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Dust in the Wind: Causes and Consequences of Managerial Replacements

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Dust in the Wind: Causes and Consequences of Managerial Replacements

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Abstract

If the economic performance of a firm is disappointing, the manager may be replaced. Whether that improves performance is unclear. For regular firms, it is often difficult to study the causes and consequences of managerial replacement due to limited data availability. This is different for sports clubs, where high-quality data are available on a regular basis. The current paper studies managerial replacements in professional football in the Netherlands. Disappointment is measured by two indicators that use bookmaker expectations as a reference. *Points surprise* is based on actual results, while *performance surprise* is based on expected goals. The analysis shows that within-season managerial replacements are more likely when there is disappointment, that is, when both surprise indicators are negative. Match results improve after managerial replacement. However, this improvement is not causal: a counterfactual analysis suggests that match results would have improved even in the absence of managerial replacement.

Keywords: Managerial replacement; professional football; expected goals; bookmaker odds

JEL-codes: C20, L83, M12, Z20

Conflict of interest: None.

Availability of data and materials: The data supporting the findings of this study come from various public sources (see Appendix A for details) and will be made publicly available in a single dataset at zenodo.org.

Dust in the wind is the title of a 1977 song by the American band *Kansas*.

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1 Introduction

To what extent managers are responsible for firm performance is difficult to establish. To start, firm performance is usually not measured very frequently. Furthermore, a comparison of outcomes with earlier expectations is not straightforward, since expectations can be manipulated. If results are disappointing, factors beyond the manager’s control may be blamed. If results are very good, managers may take the credit even though there are outside factors responsible for the good performance. Managers have a self-interest in not reporting performance truthfully (Benson and Shaw, 2025). Bertrand and Mullainathan (2001) presented empirical evidence on CEO earnings showing that luck plays a role. The compensation of CEOs working in the oil industry, for example, was influenced by market developments in the oil price. There was also some evidence of asymmetric effects, in the sense that CEOs were always rewarded for good luck (high oil prices) but not always punished for bad luck (low oil prices).

Hilger et al. (2013) presented 91 empirical studies published between 1960 and 2010 on causes and consequences of top executive dismissals; 41 on causes, 20 on consequences and 30 on both. From a meta-analysis it is concluded that the effects of managerial turnover are not statistically different from zero. A potential explanation is that managerial changes were not aiming for improvement of performance but were sacrifices to please the investment community. Jenter and Kanaan (2015) showed that some CEOs were fired after bad firm performance caused by factors beyond their control.

In general, for regular firms, limited performance data are available. This does not mean that no data are available. For example, Gentry et al. (2021) created an open-source dataset to study causes and consequences of CEO changes in S&P 1500 firms from 2000 to 2018. Nevertheless, studying causes as well as consequences of managerial replacements is difficult. Sports data can be useful to understand economic processes that occur in more regular circumstances (Palacios-Huerta, 2025). According to Flores et al. (2012), football, for example, provides an environment in which it is relatively straightforward to analyze the quality of decision-making in case of managerial replacements, because, more so than in other industries, firms have unambiguous objectives that are measurable and publicly observable.

The current paper examines the causes and consequences of managerial replacement, focusing on the top league of Dutch professional football. There are clear overlaps between managers of sports clubs and managers in regular firms in terms of personal characteristics, such as age and the capabilities to cope with stress, media attention, and a large group of stakeholders (Pieper et al., 2014). Because of these overlaps, it is possible to

use sports data to understand the role of managers as if they were from a regular labor market (Szymanski, 2003). Nevertheless, there are not only overlaps but also clear differences between football managers and managers in regular firms. A football club differs from a regular firm in terms of behavior. Regular firms may have profit maximization as their prime target, but this is not the case for football clubs. According to Sloane (1971), a manager of a football club is likely to be more concerned with successful team performance than with the financial stability of his club. This is not surprising, as a manager usually only stays for a couple of seasons and then moves on to the next club. Short-term successful performance is more of interest to the manager than long-term financial stability. Sloane (1971) also mentioned that the strength of a team is more than the sum of the strengths of individual players. Football is a team game relying on the constructive combination of individual talents. For this, the manager has an important role. An advantage of studying professional football is that it is played according to the same rules in all countries across the worlds Or, to put it differently, the same institutions affect performance in the same way. This makes it easy to compare findings of studies from different countries.

Football managers often have short-term contracts for a limited number of years or even for just one year, with the possibility of renewal for another year. With such short-term contracts, it is not obvious why a contract is ended before the season is over, since the manager would have left anyway at the end of the season. Immediate termination of employment contracts can be costly, because salaries often need to be paid until the end of the original contract. Furthermore, football managers usually have high salaries to compensate for their job uncertainty. In the Netherlands, the manager, that is, the head coach, who is forced to leave might receive his salary until the expiration of his contract or a lump-sum payment. The typical contract length of managers in the Netherlands is two seasons (Van Ours and van Tuijl, 2016). Other managers have longer contracts but with performance evaluations during the contract period. Clubs and managers are aware of this volatile situation in employment contracts.

For a manager in a regular firm, being replaced if performance is disappointing can have a scarring effect. This is different in professional football. Replacing a manager occurs frequently, and managers who are replaced rarely face long-term consequences. Replacing a manager in professional football is almost business as usual, and during an average season, a substantial number of managers are replaced. A replaced manager sometimes finds a new job in the same season, replacing a manager at a different club in the same league. This is very different from managerial replacements in regular firms.

Gilson (1989), for example, mentioned that managers who were replaced were not subsequently employed by another firm for at least three years. Thus, whereas in professional football replaced managers do not experience large personal costs, in regular firms these personal costs can be substantial.

The role of a manager in professional football may depend on the league. The manager is responsible for the performance of the team. He selects players for the game lineup, designs the tactical game plan, decides on substitutes during the match, motivates the players, and so on. Usually, a manager in Dutch professional football is not responsible for the quality of the squad, the full group of players registered and available to the club for a season or competition. This is the responsibility of a technical director, who is often also responsible for the appointment of the manager. Usually, a manager is not involved in the commercial activities of the club (Kelly, 2017). Benson and Shaw (2025) distinguished six managerial activities: hiring, retaining, training, motivating, evaluating, and allocating workers. Unlike managers of professional football clubs in other countries, managers of Dutch clubs are not directly involved in the first two activities.

Football managers may be replaced within-season if match outcomes are disappointing. There are different ways to measure disappointment as the season progresses. It is obvious to take bookmaker odds as a reference, since all information is supposed to be included in the odds. This information can be translated into bookmaker (expected) points. In the current paper, two types of disappointment are distinguished. The first is the points surprise, the cumulative difference since the start of the season between actual points and bookmaker points. The second measure of disappointment is the performance surprise, which measures the cumulative difference since the start of the season between expected points—based on expected goals—and bookmaker points.

The two surprise measures both have bookmaker points as references. Therefore, as a first step in the analysis, it is investigated whether bookmaker odds indeed contain all relevant information to provide an unbiased expectation about match outcomes. This turns out to be the case. On average, current match outcomes are correctly predicted by bookmaker-related expected points, and additional information about recent past performance is not relevant. In the second part of the analysis, the causes of managerial replacement are investigated. The third part of the analysis examines the consequences of managerial replacement.

Previous studies on the causes and consequences of replacing a manager in professional football will be discussed in more detail later on. Frequent findings are that disappointing performance increases the likelihood of managerial replacement, even though this does

not have a positive effect on performance. These are also the main findings of the current paper. The contribution of the current paper to the existing literature is modest but insightful. First, a stylized theoretical model of managerial replacement is presented. In this model, the board of a club decides to replace a manager if results are disappointing, even though the new manager may have a lower expected ability than the incumbent manager. The decision is taken because of a mix of despair about the recent past and hope about the near future. There is uncertainty whether the new manager will be a good match with the current team. There is a trade-off between the risk of attracting a new manager who performs even worse than the old one and the hope that the new manager will do better. Second, in the analysis of the causes of managerial replacements, two performance measures are used: points surprise and performance surprise. Both turn out to be equally important. Third, the consequences of managerial replacement are analyzed using a counterfactual approach to managerial replacement to establish potential causality. A counterfactual replacement is a situation where, in the same club but in a different season, results were equally disappointing but a manager was not replaced. Actual managerial replacements have similar effects as counterfactual replacements, indicating that they do not have a causal effect on performance.

The paper is structured as follows. Section 2 presents a stylized theoretical model of optimal managerial replacement policy. Section 3 describes the data, which are from seven seasons of the highest league of Dutch professional football. In total, 31 managers were replaced within-season, which implies that about 25% of the managers lost their job. Section 4 analyzes the relationship between bookmaker odds and match outcomes, including expected goals scored and expected goals conceded. Section 5 investigates the causes of clubs' decisions to replace their manager. Section 6 focuses on the consequences of manager replacement on match outcomes. Section 7 concludes that replacing a manager after a series of poor results is, in expectation, not helpful to improve performance. Nevertheless, it happens frequently, in the hope for a lucky draw from the distribution of managerial ability.

2 Optimal Managerial Replacement Policy

Audas et al. (1997) distinguished between two opposing short-term effects of managerial replacement. First, there may be a negative disruptive effect because team strategy and tactics changed. Second, there may be an effort effect because the replaced manager was unpopular or because players want to signal their willingness to play to the new manager.

Studying English football, they find that the harmful effect dominates immediately after managerial replacement. It takes some time before a football team plays according to the style preferred by the new manager. For certain styles of play, certain types of players are needed, and building the optimal squad may take some time. If a manager has done this but is replaced within a season, this may cause some disruption, as the new manager may alter tactics sometimes for no other reason than to signal that a change has taken place (Audas et al., 2002). New tactics may again take some time because the skills and experience of the squad may not be fully in line with the new game plan. A club may be willing to accept some reduced team performance initially, provided that there will be improvements later on. However, if a team is doing poorly on the verge of relegation, immediate improvements in performance are needed. Then, a club may replace the manager in the hope that the skills of the new manager are drawn from a managerial skill distribution with a negative mean (compared to the replaced manager) but with high variance, turning out to be a lucky draw (Audas et al., 2002).

The effects of managerial replacement on performance can vary. Performance may increase if the new manager is more able to select and motivate players to put more effort into their play. In combination with a more appropriate game plan, performance can go up. This could be like a shock having an immediate positive effect. However, such a process could also take some time, so the immediate effects are absent. It could also be that a new manager has negative effects on team performance, at least in the short run, because he has to learn what the optimal strategy is for the team and for the game plan conditional on the available talent.

To structure the thinking, a stylized theoretical model about managerial replacements is helpful. Peeters et al. (2022) presented a theoretical analysis of the optimal managerial hiring policy. They focused on decision-making of clubs that are on the verge of going bankrupt. In a situation like this, it is optimal to hire an experienced manager with lower expected quality than a novice manager. Although a novice manager has higher quality on average, the club is not interested in average quality but in avoiding relegation, which would be detrimental to the club. A novice manager may have higher quality on average, but there is a probability that his performance is substandard. If the club draws a bad outcome from the quality distribution of novice managers, this could be far worse than the quality of the incumbent mediocre manager.

A slightly adjusted model can be used to focus on replacement of an incumbent manager rather than hiring a new manager. Decision-making is assumed to be limited to the current season. This is different from Peeters et al. (2022), in which clubs were

assumed to be infinitely lived aiming to maximize the expected present value of profits. At a particular moment during the season, the club may decide whether or not to replace a manager for the remainder of the season. Replacing a manager brings costs, but these are small compared to the consequences of non-replacement and facing a dramatic ending of the season. Therefore, the assumption is that replacing a manager is costless. The incumbent manager's ability is assumed to be known at the time of the decision-making. Potential ability of managers follows a uniform distribution, so ability $\mu \in [0, 1]$. Profits are zero if ability of the manager is below some minimum threshold $c \in [0, 1]$, and equal to ability otherwise:

$$\pi(\mu) = \begin{cases} 0, & \mu < c, \\ \mu, & \mu \geq c. \end{cases}$$

The club uses a hiring threshold Ψ : keep the manager if $\mu \geq \Psi$, replace the manager if $0 \leq \mu < \Psi$. The new manager has unknown ability also from a uniform distribution: $\mu_n \in [0, 1]$, so $\mathbb{E}[\mu_n] = 0.5$. The expected profit from hiring a new manager is then:

$$\mathbb{E}[\text{profit}] = \int_c^1 \mu d\mu = \frac{1 - c^2}{2}.$$

It is profitable to replace a manager if the expected profits of a new manager are larger than the expected profits of the incumbent manager conditional on the incumbent manager making profits. The optimal threshold is:

$$\Psi(c) = \mu \geq \max\left\{c, \frac{1 - c^2}{2}\right\}.$$

Some numerical examples are helpful in understanding the implications of replacing a manager. If $c = 0$ and a club establishes that the current manager has an ability below 0.5, it is optimal to go for a replacement, since a new manager has, in expectation, an ability of 0.5.

If $c = 0.2$, then $\Psi = \frac{(0.96)^2}{2} = 0.48$. A club retains managers with $\mu \in [0.48, 0.5)$ despite their below-average ability because the replacement risk of having zero profits lowers expected profit below 0.5. As in [Peeters \(2018\)](#), because of the probability that a new manager has low ability leading to zero profits a club retains a manager who has lower-than-average expected ability compared to the average new manager.

If $c = 0.6$, $\Psi = 0.6$. A club replaces a manager with $\mu < 0.6$ even though incumbent managers with $\mu \in (0.5, 0.6]$ have a higher ability than a new manager who in expectation

has an ability of 0.5. However, there is a positive probability that the new manager will be able to generate profits, which is never the case with the incumbent manager. In other words, this simple model shows that there can be a situation in which a club will replace its manager even if, in expectation, there is no improvement in ability.

As c goes up initially the hiring threshold goes down to reduce the risk of the new manager generating zero profits. If c goes up further the hiring threshold goes up because the incumbent manager generates zero profits. The “flipping” point for the costs is where $\frac{1-(c^*)^2}{2} = c^*$, so $c^* \approx 0.41$. If $c > 0.41$, it is optimal to fire managers with ability below c and hire a new manager. The probability that a new manager can make profits may be sufficient to persuade a club to replace its manager. By doing this, the clubs behave in a risk-seeking way. But risk-seeking is, for clubs with badly performing managers, the only possibility to avoid zero profits: nothing ventured, nothing gained. [Audas et al. \(2002\)](#) mentioned that clubs may be gambling that an increased variance may result in improved performance. [d’Addona and Kind \(2014\)](#) referred to this as a gambling for resurrection game which can be rational even though on average replacing a manager may have a negative effect on performance.

It is possible that a club does not have precise information about the ability of their incumbent manager, but the club observes a noisy signal: $s = \mu + \varepsilon$, where ε is from a uniform distribution $\varepsilon \in U[-a, +a]$, so that $s \in [\mu - a, \mu + a]$. It could be that a declines over the course of a season if more information about performance of the team becomes available. It is also possible to introduce hiring costs. Except for introducing more complexity in the decision rule, the fundamentals of the decision to replace a manager do not change. The decision process is driven by the hope that the ability of a newly hired manager who, in expectation, is not better than the incumbent manager is drawn from the top of the ability distribution.

3 Performance Measures and Data

3.1 Bookmaker based expected points

Bookmaker odds can be used to calculate expected match outcomes. The probability that home team i wins against away team j is $\Pr_{ij}^h = \frac{1/O_{ij}^h}{1/O_{ij}^h + 1/O_{ij}^d + 1/O_{ij}^a}$, where O_{ij}^h are the odds for a home win, O_{ij}^d are the odds for a draw, and O_{ij}^a are the odds for an away win. The probabilities of a draw and an away win are derived in a similar way. The bookmaker-expected points for home team i are $BP_i = \Pr_{ij}^h \times 3 + \Pr_{ij}^d$, while for away team j they are $BP_j = \Pr_{ij}^a \times 3 + \Pr_{ij}^d$.

3.2 Expected points based on expected goals

An expected goal is an estimated probability that a shot (or a header) on target would have resulted in a goal. The probability that a shot results in a goal is determined through the analysis of thousands of shots and is related to the location of the shooter (distance and angle to the goal), the body part, the type of pass, and the type of attack. Expected goals do not take into account the quality of players involved in a particular play. It is an estimate of how an average player or team would perform in a similar situation.

Since football is a low-scoring sport, outcomes are influenced by random events. Therefore, actual match outcomes may not be good indicators of the performance of the two teams in a match, while expected goals are. Brechot and Flepp (2020) argued that shots on goal carry information signals even if the shots do not turn into goals and they showed that recent expected goals are a better predictor of future outcomes than recent actual goals (scored or conceded). Mead et al. (2023) concluded from an analysis of the five European top leagues of professional football that expected goals were a superior predictor of a football team’s future success in terms of goal scoring when compared to traditional statistics such as shots and goals in previous matches. According to Rocchetti et al. (2024), expected goals are informative about the long-term performance of a team. Teams that are temporarily underperforming in the sense that actual goals are below expected goals later on during the season improve their goal-scoring record.

The analysis in this paper uses expected points based on expected goals scored and conceded as indicators of performance. Expected goals are first transformed into a probability distribution of a discrete number of goals. Then, comparing goals scored and conceded, the distribution of the number of expected points is calculated (see Partida et al. (2021) for a similar approach). The line of reasoning is as follows. Assume that the number of goals scored, k , follows a Poisson distribution, G_s , whereby the mean of the distribution is equal to the number of expected goals scored: $G_s(k; \lambda_s) = \frac{\lambda_s^k e^{-\lambda_s}}{k!}$. Similarly, G_c is the distribution of the number of goals conceded: $G_c(k; \lambda_c) = \frac{\lambda_c^k e^{-\lambda_c}}{k!}$, where λ_s is the expected number of goals scored and λ_c is the expected number of goals conceded. The probability of a match ending in a draw is: $\Pr(\text{draw}) = \sum_{k=0}^{N_{\max}} G_s(k; \lambda_s) G_c(k; \lambda_c)$, while the probability of a match ending in a win is: $\Pr(\text{win}) = \sum_{k=0}^{N_{\max}} \sum_{v=k+1}^{N_{\max}} G_s(v; \lambda_s) G_c(k; \lambda_c)$, where $N_{\max}$ is the maximum number of goals scored (and conceded). Then, the expected number of points is $xP = 3 \times \Pr(\text{win}) + \Pr(\text{draw})$.

The terminology “expected goals” is somewhat confusing as the expectation is not future-oriented. Conditional on the location on the pitch and other characteristics, scoring attempts are labeled as expected goals, whereas “potential goals” would be a more

accurate description. Expected points based on bookmaker odds are forward-looking, so this is a more accurate use of the word “expected.”

3.3 Data

Match outcomes from seven seasons of the top league of professional football in the Netherlands, the Eredivisie, are analyzed.¹ Every season, 18 teams competed. A regular season consists of 306 matches, but season 2020 was ended prematurely due to COVID-19 restrictions. In that season, 232 matches were played. Every match is used in the analysis twice: once from the perspective of the home team and once from the perspective of the away team. The analysis of match outcomes is based on information about points, (ex post) expected points based on expected goals, and (ex ante) bookmaker points based on bookmaker odds. Table 1 provides descriptives of these variables. Although season 2020

Table 1: Match Descriptives by Season

Season	Actual points	Expected points	Δ	Bookmaker points	Δ	N	R
	(1)	(2)	(1)-(2)	(4)	(1)-(4)	(6)	(7)
2019	1.40	1.40	0.00	1.39	0.01	612	5
2020	1.39	1.40	0.00	1.39	0.00	464	5
2021	1.37	1.40	-0.02	1.39	-0.02	612	5
2022	1.40	1.39	0.00	1.39	0.01	612	5
2023	1.38	1.39	-0.01	1.39	-0.01	612	2
2024	1.38	1.40	-0.02	1.39	-0.01	612	5
2025	1.37	1.39	-0.01	1.39	-0.01	612	4
All	1.38	1.39	-0.01	1.39	0.00	4,136	31

Note: N = number of matches; R = managerial replacements; every match is included twice

was somewhat of an outlier with only 232 matches, in terms of average match statistics there is a lot of stability over the seasons. The average number of points obtained per match was about 1.4. The same holds for expected points and bookmaker points per match. With seven seasons and 18 teams, 126 managers started each season. Table 1 shows that 31 managers were replaced before the end of the season. In five seasons there were five managerial replacements, but in season 2023 there were only two while in 2025 there were four replacements.

¹The seasons are 2018/19 to 2024/25. In the remainder these are indicated by the second year; that is 2019 to 2025.

Figure 1: **Managerial Replacements by Week**

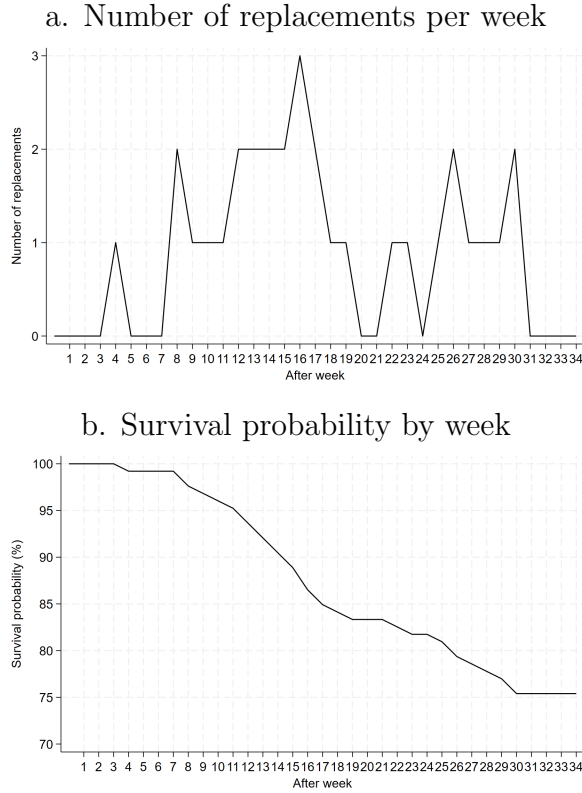


Figure 1 provides information about the timing of managerial replacements in a season. Panel a shows the number of replacements in particular weeks. The peak in the number of replacements is mid-season, where in some weeks, over all seasons, two to three managers were replaced. Panel b of Figure 1 shows the managerial survival probability. Mid-season, about 15% of the managers were replaced, while by the end of the season this added up to about 25%.

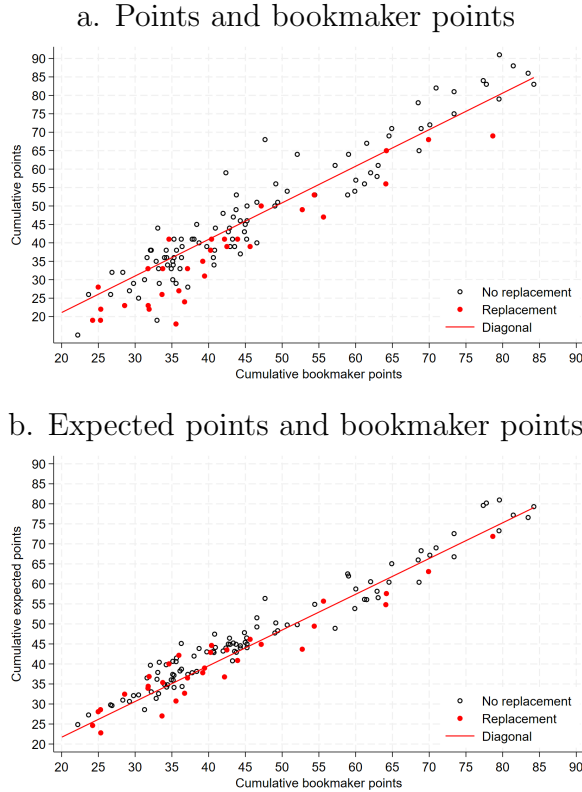
3.4 Measuring disappointment

To measure disappointment, one cannot simply use the number of points obtained as an indicator. If, by coincidence, a team would have played a number of matches against very strong opponents, fewer points would have been obtained than if the team had played against weaker teams. If a manager is replaced after a series of matches against strong teams and the team then plays against weaker teams, the results will improve because of the differences in the strength of opponents (Koning, 2003). Clearly, to measure disappointment, the strength of opponents and expectations need to be taken into account. In the past, this has been done by translating bookmaker odds into expected win and draw probabilities and transforming these into expected points. In Van Ours and van Tuijl

(2016) and Besters et al. (2016), the cumulative differences between bookmaker-related expected points and actual points were used as a measure of disappointment. The current paper adds to this information from expected points based on expected goals scored and conceded. Two measures are used:

1. Points surprise for club i in season s , match $t = \sum_{\tau=1}^t (P_{is\tau} - BP_{is\tau})$, where P is the number of points. The cumulative difference between the actual number of points and the expected number of points based on bookmaker odds represents the points surprise. This measure was called “cumulative surprise” in Van Ours and van Tuijl (2016) and Besters et al. (2016). Summing over the matches from the start of the season generates the points surprise.
2. Performance surprise for club i in season s , match $t = \sum_{\tau=1}^t (xP_{is\tau} - BP_{is\tau})$. This measure uses cumulative expected points compared to bookmaker-based points as a surprise measure.

Figure 2: **End-of-Season Performance**



Note: panel a below the diagonal negative points surprise;
panel b below the diagonal negative performance surprise.

Figure 2 provides an overview of the relationships between the performance measures. Points surprise is positive above the diagonal in the graph in panel a of Figure 2 and

negative below the diagonal. Performance surprise is positive above the diagonal in the graph in panel b of Figure 2 and negative below the diagonal. Panel a shows the relationship between cumulative bookmaker points and cumulative points. Replacement of managers was more likely below the diagonal, when points were below bookmaker points and there was points disappointment. Many replacements were at the lower end, i.e., it was more likely to be replaced at teams that were at the bottom of the league. Panel a also shows that at the top end clubs obtained more points than expected by the bookmakers, while at the bottom end clubs obtained fewer points than expected by the bookmakers. Panel b of Figure 2 shows the relationship between cumulative bookmaker points and cumulative expected points according to expected goals scored and conceded. Here the relationship between the two measures and managerial replacement is less clear. There were many replacements if the expected points were above the bookmaker points, although this was mainly at the lower end of the distributions.

Figure 3: **End-of-Season Points Surprise and Performance Surprise**

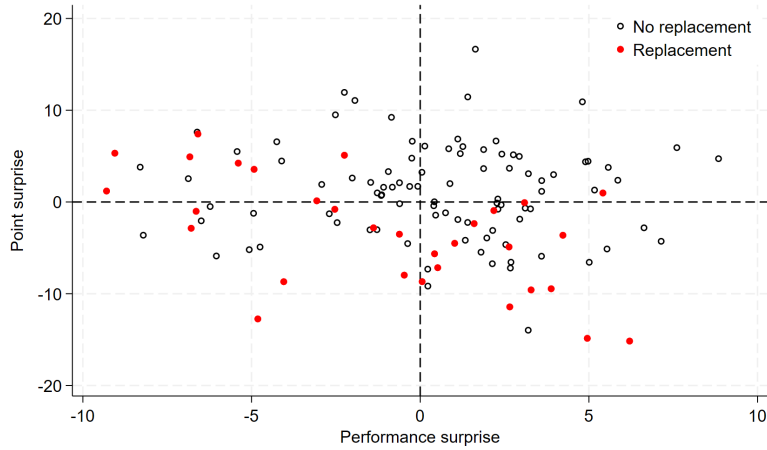


Figure 3 provides an overview of the relationship between the two measures of disappointment. When end-of-season points surprise and performance surprise were both positive, managerial replacements were rare. When both indicators were negative, quite a few managerial replacements occurred, but most replacements occurred when points surprise was negative and performance surprise was positive.

Note that overperformance is a potential third measure of disappointment. Overperformance for club i in season s , match $t = \sum_{\tau=1}^t (P_{is\tau} - xP_{is\tau})$. On average, cumulative actual points and expected points should be approximately identical, but it is possible that a club overperforms over a long period of time. The potential third measure of disappointment is not independent from the other two, as by definition Overperformance = Points Surprise – Performance Surprise.

4 Bookmaker Odds

4.1 Previous studies on bookmaker odds

Sports betting markets share similarities with traditional financial markets, where participants invest money in assets with the hope of generating positive returns. In both markets, future outcomes are uncertain, there are numerous participants, and historical information about relevant events is widely accessible (Makropoulou and Markellos, 2011). In an efficient market, prices fully reflect available information. Similarly, in a sports betting market, bookmakers use all available information when setting their odds. Sauer (1998) argued that sports betting markets offer a unique setting for economists to study models of market pricing whereby these markets are efficient if expected returns are equal across betting opportunities.

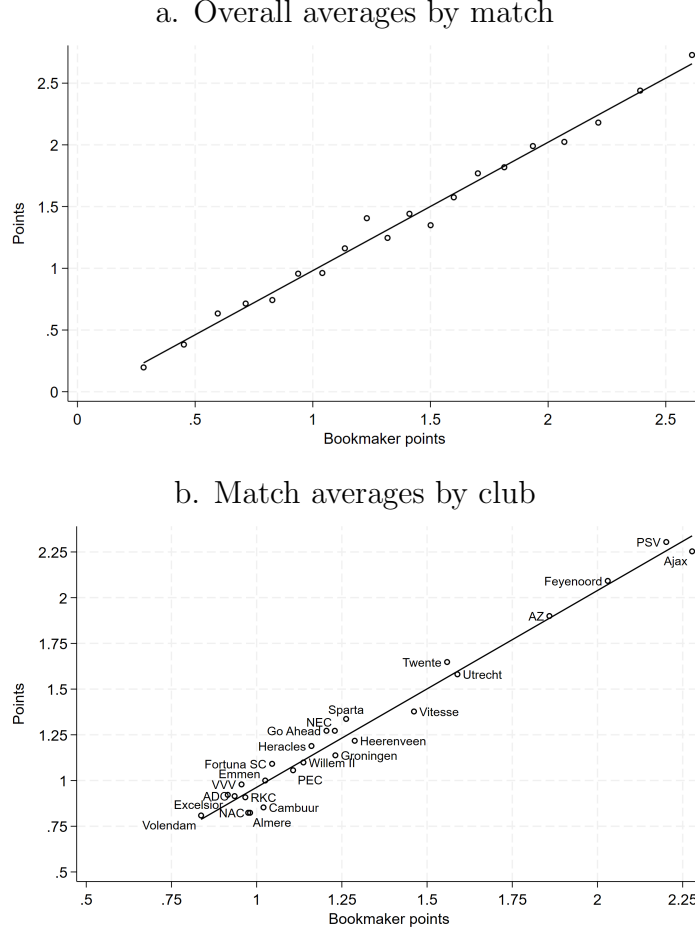
According to Thaler and Ziemba (1988), the most robust violation of the efficiency condition is the favorite-longshot bias, which involves a small chance of winning but with a great reward if successful. Betting on a favorite has a high chance of winning a small amount. High win probabilities are underbet, while low win probabilities are overbet. Therefore, expected returns to a bet increase monotonically with the win probability. Favorites win more often and longshots win less often than win probabilities based on bookmaker odds imply. Based on an analysis of twenty different European football leagues over twelve seasons, Wheatcroft (2020) concluded that teams that performed below expectations were assigned more generous odds by bookmakers, while teams that overperformed had less generous bookmaker odds. In other words, bookmakers accounted for gamblers believing that a team is more likely to be successful if it was successful in recent matches. Merz et al. (2021) concluded, on the basis of an analysis of betting markets for matches in the top five European leagues, that a good-luck variable based on differences between actual and expected goals, had a significant effect on the probability of winning a bet. It is also possible that bettors overestimate the winning probabilities of teams that have recently won, even if some of those wins were coincidental and teams were actually overperforming (Flepp et al., 2024).

4.2 Bookmaker Odds and Match Outcomes

Panel a of Figure 4 shows the bin-scatter relationship between bookmaker-based expected points and actual points. There is a clear positive relationship between the two. Panel b of Figure 4 shows that averaged by club, there is also a positive relationship between bookmaker points and actual points. In most cases, the observations are close to the

diagonal where points equal bookmaker points.

Figure 4: **Bookmaker-Based Expected Points and Actual Points**



Note: The straight lines represent the diagonals. Figure 1b conditional on being present more than 1 season over the sample period.

Bookmaker-based expectations on the number of points may be influenced by home advantage, the difference in strength between the two teams, recent match results, and points based on expected goals scored. In an efficient betting market, recent match results should not matter because the information in these results should have been accounted for in the bookmaker odds. Therefore, the following equation is estimated:

$$P_{ijt} = \alpha + \beta_1 BP_{ijt} + \beta_2 \sum_{\tau=-3}^{-1} P_{ij\tau} + \beta_3 \sum_{\tau=-3}^{-1} xP_{ij\tau} + \varepsilon_{ijt} \quad (1)$$

where P_{ijt} is the number of points obtained by club i when playing against club j in season t , BP_{ijt} represents the number of bookmaker points, i.e., the points club i should have obtained in the match against club j in match t according to the bookmaker odds.

Furthermore, $\sum_{\tau=-3}^{-1} P_{ij\tau}$ and $\sum_{\tau=-3}^{-1} xP_{ij\tau}$ represent the number of points and expected points obtained by the home team in the previous three matches. In an efficient betting market, $\beta_1 = 1$ and $\beta_2 = \beta_3 = 0$. The parameter estimates are shown in Table 2.

Table 2: **Parameter Estimates: Number of (Expected) Points per Match**

	(1) Points	(2) Points	(3) Points	(4) xPoints	(5) xPoints	(6) xPoints
Bookmaker points	1.040*** (0.033)	1.042*** (0.032)	1.038*** (0.033)	0.827*** (0.016)	0.831*** (0.016)	0.824*** (0.016)
Points previous 3 matches	-0.008 (0.010)	-0.007 (0.008)		-0.007 (0.005)	-0.004 (0.004)	
xPoints previous 3 matches	0.003 (0.017)		-0.006 (0.013)	0.008 (0.008)		0.000 (0.007)

Linear models; based on 3,758 observations; standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The first column shows that bookmaker expected points have a significant and positive parameter estimate which does not differ significantly from 1. The actual points and expected points in the previous three matches have no effect on the points obtained in the current match. These parameter estimates suggest that all information about match outcomes is in the bookmaker odds. Columns (2) and (3) present alternative specifications that do not bring new insights. Clearly, over the sample period, the betting market for results of matches in the highest league of Dutch professional football is efficient. Columns (4) to (6) of Table 2 show the parameter estimates when actual points are replaced by expected points. Also here, bookmaker points have a significant positive effect, while the effects of recent match outcomes in terms of points and expected points are not significantly different from zero.

5 Causes of Managerial Replacements

5.1 Previous studies on causes

In research on the causes of managerial replacements in professional football, duration models or logistic models are common. Some studies have been done for separate leagues. For English football, for example, Audas et al. (1999) found that recent match results and the league position were important determinants of managerial replacement. Dobson and Goddard (2001) and d'Addona and Kind (2014) found recent match results and changes in the league position to be important determinants. Bachan et al. (2008) concluded that league position was the most important determinant of managerial replacement while age, experience, length of service or nationality of the manager were not important.

For Spanish football, [De Dios Tena and Forrest \(2007\)](#) found that losing the last game and being in the relegation zone were important determinants, while a manager was less likely to be replaced in a season if such a replacement occurred earlier in the same season. For German football, [Salomo and Teichmann \(2000\)](#) found the points in the last four matches to be important, and [Frick et al. \(2010\)](#) found the number of points in the last three matches to be an important determinant of manager replacement. Relative points, defined as points accumulated by the team divided by total points in the season, were also important. [Pieper et al. \(2014\)](#) concluded that the league position and the number of points in the last five matches were important. Furthermore, expected points, defined as points derived from bookmaker odds, were important. [Van Ours and van Tuijl \(2016\)](#) studied within-season effects of managerial changes in the top league of Dutch professional football, finding that these depended on the cumulative number of points in the previous four matches and on the points surprise indicator, i.e., the cumulative discrepancy between actual results and expected results based on bookmaker odds (Note that [Van Ours and van Tuijl \(2016\)](#) referred to points surprise as “cumulative surprise”). [Semmelroth \(2022\)](#) also found for the US Major League Soccer that performance below expectations increased managerial dismissals while performance above expectations had a positive effect on managers quitting. Manager reputation had a negative effect on replacement probabilities.

There are also studies investigating managerial replacements in multiple leagues. [Roboy and Pavlik \(2020\)](#) found for the English Premier League and the French Ligue 1 that underperformance was the main determinant of manager replacement. [Bryson et al. \(2021\)](#) studied eight leagues in France, Germany, Italy, and Spain, finding that the likelihood of a managerial replacement was significantly lower when the team performed above expectations. [Flepp and Franck \(2021\)](#), analyzing five seasons of the top five European professional football leagues using expected goals as a measure of performance quality, found that sometimes managers were replaced after a series of bad luck. [Jedellauser et al. \(2025\)](#), analyzing outcome bias in managerial replacements in the five main European leagues over five seasons, also found that dismissals of managers were more likely to occur after bad luck. [Van Ours \(2026\)](#), studying the causes of managerial replacement in the top five European leagues, found that clubs were more likely to replace managers if the results from the start of the season were disappointing. This disappointment was measured by the points surprise, i.e., the cumulative difference between points obtained and the points the club would have obtained if the results had been according to the bookmaker odds. Furthermore, [Van Ours \(2026\)](#) found that recent performance

affected managerial replacement, whereby recent match results rather than underlying performance as measured by expected points were important.

5.2 Managerial replacements in Dutch football: Causes

Measuring the performance of a football manager, like that of any executive or manager, is a complex task. However, it is simplified in football due to the availability of clear performance indicators at frequent intervals, often weekly or even more frequently. One straightforward measure is the number of points the team has earned since the start of the season. Yet, as indicated earlier, this is a noisy metric for several reasons. First, past results are affected by the quality of the opponents and the proportion of home versus away games. Additionally, luck plays a significant role in football. For instance, a shot might hit the post and stay out, or it might bounce off the post and into the net, with the outcome sometimes depending on mere centimeters.

In the analysis of managerial replacements, the focus is on the duration until replacement measured in rounds (weeks) from the start of the season. The duration comes to an end if a manager is replaced. If there is no managerial replacement within a season, the duration is right-censored at 34 weeks (in 2020 the season was ended prematurely due to COVID-19 regulations; in that season the duration was right-censored at 26 weeks). Observations are grouped by club $\times$ season. A Cox proportional hazard model is estimated with the hazard rate of a managerial replacement in season s for club i after match t specified as

$$h_{is}(t) = h_0(t) \exp(\lambda X_{ist}) \eta_{is}, \quad \eta_{is} > 0 \quad (2)$$

where $h_0(t)$ is the unspecified baseline hazard function, X represents a vector of covariates, and η_{is} represents unobserved heterogeneity which is assumed to follow a gamma distribution with mean 1 and variance θ : $f(\eta_{is}|\theta) = \frac{(1/\theta)^{1/\theta}}{\Gamma(1/\theta)} \eta_{is}^{1/\theta-1} e^{-\eta_{is}/\theta}$, $\theta > 0$. Furthermore, λ is a vector of parameters. The parameters are estimated by partial likelihood, in which the baseline hazard cancels out due to the proportionality assumption (Cox, 1972). The covariates are indicators of cumulative results since the start of the season, measured in points, bookmaker points, and expected points. Furthermore, outcomes in the previous three matches, also measured in points, bookmaker points, and expected points, are used as covariates.

Table 3 shows the parameter estimates. In column (1), the three indicators of cumulative performance all have significant effects on the rate at which managers are replaced.

Table 3: **Parameter estimates Cox model with gamma frailty**

	(1)	(2)	(3)	(4)	(5)	(6)
Cumulative since start season						
Points (CP)	−0.319*** (0.079)	−0.339*** (0.082)				
Bookmaker points (CBP)	0.462*** (0.124)	0.559*** (0.118)				
Expected points (CxP)	−0.222** (0.124)	−0.250** (0.121)				
Points Surprise (CP-CBP)			−0.318*** (0.078)	−0.420*** (0.087)	−0.252*** (0.049)	−0.173*** (0.035)
Performance Surprise (CxP-CBP)			−0.203** (0.095)		−0.252*** (0.049)	−0.173*** (0.035)
Previous 3 matches						
Points	−0.441*** (0.153)	−0.396*** (0.135)	−0.430*** (0.124)	−0.389*** (0.125)	−0.446*** (0.117)	−0.401*** (0.108)
Bookmaker points	0.521 (0.333)					
Expected points	−0.140 (0.259)					
-Log likelihood	110.32	111.57	111.80	113.87	112.07	113.34
θ	1.91*	2.13**	1.81*	2.76***	1.31*	—

Based on 3,319 observations of 126 club-seasons and 31 manager replacements; standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; for θ the significance is based on a Likelihood-Ratio test.

Cumulative points and cumulative expected points have significant negative effects, while cumulative bookmaker points have a significant positive effect. Furthermore, the number of points in the previous three matches have a significant negative effect, while the number of expected points and bookmaker points in the previous three matches have no significant effects on the managerial replacement rate.

Column (2) of Table 3 shows that the log-likelihood hardly changes if the effects of recent expected points and recent bookmaker points are ignored. Recent actual outcomes affect the rate at which a manager is replaced, but recent bookmaker expectations and recent outcomes as measured by expected points do not play a role. The latter is in line with outcome bias affecting managerial replacements (Van Ours, 2026).

In column (3), the three cumulative indicators are combined into two surprise indicators: points surprise, equal to the difference between the cumulative number of points and the cumulative number of bookmaker-related points, and performance surprise, equal to the difference between the cumulative number of expected points and the cumulative number of bookmaker-related points. A likelihood ratio test shows that this restriction does not significantly affect the overall estimation results.

In column (4), the effect of performance surprise is omitted. This specification would be equivalent to the one used by Van Ours and van Tuijl (2016) and Van Ours (2026).

Points surprise has a significant negative effect on the managerial replacement hazard. However, the LR test-statistic of ignoring performance surprise shows that this restriction significantly changes the overall estimation results (The LR test statistic = 4.14; with 1 degree of freedom significant at the 5% level).

Since in column (3) the magnitudes of the parameter estimates for points surprise and performance surprise are very similar in column (5) the two effects are imposed to be the same. A comparison of the log-likelihoods of columns (3) and (5) suggests that one cannot reject the hypothesis that the two parameters have the same magnitude (The LR test statistic = 0.54, which is not different from zero at conventional levels of significance). Finally, column (6) shows parameter estimates if frailty is ignored. This reduces the magnitudes of the parameter estimates, and an LR test shows that the absence of frailty cannot be rejected (The LR test statistic = 2.54, which with 1 degree of freedom is significant at the 10% level).

All in all, for managerial replacements in the top league of professional football in the Netherlands, recent results in terms of points obtained in the previous three matches are important. In addition, points surprise and performance surprise calculated since the start of the season are important. This differs from the finding in [Van Ours \(2026\)](#) for the top five European football leagues that only points surprise is important while performance surprise is not. A possible explanation is that in the short run, only actual points obtained matter, while from the season's start onward, expected points also matter. It may be that boards of Dutch clubs are more emotional in the short run than when there is more time to reflect. In the short run, the number of points obtained plays a role in decision-making. When there is more time to reflect, performance in terms of expected points based on expected goals is also taken into account. This may be related to the specifics of the role of managers in Dutch football. They are responsible for the team and its performance but not for creating the team in terms of hiring new players or making incumbent players redundant by demoting or selling them to another club.

6 Consequences of Managerial Replacement

6.1 Previous studies on consequences

The position of managers in professional football resembles that of top managers in business. The main difference is that the performance of football managers is measured more precisely and more frequently, while the ownership structure is simpler and the business is more transparent. There is clear evidence that overall, managers affect performance.

Muehlheusser et al. (2018), for example, using data from the German top football league, the Bundesliga, found that managers from the top of the ability distribution gained, on average, considerably more points than managers from the bottom of the distribution. They also found evidence that managers affect teams' playing styles. Peeters and van Ours (2026) found that more productive managers work at more productive clubs. Investigating the allocation of football managers across clubs in nine European countries, they found evidence of positive assortative mobility. More productive managers were more likely to move to a higher-productivity club, both within countries and between countries.

When it comes to within-season managerial replacement, performance effects are less obvious. Within a season, a new manager has to be selected from a limited pool of available jobless managers, who may not have a job for a reason. Therefore, new managers may not have an optimal fit with the current team. Within-season, the new manager has limited degrees of freedom for adjustment. The squad is the same, and changing the style of play is not done overnight. The new manager may choose a different starting eleven than the previous manager, but this does not necessarily improve the performance of the team.

In their analysis of the optimality of managerial replacement, Höffler and Sliwka (2003) distinguished between two opposing effects on performance: effort and task allocation. A new manager leads to team members exerting greater effort because they may obtain favorable tasks which they could not get under the old manager. This will increase performance. However, a new manager is less well informed about the abilities of the team members and therefore may not immediately achieve the best allocation of workers over tasks. This has a negative effect on performance. In the context of football, the main allocation decision of the manager is which players from the squad will be playing in the team, in the starting eleven or later as substitutes, and which players from the squad will rarely be part of the team. The optimal dismissal decision depends on the tradeoff between the positive effort effect and the negative effect of less optimal task allocation. Höffler and Sliwka (2003) showed that the dismissal decision is only optimal if the expected abilities of the players are neither too homogeneous nor too heterogeneous. If the abilities are too homogeneous, task relocation does not make sense and there will be no effort effect. If the abilities are too heterogeneous, task reallocation does not make sense either and therefore the effort effect will be absent. Henriques Pereira et al. (2025) used the same distinction between task allocation and effort concluding that new managers changed workers' roles and tasks which had a negative effect on the work quality

but a positive impact on work effort.

In practice, the effects of managerial replacement are often found to be limited or even absent. Already [Gamson and Scotch \(1964\)](#) argued that a possible explanation for the lack of effects is that managerial replacement is a classic example of ritual scapegoating, a “convenient, anxiety-reducing act which the participants in the ceremony regard as a way of improving performance even though there may not be an actual improvement.” In the scapegoating theory, the appointment of a new manager on average makes no difference to team performance. Performance depends ultimately on the quality of playing talent. As [Gamson and Scotch \(1964\)](#) argued, sacrificing the manager is a gesture aimed at appeasing spectators or perhaps deflecting attention from shortcomings in the team owner’s personal contribution. If a manager is replaced because his position has been invented to take the blame for poor results effects of the replacement are likely to be absent ([Carter, 2006](#)). Scapegoating is a blaming phenomenon not exclusive to managerial replacement. [Zussman \(2021\)](#), for example, using observational data showed that driving-test decisions are influenced by scapegoating, a mechanism for prejudice discrimination. [Bauer et al. \(2023\)](#) provided experimental evidence of scapegoating behavior.

Various recent studies of professional football managerial replacements during a season suggest that a new manager does not increase performance. Examples are [Balduck et al. \(2010\)](#) for Belgium, [Arnulf et al. \(2012\)](#) for Norway, [De Paola and Scoppa \(2012\)](#) for Italy, and [Madum \(2016\)](#) for Denmark. [Van Ours and van Tuijl \(2016\)](#) concluded for the top league of professional football in the Netherlands that after a within-season dismissal of a manager, football team performance was better than before. However, this improvement would have occurred without managerial replacement due to regression to the mean. Earlier studies for Dutch professional football using different methodologies had similar conclusions ([Koning, 2003](#); [Bruinshoofd and Weel, 2003](#); [Ter Weel, 2011](#)). Using a sample of managerial replacements in the highest tier of Dutch professional football, [Besters et al. \(2017\)](#) compared the methods of [Koning \(2003\)](#), [Bruinshoofd and Weel \(2003\)](#) and [Van Ours and van Tuijl \(2016\)](#). [Koning \(2003\)](#) compared the results from all matches of all clubs by season. Implicitly, all clubs that did not replace their manager are a control group for the clubs that replaced their manager. [Bruinshoofd and Weel \(2003\)](#) and [Van Ours and van Tuijl \(2016\)](#) constructed control groups based respectively on short-term performances and bookmaker data. Irrespective of the method used the conclusion was the same: replacing a manager did not have a causal effect on the performance of a club. [Besters et al. \(2016\)](#), studying within-season manager changes in English Premier League football, found that some managerial changes were successful

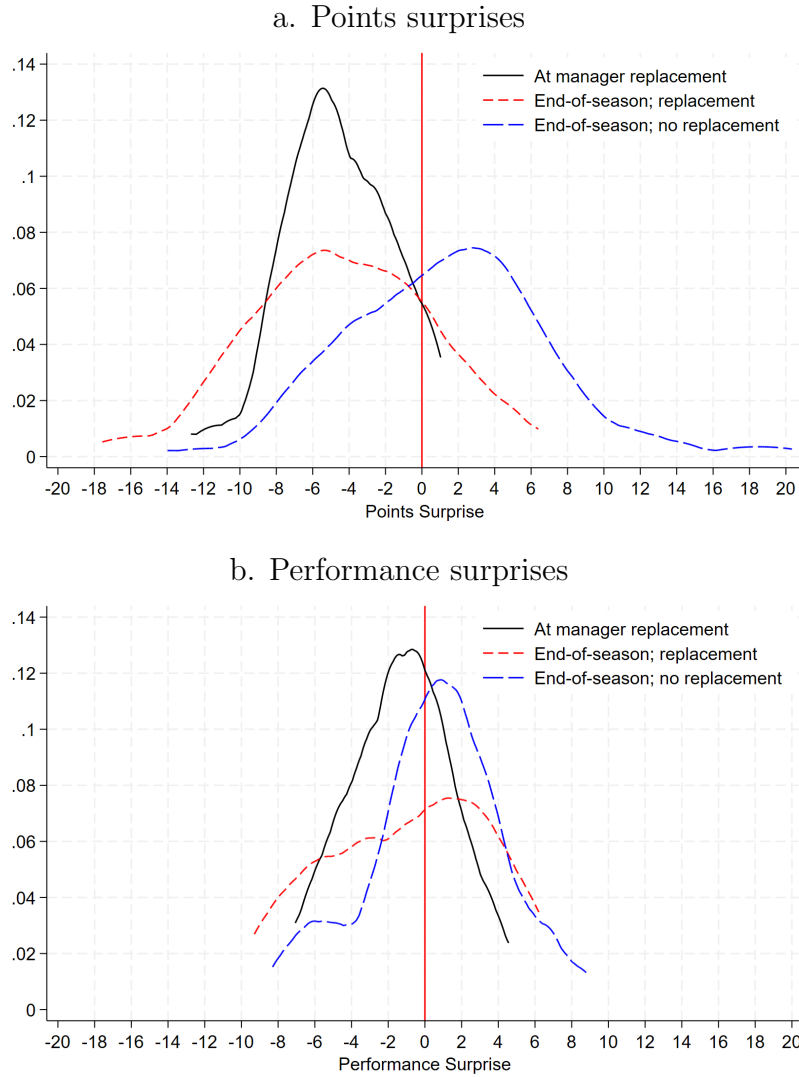
while others were counterproductive. On average, performance did not improve following a managerial replacement. [Muehlheusser et al. \(2016\)](#) found evidence that in German football, replacing a manager increased performance of sufficiently homogeneous teams in terms of quality. In teams that were heterogeneous in quality, new managers were likely to make similar choices as the previous managers. Therefore, players had no incentive to provide additional effort to convince the new manager of their abilities.

[Rocaboy and Pavlik \(2020\)](#) found for the English Premier League and the French Ligue 1 that coach replacement improved performance only when the teams under-performed before the replacement. [Flepp and Franck \(2021\)](#), studying the effects of football manager replacements on the performance of football teams in five European top leagues over five seasons, classified the dismissal of a football manager as unwise if the team was under-performing due to bad luck. After bad luck, performance would have increased anyway due to reversion to the mean irrespective of managerial replacement. [Sousa et al. \(2023\)](#) presented an overview of 24 studies on the effects of manager replacement on match outcomes, concluding that some studies found small positive impacts on short-term performance while others found no effects at all. [Bryson et al. \(2024\)](#), analyzing eight leagues in France, Germany, Italy, and Spain, concluded that a within-season football manager replacement on average did not have an effect on team performance. [Van Ours \(2026\)](#) also studied the consequences of managerial replacement in the top five European leagues over eight seasons, finding that clubs who replaced an underperforming manager obtained more points per match after replacement than before. However, the analysis also showed that if underperforming managers were not replaced, a similar improvement occurred. These findings were interpreted as evidence of regression to the mean, where after under-performing, results improved irrespective of whether or not the underperforming manager was replaced.

6.2 Managerial replacements in Dutch football: Consequences

A first indication of the consequences of managerial replacement can be derived from Figure [5](#). Panel a shows the distributions of points surprise at the time of manager replacement and, on average, at the end of the season over all matches for clubs whose managers were not replaced. Clearly, managers were replaced when results were disappointing, i.e., when the points surprise was negative. Panel a also compares the distribution of points surprise at the time of manager replacement and at the end of the season after a manager was replaced. If replacing a manager would have positive effects on performance, one would expect the points surprise at the end of the season to have increased. This does

Figure 5: **Surprises at Manager Replacement and End-of-Season with and without Manager Replacement**



not seem to have been the case. The distribution of points surprise at the end of the season was wider but not shifted to the right. Apparently, in some cases performance improved after manager replacement, but in other cases performance worsened.

Panel b of Figure 5 shows the distributions of performance surprises in similar situations. At managerial replacement, average performance surprise was negative, while without managerial replacement, on average end-of-season performance surprise was positive. Unlike points surprise, on average performance surprise with managerial replacement was positive at the end of the season.

To study the effects of manager replacement on team performance more closely, the following equation is estimated with the number of points P_{ijs} achieved by club i in match

j of season s as dependent variable:

$$P_{ijs} = \alpha_{is} + \beta_1 H_{ijs} + \beta_2 A_{ijs} + \beta_3 C_{ijs} + \nu_{ijs} \quad (3)$$

where the explanatory variables are H , indicating whether i was playing a home match, and A , which indicates the period after replacement of the manager, i.e., A has a value of 0 up to the last match of the old manager and a value of 1 from then on. Similarly C indicates whether there was a counterfactual replacement. These are replacements that did not actually occur but could have occurred since the sum of points surprise and performance surprise was about the same as when, in a different season, an actual manager replacement occurred (see Appendix B for details and Appendix C for an alternative approach in which surprise points are used to build a counterfactual). The α_{is} represent fixed effects for club $\times$ season. This implies that differences between clubs in a particular season in terms of for example squad quality, payroll and transfer spending are accounted for. The parameters β_2 and β_3 are the parameters of main interest. If $\beta_2 > \beta_3$, an actual replacement had a larger effect than a counterfactual replacement. If $\beta_2 = \beta_3$, managerial replacement had no effect.

Table 4: **Effects of Manager Replacement on Match Outcomes**

	(1) Points	(2) Points	(3) xPoints	(4) xPoints
Home	0.371*** (0.061)	−0.020 (0.061)	0.362*** (0.032)	0.070** (0.030)
Bookmaker points		1.044*** (0.066)		0.779*** (0.033)
Actual replacement (β_2)	0.211** (0.085)	0.265*** (0.079)	0.054 (0.045)	0.095** (0.039)
Counterfactual (β_3)	0.380*** (0.118)	0.335*** (0.110)	0.154** (0.063)	0.121** (0.054)
F-test $\beta_2 = \beta_3$	1.35	0.27	1.66	0.15

Based on 1634 observations of 50 club-seasons. Fixed effects linear models. F-test on the equality of actual replacement and counterfactual replacement; standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The parameter estimates are shown in Table 4. The first column shows that the number of points in a match is higher in home matches and after a new manager has started. On average, a club obtains 0.21 additional points per match after a manager has been replaced. However, a counterfactual replacement increases the number of points per match with 0.38. The bottom row of the table shows that the effects of the actual

replacement and counterfactual replacement are identical in magnitude.

The second column presents the parameter estimates with bookmaker points as additional right-hand side variable. Now, the effect of home advantage is not significantly different from zero as apparently it is included in the bookmaker points. For the rest, the pattern is similar. After managerial replacement, the number of points per match increased, but this is also the case for the counterfactual replacement.

Columns (3) and (4) of Table 4 show the parameter estimates with expected points as dependent variable. In column (3) actual replacement has an insignificant positive effect on the number of expected points while the counterfactual replacement has a significant positive effect. Nevertheless, the parameter estimates do not differ significantly from each other. Column (4) shows that the effect of home advantage on the number of expected points was not fully taken into account the bookmaker points. The effects of actual managerial replacement and counterfactual replacement are very similar suggesting that there is no causal effect of manager replacement on performance but rather a regression-to-the-mean phenomenon.

7 Conclusions

This paper presents an analysis of the causes and consequences of within-season managerial replacements in the top tier of professional football in the Netherlands over a period of seven seasons. Two measures of disappointment are used: points surprise and performance surprise. Points surprise is the cumulative difference between actual match outcomes and expectations based on bookmaker odds. Performance surprise is the cumulative difference between expected match outcomes based on expected goals and expectations based on bookmaker odds.

As to the analysis of the causes of managerial replacements, the main finding is that disappointing results, as measured by negative points surprises and negative performance surprises, were important. Furthermore, a sequence of poor results in recent matches also makes managerial replacement more likely. Performance as measured by expected points in recent matches was not important. A possible explanation is that the short-run perspective of the board of the club was more emotional than when there was more time to reflect. In the short run, the number of points obtained played a role in decision-making. When there was more time to reflect, performance in terms of expected points based on expected goals was also taken into account.

As to the analysis of the consequences of managerial replacement, the main finding

is that the performance of a club improves after managerial replacement, but this improvement would have materialized even if the manager had not been replaced. It is hard to understand why managers are replaced if, on average, their replacement does not improve results. It may be that the “scapegoat” theory applies to professional football. If results are disappointing, the manager is the first in line to be blamed by supporters, stakeholders, sports journalists, and so on. The blame is understandable, as the position of the manager is created to provide a focal point for potential blame. Replacing a manager may not be very helpful for improving match performance, but it usually is not very damaging to the manager’s career either. Managerial positions are more often than not short-tenured; managers are well paid; and once they have been replaced a couple of times by various clubs, they are often very popular as candidates to replace a manager whose team is underperforming.

Managerial replacements in professional football, on average, have no effects on the performance of the clubs involved. Nevertheless, leaving aside the scapegoat theory, it may be rational for clubs to act as they do. Even if, in expectation, a new manager is not more able than the incumbent manager, there is a possibility that the club, when attracting a new manager, draws from the top end of the ability distribution of new managers. The positive probability that a new manager improve performance may be sufficient to persuade a club to replace its manager. If, on average, half of the new managers will improve performance and half will not, there is a possibility that the club is lucky. By replacing their manager, clubs behave in a risk-seeking way. But for some clubs, risk-seeking is likely the only way to avoid catastrophe. There is always hope among supporters and club officials that replacing a manager will be helpful, but there is also some truth in the saying that hope is nothing more than postponed disappointment. Since manager replacement often occurs mid-season or as the season nears its end, the disappointment is not postponed for long and since a new season with new hopes is bound to start soon.

From a general economic perspective, an important question is whether the results based on manager replacement in professional football have external validity. That is, do they serve as an example for the causes and consequences of managerial replacement in regular firms? To some extent they do and to some extent they do not. There are important differences between the two types of managers. Whereas in football, replacing a manager is close to being business as usual, replacing a manager in regular firms is rare and therefore carries an important scarring effect for the managers who were replaced. However, there is a similarity in the personal characteristics of football managers and

regular managers. They have a similar age and similar abilities to cope with stress, media attention, and a variety of stakeholders. Furthermore, performance of the firm or club is partly driven by forces outside the control of the manager. These could be market forces for regular firms and injuries for football clubs. All in all, the analysis presented in this paper on the causes and consequences of managerial replacement could have external validity for firms that operate in an environment with a lot of media attention and clearly measurable output indicators that become available on a regular basis.

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Appendix A: Information about the data

The information used in this paper is based on the following data:

1. Goals and bookmaker odds: football-data.co.uk
2. Expected goals: fbref.com. Expected goals (xG) for the top league of professional football in the Netherlands are available for seasons 2019 to 2025. Due to a conflict between fbref and OPTA the provision of match level xG data has been discontinued in January 2026 even to the extent that currently xG data are no longer available at all (see: Twomey, L. (2026) FBref and Opta: The data break-up that sent soccer's analytics world into meltdown, *The Athletic*, 28 January 2026)
3. Replacement of managers: Wikipedia

A1. Descriptives Bookmaker Odds Analysis

Variable	Mean	St.dev.	Min	Max
Points	1.38	1.33	0	3
Bookmaker based points	1.39	0.64	0.13	2.81
Points previous 3 matches	4.15	2.54	0	9
xPoints previous 3 matches	4.18	1.58	0.5	8.6

Note: Based on 3,758 observations of 126 club-seasons.

A2. Replacement of Managers

During the seasons 2019 to 2025 in total 31 managers were replaced, that is, in each season on average one in four managers. This shows that indeed a managerial position in professional football is very insecure. Here is an overview of managerial replacements by club (in parentheses the week after which the manager was replaced):

Season	#	Club
2019	5	Utrecht (4), PEC (16), NAC (26), Excelsior (28), Heerenveen (29)
2020	5	Feyenoord (11), VVV (13), Vitesse (13), ADO (15), PSV (17)
2021	5	ADO (8), Fortuna SC (8), Willem II (18), PEC (23), VVV (26)
2022	5	PEC (12), Heerenveen (19), Willem II (25), Utrecht (27), Sparta (30)
2023	2	Groningen (14), Ajax (16)
2024	5	Ajax (9), Vitesse (12), Volendam (14), Heracles (15), AZ (17)
2025	4	Sparta (10), Almere (16), Feyenoord (22), Willem II (30)
Total	31	

In addition to these changes there were six within-season manager replacements which were not performance related. During season 2021 Arne Slot, manager of AZ, was in contact with Feyenoord about a new contract for the next season since it was the last

season of his contract at AZ. The management of AZ disagreed with these contacts and replaced him. Henk de Jong, manager of Cambuur, was seriously ill and was replaced for health reasons both in seasons 2022 and 2023. Henk Fräser, manager of Utrecht, was replaced in 2023 due to inappropriate behavior towards one of his players. Robin van Persie, manager at Heerenveen, quit his job in 2025 to fill a vacancy at Feyenoord. The counterfactual replacements of managers are presented in Tables B2 and C1.

A3. Descriptives Causes of Managerial Replacement

Variable	Mean	Std. deviation	Minimum	Maximum
Cumulative points	25.44	16.72	0	91
Cumulative Bookmaker points	24.93	15.36	2.50	84.23
Cumulative xPoints	25.20	14.98	1.30	80.96
Performance Surprise	0.27	2.46	-8.76	8.84
Points Surprise	0.51	4.35	-15.91	20.33
Points previous 3 matches	4.23	2.52	0	9
xPoints previous 3 matches	4.23	1.60	0.54	8.62

Note: Based on 3,319 observations.

A4. Descriptives Consequences of Managerial Replacement

Variable	Mean	Std. deviation	Minimum	Maximum
a. Actual replacements				
Points	1.14	1.28	0	3
xPoints	1.24	0.75	0.00	2.98
Home	0.50	0.50	0	1
Bookmaker points	1.27	0.62	0.13	2.76
After replacement	0.46	0.50	0	1
b. Counterfactual replacements – Points and Performance surprise				
Points	1.46	1.35	0	3
xPoints	1.45	0.76	0.02	2.95
Home	0.50	0.50	0	1
Bookmaker points	1.46	0.68	0.16	2.79
After replacement	0.50	0.50	0	1
c. Counterfactual replacements – Points surprise				
Points	1.46	1.34	0	3
xPoints	1.48	0.76	0.02	2.95
Home	0.50	0.50	0	1
Bookmaker points	1.46	0.67	0.16	2.79
After replacement	0.51	0.50	0	1

Note: Actual replacement based on 980 observations; counterfactual replacements based on 621 observations (panel b) and 663 observations (panel c). See for details Appendices B and C.

Appendix B: Descriptives by Club

Table B.1 provides various descriptives at the level of the clubs. The clubs are ranked by actual points per match over the sample period ranging from 2.30 by PSV over seven seasons to 0.81 by Volendam over two seasons. The averages of the expected points follow a similar ranking but at the top of the table expected points exceed actual points while at the bottom actual points are less than expected points. Clearly, this represents quality differences between the clubs at the top and those at the bottom of the table.

Table B.1: **Descriptives Eredivisie; 2019 - 2025**

Club	Actual points	Expected points	Δ	Bookmaker				
	(1)	(2)	(1)-(2)	points	Δ	N	S	R
	(1)	(2)	(1)-(2)	(4)	(1)-(4)	(6)	(7)	(8)
PSV	2.30	2.11	0.20	2.20	0.10	230	7	1
Ajax	2.25	2.10	0.15	2.28	-0.02	229	7	2
Feyenoord	2.09	1.95	0.14	2.03	0.06	229	7	2
AZ	1.90	1.76	0.14	1.86	0.04	229	7	1
Twente	1.65	1.58	0.07	1.56	0.09	196	6	0
Utrecht	1.58	1.55	0.03	1.59	-0.01	229	7	2
Vitesse	1.38	1.38	0.00	1.46	-0.08	196	6	2
Sparta	1.34	1.28	0.06	1.26	0.07	196	6	2
Go Ahead	1.27	1.28	0.00	1.20	0.07	136	4	0
NEC	1.27	1.30	-0.03	1.23	0.04	136	4	0
Heerenveen	1.22	1.31	-0.09	1.29	-0.07	230	7	2
Heracles	1.19	1.24	-0.05	1.16	0.03	196	6	1
Groningen	1.14	1.25	-0.11	1.23	-0.09	196	6	1
Willem II	1.10	1.14	-0.04	1.14	-0.04	162	5	3
Fortuna SC	1.09	1.12	-0.03	1.05	0.05	230	7	1
PEC	1.06	1.19	-0.14	1.11	-0.05	196	6	3
Emmen	1.00	1.15	-0.15	1.03	-0.03	128	4	0
VVV	0.98	1.12	-0.15	0.96	0.02	94	3	2
Excelsior	0.92	1.03	-0.11	0.92	0.01	102	3	1
ADO	0.91	0.91	0.00	0.94	-0.02	94	3	2
RKC	0.91	1.01	-0.10	0.97	-0.06	196	6	0
Cambuur	0.85	1.04	-0.18	1.02	-0.17	68	2	0
Graafschap	0.85	0.94	-0.09	0.88	-0.02	34	1	0
Almere	0.82	1.05	-0.23	0.98	-0.15	68	2	1
NAC	0.82	1.04	-0.21	0.98	-0.16	68	2	1
Volendam	0.81	0.96	-0.15	0.84	-0.03	68	2	1

Actual, expected and bookmaker points: averages per match; N = number of observations; S = number of seasons; R = number of managerial replacements

Table B.1 also provides information about the average number of points per match calculated using bookmaker odds. Also for the bookmaker points there is a strong correlation with actual points but here the differences are positive and negative both at the top and the bottom of the table. The table also provides information about the number of managerial replacements. Of the 16 clubs at the top half of the table six were present in every season with 13 club replacing their manager at least once and three clubs never

replacing a manager over the sample period. Of the 15 clubs in the bottom part of the table one club was present in all seasons, four clubs never replaced their manager while two clubs replaced their manager in three seasons.

Table B.2: **Replacement of Managers – Points Surprise + Performance Surprise**

	Season	Club	Manager	After	PSPS	Counterfactual		Season	#
						After	PSPS		
1	2019	Utrecht	Jean-Paul de Jong	4	-3.03	6	-3.08	2024	1
2	2019	PEC	John van 't Schip	16	-3.85	9	-3.73	2020	2
3	2019	NAC	Mitchell van der Gaag	26	-4.48				
4	2019	Excelsior	Adrie Poldervaart	28	-2.26	29	-0.50	2024	3
5	2019	Heerenveen	Jan Olde Riekerink	29	-4.04	6	-4.28	2024	4
6	2020	Feyenoord	Jaap Stam	11	-9.16				
7	2020	VVV	Robert Maaskant	13	-3.85				
8	2020	Vitesse	Leonid Sloetski	13	-0.13	6	0.15	2019	5
9	2020	ADO	Alfons Groenendijk	15	-2.91	23	-3.02	2019	6
10	2020	PSV	Mark van Bommel	17	-12.08	29	-12.27	2025	7
11	2021	ADO	Aleksandar Ranković	8	-2.76	23	-3.02	2019	6
12	2021	Fortuna SC	Kevin Hofland	8	-4.16	28	-3.86	2022	8
13	2021	Willem II	Adrie Koster	18	-18.09				
14	2021	PEC	John Stegeman	23	-0.82	28	-1.05	2024	9
15	2021	VVV	Hans de Koning	26	3.62	4	3.22	2019	10
16	2022	PEC	Art Langelier	12	-5.47	9	-3.73	2020	2
17	2022	Heerenveen	Johnny Jansen	19	2.81	12	2.81	2023	11
18	2022	Willem II	Fred Grim	25	-9.47				
19	2022	Utrecht	René Hake	27	-6.77	26	-6.77	2021	12
20	2022	Sparta	Henk Fraser	30	-10.49				
21	2023	Groningen	Frank Wormuth	14	-7.21	10	-6.87	2019	13
22	2023	Ajax	Alfred Schreuder	16	-11.37	25	-11.88	2020	14
23	2024	Ajax	Maurice Steijn	9	-12.09	25	-11.88	2020	14
24	2024	Vitesse	Phillip Cocu	12	-8.99	26	-9.00	2023	15
25	2024	Volendam	Matthias Kohler	14	-1.06	12	-0.72	2023	16
26	2024	Heracles	John Lammers	15	1.18	15	1.20	2025	17
27	2024	AZ	Pascal Jansen	17	-1.68	16	-1.67	2022	18
28	2025	Sparta	Jeroen Rijdsdijk	10	-2.79	22	-2.80	2020	19
29	2025	Almere	Hedwiges Maduro	16	-7.05				
30	2025	Feyenoord	Brian Priske	22	-9.49				
31	2025	Willem II	Peter Maes	30	-10.31				

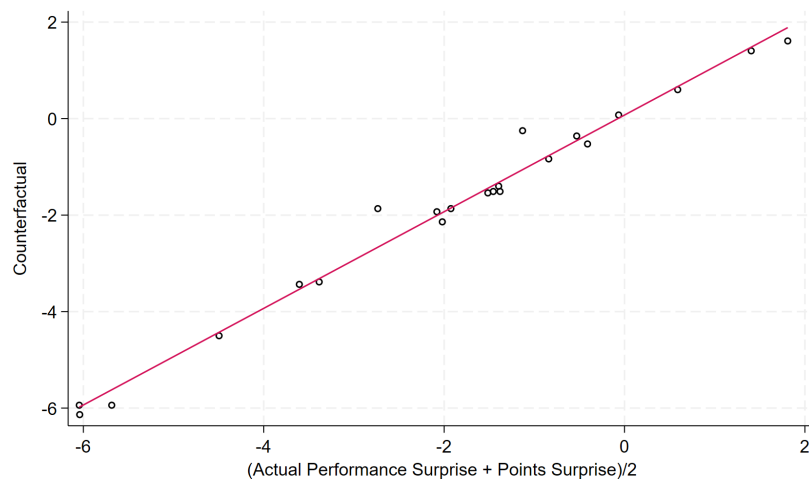
After in weeks; PSPS = Performance Surprise + Points Surprise

Table [B.2](#) gives an overview of all managerial replacements organized by season and week. The table presents the value of the sum of points surprises and performance surprises in the last match the manager was in charge. This sum ranges from 3.62 for VVV in season 2021 to -18.09 for Willem II in the same season. Counterfactual replacements were established by finding for each managerial replacement the sum of points and performance surprise for the same club but in a different season closest to the value for the actual replacement. The difference between the actual and counterfactual replacement should be at most two points and be in between the fourth and thirtieth match – because otherwise it is difficult to do a before-after analysis of performance.

For some replacements, the points and performance surprise were so negative that no counterfactual replacement could be established. Some clubs had more seasons with managerial replacement than seasons without managerial replacement (ADO and VVV were present in the top league for three seasons while they replaced their manager in two out of these three seasons). Therefore, it was not possible to find a unique counterfactual for each managerial replacement. As shown in the last column of Table B.2, it was possible for the 31 managerial replacements to find 22 counterfactuals of which 19 are unique.

Figure B.1 shows the relationship between the averages of points surprises and performance surprise of the actual and counterfactual replacements.

Figure B.1: Points Surprises at Manager Replacement; Actual and Counterfactual



Appendix C: Points Surprises for Counterfactuals

In this appendix, parameter estimates are shown in which the counterfactual replacements are based on points surprises only (see Figure 6a). Table C.1 gives an overview of the 20 counterfactual replacements similar to those presented in Table B.2

Table C.1: **Replacement of Managers – Points Surprise**

	Season	Club	Manager	After	PS	Counterfactual		Season	#
						After	PS		
1	2019	Utrecht	Jean-Paul de Jong	4	-1.38	6	-1.30	2023	1
2	2019	PEC	John van 't Schip	16	-4.94	16	-3.50	2020	2
3	2019	NAC	Mitchell van der Gaag	26	-6.11				
4	2019	Excelsior	Adrie Poldervaart	28	-1.28	23	-1.40	2024	3
5	2019	Heerenveen	Jan Olde Riekerink	29	-0.95	5	-1.05	2025	4
6	2020	Feyenoord	Jaap Stam	11	-6.80	27	-5.97	2019	5
7	2020	VVV	Robert Maaskant	13	-2.64				
8	2020	Vitesse	Leonid Sloetski	13	1.25	8	1.23	2022	6
9	2020	ADO	Alfons Groenendijk	15	-3.20	27	-3.10	2019	7
10	2020	PSV	Mark van Bommel	17	-5.09	24	-4.88	2025	8
11	2021	ADO	Aleksandar Ranković	8	-2.36	27	-3.10	2019	7
12	2021	Fortuna SC	Kevin Hofland	8	-3.83	13	-3.68	2022	9
13	2021	Willem II	Adrie Koster	18	-12.47				
14	2021	PEC	John Stegeman	23	-4.75	16	-3.50	2020	2
15	2021	VVV	Hans de Koning	26	-0.24	4	1.39	2019	10
16	2022	PEC	Art Langeler	12	-7.65				
17	2022	Heerenveen	Johnny Jansen	19	2.76	13	2.78	2023	11
18	2022	Willem II	Fred Grim	25	-6.01				
19	2022	Utrecht	René Hake	27	-5.56	27	-5.64	2021	12
20	2022	Sparta	Henk Fraser	30	-9.55				
21	2023	Groningen	Frank Wormuth	14	-3.81	15	-3.89	2019	13
22	2023	Ajax	Alfred Schreuder	16	-6.63	25	-6.13	2020	14
23	2024	Ajax	Maurice Steijn	9	-6.41	16	-4.56	2022	15
24	2024	Vitesse	Phillip Cocu	12	-6.47	20	-6.56	2023	16
25	2024	Volendam	Matthias Kohler	14	-4.03	12	-3.94	2023	17
26	2024	Heracles	John Lammers	15	-0.72	15	-0.76	2025	18
27	2024	AZ	Pascal Jansen	17	0.35	21	0.31	2025	19
28	2025	Sparta	Jeroen Rijdsdijk	10	-2.71	29	-2.47	2021	20
29	2025	Almere	Hedwiges Maduro	16	-8.06				
30	2025	Feyenoord	Brian Priske	22	-4.86	27	-5.97	2019	5
31	2025	Willem II	Peter Maes	30	-5.27				

After in weeks; PS = points surprise

Table C.2 shows the various parameter estimates of the effects of the actual and the counterfactual managerial replacements. The parameter estimates are very much the same to those presented in Table 4

Table C.2: **Effects of Manager Replacement on Match Outcomes**

	(1) Points	(2) Points	(3) xPoints	(4) xPoints
Home	0.346*** (0.060)	−0.039 (0.061)	0.368*** (0.032)	0.078*** (0.030)
Bpoints		1.041*** (0.067)		0.783*** (0.033)
Actual replacement	0.211** (0.085)	0.265*** (0.080)	0.054 (0.045)	0.095** (0.039)
Counterfactual	0.314*** (0.109)	0.292*** (0.102)	0.062 (0.058)	0.045 (0.050)
F-test equality	0.56	0.04	0.01	0.62

Based on 1676 observations of 51 club-seasons. Fixed effects linear models. F-test on the equality of actual replacement and counterfactual replacement; standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure [C.1](#) shows the relationship between the points surprises of the actual and counterfactual replacements.

Figure C.1: **Points Surprises at Manager Replacement; Actual and Counterfactual**

