zero-point: (Perf+1 +…+Perf+n)/n (with n equal to or smaller than 5)
Dif	Continuous	The difference between AvgBefore and AvgAfter
England, Italy,…	Dummy	This dummy equals one for England whenever the club takes part in the English competition.
SmallComp	Dummy	This dummy is one when the club takes part in an 18-club league.
BigComp	Dummy	This dummy is one when the club takes part in a 20-club league.
Top6	Dummy	When the club's average place in the raking over the past two to five years (depending on how long the club has been in the league) before the zero-point was in the top 6 of the league.

MidClub	Dummy	When the club's average place in the raking over the past two to five years before the zero-point was between position 7 and 12 of the league.
LowClub	Dummy	When the club's average place in the raking over the past two to five years before the zero-point was below place 12 of the league.
ManChange	Dummy	This means the club has experienced a CEO change within the timeframe we are studying.
FinInj	Dummy	This means transfer expenditures were increased significantly (criteria: cfr supra).
CoachFired	Dummy	This means the coach was fired within six months after a new CEO had arrived.
Insider	Dummy	This dummy equals one is the CEO is an inside successor.
Season	Continuous	The season in which the managerial change took place.

Appendix 2

The following news websites, club websites and biographical websites have been used when collecting the data:

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http://www.thenational.ae/sport/football/ferran-soriano-is-the-man-to-match-manchester-citys-ambitions

http://news.bbc.co.uk/sport2/hi/football/teams/m/man_utd/3091316.stm

http://www.isportconnect.com/index.php?option=com_content&view=article&id=19092&Itemid=483

http://www.evertonfc.com/content/club/board-of-directors/robert-elstone-profile

https://uk.linkedin.com/pub/keith-wyness/10/925/529

http://www.telegraph.co.uk/sport/football/competitions/premier-league/8398978/Liverpool-appoint-Ian-Ayre-as-managing-director-and-promote-Damien-Comolli.html

http://www.bbc.com/sport/0/football/29784107

http://www.bbc.co.uk/news/uk-northern-ireland-14075321

http://uk.linkedin.com/pub/steve-walton/19/998/322

http://investing.businessweek.com/research/stocks/private/people.asp?privcapId=877891

http://thealbionfoundation.co.uk/?page_id=4283

http://web.archive.org/web/20070708070059/www.pompeyfc.premiumtv.co.uk/page/ClubHistoryDetail/0,,10396~839834,00.html

http://www.fulhamfc.com/shahid-khan/directors

http://infoweb.newsbank.com/iw-search/we/InfoWeb?p_action=doc&p_topdoc=1&p_docnum=1&p_sort=YMD_date:D&p_product=AWNB&p_text_direct-0=document_id=%28%200F91F9AB8169FF84%20%29&p_docid=0F91F9AB8169FF84&p_theme=aggregated4&p_queryname=0F91F9AB8169FF84&f_openurl=yes&p_nbid=R6FY62QWMTQxNjg0NjY0MS40ODgyMDI6MTo5OjEyOC4zLjAuMA&&p_multi=LTIB

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http://www.bbc.com/sport/0/football/18367285

http://www.dailymail.co.uk/sport/football/article-1388321/Middlesbrough-chief-executive-Keith-Lamb-steps-down.html

http://news.bbc.co.uk/sport2/hi/football/teams/w/wigan_athletic/8674606.stm

http://www.ajax.nl/De-Club/Vennootschap/Directie.htm

http://www.feyenoord.nl/nieuws/nieuwsoverzicht/59439

http://www.trouw.nl/tr/nl/4508/Sport/article/detail/2876600/2011/08/30/Jan-van-Halst-vertrekt-bij-FC-Twente.dhtml

http://www.psv.nl/Nieuws/Nieuwspagina/Van-den-Bunder-en-Reker-vertrekken-bij-PSV.htm

http://www.psv.nl/Nieuws/Nieuwspagina/Tiny-Sanders-treedt-terug-als-algemeen-directeur-PSV.htm

http://www.vitesse.nl/vitessenl/nieuws/detail/3425

http://www.sc-heerenveen.nl/nieuws/robert-veenstra-nieuwe-directeur-sc-heerenveen/10

http://www.fcgroningen.nl/home/club-info/organisatie/

http://www.nrc.nl/nieuws/2014/04/14/directeur-gerbrands-wi-nieuwe-uitdaging-en-vertrekt-bij-az/

http://fcutrecht.nl/nieuws/actueel/3714/wilco-van-schaik-algemeen-directeur-fc-utrecht

http://www.tubantia.nl/sport/heracles/hsv-wil-heracles-directeur-nico-jan-hoogma-1.2337483

http://www.tubantia.nl/sport/2.1921/nico-jan-hoogma-is-klaar-met-voetballen-br-afscheid-met-pijn-in-het-hart-1.2427564

http://www.vi.nl/nieuws/directeur-goetzee-verlaat-perspectiefloos-rkc-waalwijk.htm

http://www.nrc.nl/nieuws/2014/05/05/roda-jc-ontslaat-directeur-marcel-van-bunder/

http://www.telegraaf.nl/telesport/voetbal/nationaal/22338049/__Directeur_weg_bij_VVV-Venlo__.html

http://www.rijnmond.nl/sport/04-02-2011/peter-bonthuis-vertrekt-bij-sparta

http://aktie.bvb.de/eng/BVB-at-a-glance/Management2

http://www.spiegel.de/sport/fussball/fussball-bundesliga-heldt-verlaesst-den-vfb-stuttgart-a-702842.html

http://www.schalke04.de/en/club/structure/managing-board/page/26--22--.html

http://www.bundesliga.com/en/liga/news/2012/0000253375.php

http://www.isportconnect.com/index.php?option=com_content&view=article&id=16897&Itemid=458)

http://www.borussia.de/english/club/club/officials.html
http://stadiumdb.com/news/2014/08/monchengladbach_borussiapark_how_it_changed_things_round

http://www.voetbalkrant.com/apphulp/nl/nieuws/lees/2014-09-20/dortmund-staat-op-dit-moment-verder-dan-bayern

http://www1.skysports.com/football/news/21572/8363475/Augsburg-have-appointed-Stefan-Reuter-as-their-new-director-of-sport

http://www.achtzehn99.de/frank-briel-wird-gesch-ftsf-hrer-bei-1899-hoffenheim/

http://www.hannover96.com/CDA/index.php?id=1096&tx_ttnews[tt_news]=51112&cHash=827ad811eff0687d485e1deeb37528dc

http://www.glc-group.com/en/management/martin-kind/

http://www.herthabsc.de/en/hertha/management/page/47----.html

http://www.zess.uni-goettingen.de/wordpress/?p=1606
http://isportconnect.com/index.php?option=com_content&view=article&id=26037:werder-bremen-president-a-ceo-announces-departure&catid=16:hirings&Itemid=26

http://www.eintracht.de/aktuell/9233/

http://www.eintracht.de/english/company_club/fussball_ag/

http://www.scfreiburg.com/node/11340

http://www.mainz05.de/mainz05/verein/vorstand.html

http://www.stuttgarter-zeitung.de/inhalt.vfb-stuttgart-ulrich-ruf-geht-robin-dutt-kommt.7ca81e82-8ee9-4d62-9a1b-a22f80c6db83.html
http://www.bundesliga.com/en/liga/clubs/vfb-stuttgart/daten.php

http://www.vfb.de/en/club/club-management/page/380-0-1-.html

http://www.hsv.de/verein/meldungen/verein/maerz-2011/jarchow-und-hilke-freude-auf-die-neue-aufgabe/

http://www.bundesliga.com/en/liga/clubs/hamburger-sv/daten.php

http://www.fcn.de/club/der-club/vorstand/

http://www.vfl-bochum.de/site/en/_home/aktuelles/12367_vfltrauertumwerneraltegoerp.htm

http://www.girondins.com/matches/encyclopedie/staff/5/5.shtml

http://www.uefa.com/memberassociations/association=fra/news/newsid=1644552.html

http://www.rclens.fr/site/club_president/index.php#ancreContenu

http://www.lorient.maville.com/sport/detail_-reunion-de-crise-au-fc-lorient_52713-2395405_actu.Htm 2009 tot 2013/2014

http://www.olweb.fr/fr/article/jean-michel-aulas-23519.html

http://www.footmercato.net/breves/om-qui-est-philippe-perez_68024

http://www.ouest-france.fr/football-deces-de-lex-president-de-las-monaco-michel-pastor-1901128

http://www.liberation.fr/sports/2008/11/07/laurent-nicollin-et-ces-pd-de-nimois_174272

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http://www.psg.fr/fr/Club/609001/Presidents

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http://fr.viadeo.com/fr/profile/jean-francois.soucasse

http://www.lepoint.fr/michel-seydoux-19-05-2011-1335283_19.php

http://www.lequipe.fr/Football/Actualites/Lacombe-demissionne/351473

http://jean-guy.moreau.pagesperso-orange.fr/presiden.htm#Plessis

http://politiques-sportives.blogspot.be/2013/11/un-nouveau-president-pour-valenciennes.html

http://www.asnl.net/93/club_dirigeant

http://atleticomadrid.nl/index.php/club/17-bestuur/530-miguel-angel-gil-marin-algemeen-directeur

http://www.diariogol.com/es/notices/2014/01/-quien-es-antonio-rossich-37528.php

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http://www.sevillafc.es/nuevaweb/actualidad/noticias/32908

http://www.plazadeportiva.com/ver/7739/luis-cervera--nuevo-director-general-del-valencia.html

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http://archivo.rayoherald.com/28201-luis-yanez-nuevo-asesor-general-del-rayo-vallecano.html

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http://www.levante-emv.com/deportes/2009/04/23/levante-ud-nombra-director-general-catalan-ata-tecnico/581229.html

http://www.malagacf.com/es/noticia/entidad/vicente-casado-nuevo-director-general-malaga-cf/131/65952

http://www.tufenuncadecaiga.org/?page_id=133

http://hemeroteca.mallorcadiario.com/deportes/jose-maria-duran-farre-nuevo-director-general-del-mallorca-99459.html

http://www.prnoticias.com/index.php/home/559/10058775

http://www.juventus.com/juve/en/news/2010/5/news_newsseriea_6de77b69faf4409f86a13d8c305e57be.asp

http://www.goal.com/en/news/10/italy/2012/05/30/3136565/ernesto-paolillo-resigns-as-inter-ceo

http://www.hln.be/hln/nl/1303/Serie-A/article/detail/1761249/2013/12/19/Barbara-Berlusconi-nu-ook-officieel-CEO-van-AC-Milan.dhtml

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http://en.violachannel.tv/organisational-chart.1412.html

http://www.asroma.it/en/news/the_new_ceo_italo_zanzi_/

http://247.libero.it/focus/23110945/1/nicola-bignotti-dall-albinoleffe-a-direttore-generale-del-genoa/

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http://woordenkracht.com/categorie/wetenschap/giuseppe-marotta.php

http://livesicilia.it/tag/andrea-cardinaletti-nuovo-ad-del-palermo-calcio/

http://www.corrieredellosport.it/calcio/calcio_mercato/2013/06/12-324808/Cagliari,+Stagno+nuovo+dg%3A+Marroccu+saluta+i+rossobl%C3%B9

Appendix 3

The following table presents all the variables used and their sources.

Variable	Source
Club name	Transfermarkt.com
Points earned per season	Transfermarkt.com
Average points earned before or after the managerial change	Calculated based on points earned per season
Country dummy	Transfermarkt.com
Big/small competition	Based on country dummy variables

Placement dummy	Transfermarkt.com
Managerial change	Transfermarkt.com Google.com -> news reports and club websites
Increase in transfer balance (= "financial injection")	Transfermarkt.com
Coach fired	Transfermarkt.com
Inside vs outside succession	Google.com -> news reports, club websites and biographies
Season	Based on wherever the information about the managerial change was found (Transfermarkt.com, news reports or club websites)

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