Journal of Sports Economics
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Journal of Sports Economics 2014 15: 150 originally published online 14 June 2012
DOI: 10.1177/1527002512447803

Article

Journal of Sports Economics
2014, Vol. 15(2) 150-179

DOI: 10.1177/1527002512447803
jse.sagepub.com
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Forced Manager Turnovers in English Soccer Leagues: A Long-Term Perspective

Stefano d'Addona[1] and Axel Kind[2]

Abstract

The authors conduct an empirical analysis of a hand-collected sample of 2,376 turnovers of soccer managers in the four major English leagues in the seasons from 1949-1950 to 2007-2008. While the relation between the probability of a manager being fired and long-term performance remained remarkably stable, both the absolute frequency and the sensitivity of firing decisions on the outcome of recent matches steadily and significantly increased during the six decades covered by the sample. This is likely to reflect the increased level of competition in and economic importance of the English soccer leagues.

Keywords

managers' turnover, firing decision, governance mechanisms, logit models, duration models

Introduction

The threat of firing a manager is a powerful mechanism for aligning their interests with those of investors, thereby increasing the performance of an organization, be it a corporation or a sports team. In particular, the threat of being fired due to bad

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performance ensures adequate effort by the incumbent manager. Furthermore, monitoring managers' performance may provide a better understanding of the level of their skills and enable the board to replace a low-performing manager with a better one. The large majority of papers in the field of corporate governance (see CEO Turnovers in Corporations subsection) and sports economics (see Manager Turnovers in Sports Teams subsection) are indeed able to show that the past performance of an organization is significantly related to the probability of its leading manager being fired.

This article studies the performance sensitivity of firing decisions in English soccer teams, with a particular focus on its long-term development. The four major English soccer leagues have experienced considerable development in the last decades in terms of revenues, salaries, transfer sums, and media coverage. For example, Deloitte (2009) reports average annual revenue growth rates[1] since the 1991-1992 season of 16.4%, 11.6%, 10.6%, and 9.2%, respectively, for teams in the four major English soccer leagues—Premier League, Championship, League 1, and League 2. These figures are particularly impressive when compared to the much lower annual nominal U.K. gross domestic product growth of 5.4% over the same time period. However, as noted in Deloitte (2009), English soccer is also characterized by a high level of entrepreneurial competition: "Despite the increases in revenue, the fiercely competitive nature of the league has seen potential profits quickly competed away, with operating margins falling from 16% to 10%" (p. 2). This raises the question of whether the increased economic importance of English soccer and its fiercer competition are also reflected in the performance pressure exercised on managers via the threat of firing.

This article contributes in two ways to the existing literature. First, to the best of our knowledge, this study is the most comprehensive empirical investigation so far of manager turnovers in sports teams in terms of numbers of (forced) manager turnover events and match data used for the construction of the performance variables. The sample comprises a complete set of 2,376 manager turnovers in the four major English soccer leagues. Of these, 1,213 are classified as firings of regular managers.[2] The construction of the performance variables is based on the outcome of 119,555 soccer matches.

Second, this article focuses on the existence of time period differences and long-term trends in the performance sensitivity of firing decisions, an aspect that has never been systematically studied in the field of sports economics. The sample used in this study is particularly well suited for investigating this research question because it is comparatively long, spanning six decades, from the 1949-1950 season to the 2007-2008 season.

As argued by other authors (see, e.g., Audas, Dobson, & Goddard, 1997, 1999), studying the performance sensitivity of manager turnovers in sports teams is appealing because of the possibility of constructing simple, reliable, and uncontroversial performance measures based on match outcomes. Match-based performance measures have decisive advantages over traditional market-based and accounting-based measures. First, they are free from the forward-looking problem of market-based measures which tend to anticipate the occurrence of a manager turnover. Second, the frequency of the performance signal is (at least) weekly, and not quarterly or annual, as in the case of accounting data. This allows one to test the performance–turnover relation in a close time frame around the turnover event. Third, match-level performance measures are free of manipulation biases because managers have generally no reason to artificially alter the outcome of a game. On the contrary, the general consensus in the related literature is that both departing and incoming CEOs of public companies have the incentives and means to manipulate accounting data in correspondence with the beginning and end of their appointments (see, e.g., Pourciau, 1993).[3]

This article employs discrete-choice logit models and proportional hazard models to detect the determinants of manager firings in English soccer. While the main focus of the article is on (the evolution of) the relation of firing decisions and managerial performance, all regressions include a number of control variables related to the team position, the time period within the season, as well as variables capturing the individual characteristics of managers, such as age and prior experience as team coach and former soccer player.

In accordance with economic intuition and empirical evidence of previous papers, the probability of a manager being fired is found to be negatively related to both short-term and long-term managerial performance. Interestingly, while the relation between the firing probability and long-term performance has remained remarkably stable, the absolute firing probability and its sensitivity toward the outcome of recent matches (short-term performance) has steadily and significantly increased over time. The fact that nowadays soccer managers are fired more frequently and their jobs depend to a larger extent on the outcome of recent matches indicates that they are confronted with stronger short-term monitoring and that the governance mechanism of the firing threat has gained importance. In general, these findings seem to comply with the increased level of economic importance and competition in English soccer. Furthermore, the probability of being sacked is found to be (all else being equal) higher for older managers and less-experienced ones. The latter result is interesting on its own because previous studies could not detect any significant impact of experience variables on turnover probabilities. Finally, managers of teams in relegation positions are found to face a higher probability of getting fired. The combination of this observation with the fact that manager firings seem to trigger lower mean performance but higher variance (see Audas, Dobson, & Goddard, 2002) supports the hypothesis that owners of teams in relegation positions tend to play a gambling for resurrection game.[4]

The article is structured as follows. Related Literature section provides a detailed literature review on the determinants of manager turnover rates. The subsequent section describes the sample construction and the set of explanatory variables. The empirical findings are presented and discussed in the Results section. The final section concludes with a summary of the main results of the article.

Related Literature

CEO Turnovers in Corporations

Firing a CEO is one of the most drastic decisions to be made by the board of directors of a company. Not surprisingly, academics in the field of corporate governance have devoted considerable research resources to study different aspects of this decision. This section provides an overview of the most important empirical contributions in this field of research. The rich body of papers that investigate the turnover of executive managers can be classified along several dimensions. A first distinction concerns the broad research focus: Some papers mainly investigate the determinants of manager turnovers (see Table 1), others study their consequences on firm performance (e.g., Denis & Denis, 1995; Furtando & Rozeff, 1987; Huson, Malatesta, & Parrino, 2004; Kang & Shivdasani, 1996), and still others deal with both research questions (e.g., Ertugrul & Krishnan, 2011; Warner, Watts, & Wruck, 1988; Weisbach, 1988). A second distinction concerns the entities for which the manager turnovers are considered: industry corporations (see, e.g., Coughlan & Schmidt, 1985; Parrino, 1997; Warner et al., 1988; Weisbach, 1988), banks (Barro & Barro, 1990), or sport teams (see the next subsection). The most important empirical findings (see Brickley, 2003, for a summary of the literature) can be summarized as follows.

First, the majority of studies find a negative and statistically significant relation between performance measures and the probability of a forced turnover (see Coughlan & Schmidt, 1985; Warner et al., 1988; Weisbach, 1988, among many others).

Second, the negative relation between stock performance and turnover probability is more pronounced when (i) the board is dominated by outside directors (Weisbach, 1988), (ii) the successor is a firm outsider (Parrino, 1997), (iii) the industry is homogeneous (Parrino, 1997), (iv) the competition in the relevant industry is high (DeFond & Park, 1999), (v) the precision of the performance signal is high (Engel, Hayes, & Wang, 2003), and (vi) the board is small (Yermack, 1996).

Third, performance measures based on deviations from boards' expectations (e.g., earnings deviations relative to analyst forecasts) seem to provide a better empirical fit in explaining firing decisions (Farrell & Whidbee, 2003).

Fourth, the absolute probability of a dismissal as well as its performance sensitivity should increase with idiosyncratic risk and decrease with systematic risk (Bushman, Dai, & Wang, 2010).

The article of Huson, Parrino, and Starks (2001) is the corporate governance article with the closest link to ours. The authors analyze the development of CEO firings in U.S. corporations from 1971 to 1994 and conclude that the performance

Table 1. Literature Overview on Manager Turnovers in Corporations.

Authors (Year)	Performance Measure	Country	Sample Period	Success	Dismiss
Barro and Barro (1990)	E_A, E_R	USA	1982–1987	60	–
Bushman, Dai, and Wang (2010)	S_A, S_R, ROA_A	USA	1992–2005	1,823	794
Coughlan and Schmidt (1985)	S_A, S_R	USA	1977–1980	76	–
DeFond and Park (1999)	S_A, S_R	USA	1988–1992	301	–
Engel, Hayes, and Wang (2003)	S_A, S_R	USA	1975–2000	1,330	171
Farrell and Whidbee (2003)	S_R, ROA_R	USA	1986–1997	363	86
Jenter and Kanaan (2011)	S_A, S_R	USA	1993–2001	1,590	384
Huson, Parrino, and Starks (2001)	S_R, ROA_R	USA	1971–1994	1,316	213
Kaplan (1994)	S_A, ROA_A	Germany	1981–1989	46	–
Parrino (1997)	S_R, ROA_R	USA	1969–1989	977	127
Warner, Watts, and Wruck (1988)	S_A, S_R	USA	1963–1978	567	102
Weisbach (1988)	S_A	USA	1974–1983	286	–

sensitivity of CEO firings has not changed significantly from the beginning to the end of the sample period, in spite of a general improvement of the governance structure of companies and an increase over time in forced turnover frequency.

Manager Turnovers in Sports Teams

While most empirical studies that investigate the determinants of managerial turnovers focus on large corporations and rely either on accounting- or market-based performance measures, an established and growing strand of literature deals with managerial changes in the context of team sports. Studying the determinants of managerial turnover in team sports is particularly appealing because of the availability of large, accurate, and transparent data on managerial change and team performance. As noted by several authors (see, e.g., Audas et al., 1997, 1999), the possibility of constructing simple performance measures based on match outcomes is particularly valuable. First, match-based performance measures are free from the forward-looking bias of market-based measures, such as (abnormal) stock returns, that tend to anticipate manager turnovers. Second, match-level performance signals are observed at a higher frequency than quarterly or annual accounting-based measures. This allows one to test the performance–turnover relation in a closer time frame around the turnover event. Third, match-level performance measures are free of manipulation biases: Managers have neither the means nor the incentives to artificially alter the output of a game. This is different from earnings-based performance measures which tend to be prone to "creative accounting."

Table 2 provides a list of important papers that study the determinants, and thus the performance sensitivity, of manager firings in team sports. The methodology for studying the determinants of manager turnover ranges from descriptive statistics, correlation analysis, and linear probability regressions (Allen, Panian, & Lotz,

Table 2. Literature Overview on Manager Turnovers in Sports.

Authors (Year)	Sport	Country	Sample Period	Success	Dismiss
Panel A. Studies of manager turnovers in soccer teams					
Audas, Dobson, and Goddard (1997)	Soccer	England	1972–1993	633	–
Audas, Dobson, and Goddard (1999)	Soccer	England	1972–1997	826	699
Bachan, Reilly, and Witt (2008)	Soccer	England	2001–2004	NA	NA
Barros, Frick, and Passos (2009)	Soccer	Germany	1981–2003	190	190
Frick, Barros, and Prinz (2010)	Soccer	Germany	1981–2003	142	115
Salomo and Teichmann (2000)	Soccer	Germany	1979–1998	194	–
Forrest and Tena (2007)	Soccer	Spain	2002–2005	20	20
Panel B. Studies of manager turnovers in other sports					
Allen, Panian, and Lotz (1979)	Baseball	USA	1920–1973	934	–
Audas, Goddard, and Rowe (2006)	Ice Hockey	USA	1967–2002	369	–
Borland and Lye (1996)	Football	Australia	1931–1994	219	–
Fizel and d'Itri (1997)	Basketball	USA	1984–1991	147	100
Kahn (2004)	Basketball	USA	1996–2003	60	41
Mixon and Trevino (2004)	Football	USA	1990–2000	85	85

1979; Audas et al., 1997; Fizel & d'Itri, 1997) to discrete-choice models (logit/probit regressions; Forrest & Tena, 2007; Mixon & Trevino, 2004) and duration models (Audas et al., 1999; Audas, Goddard, & Rowe, 2006; Barros, Frick, & Passos, 2009; Kahn, 2004). While a complete review of those studies is beyond the scope of this article, several established facts arising from the existing research are worth mentioning. Since the number of observations used in the empirical analysis is likely to play a critical role in identifying the importance and significance of explanatory variables, in the following summary greater weight is given to studies relying on large samples.

First, manager turnovers in sports teams are characterized by a higher turnover frequency and a larger share of forced turnovers compared to the world of corporations. For example, Audas, Dobson, and Goddard (1999) identify 84.6% of manager changes in a sample of 826 manager turnovers in the four English soccer leagues between 1972-1973 and 1999-2000 as firings. This is in striking contrast to the 16.2% of forced turnovers in a sample of 1,316 CEO turnovers at large U.S. public firms between 1971 and 1994 (Huson, Parrino, & Starks, 2001).

Second, the majority of studies (e.g., Allen et al., 1979; Audas et al., 1999; Barros et al., 2009; Kahn, 2004; Salomo & Teichmann, 2000) provide evidence that manager firings in teams sports are strongly linked to past performance as measured by (recent) match outcomes. For instance, Audas et al. (1999) show that in their sample of manager turnovers in English soccer the results of up to the last nine matches are significantly related to the occurrence of manager firings, with more recent matches having greater explanatory power, on average.

Third, individual manager characteristics related to past experience as either player or manager do not seem to affect, all else being equal, the probability of being fired (see Audas et al., 1999; Audas et al., 2006).

Fourth, racial differences do not seem significantly related to firing decisions (Kahn, 2004; Mixon & Trevino, 2004).

Finally, it is important to note that, to the best of our knowledge, no paper in sports economics has so far systematically analyzed the development over time of the performance sensitivity of firing decisions. Audas et al. (1999) document, however, a statistically significant increase over time in the absolute number of firings.

Data

Sample Construction

This article analyzes the complete set of manager turnovers in the four major English soccer leagues from the beginning of the 1949-1950 season until the end of the 2007-2008 season. An initial sample of complete manager histories corresponding to each of the 92 teams currently playing in any of the four major soccer leagues is obtained from SoccerBase,[5] an Internet portal that provides a wide range of statistics related to soccer. To avoid survivorship biases, this initial sample is extended to consider the manager histories of 17 teams that played in any of the four major leagues during the time period covered by our sample. Manager histories for these additional 17 teams are obtained and cross-checked using a variety of Internet sources, such as teams' official Internet pages, fan pages, Internet soccer portals,[6] Wikipedia pages dedicated to either teams or managers, and online newspapers and broadcasters, such as the BBC, *The Guardian*, *The Independent*, *The Daily Telegraph*, or *The Times*.[7] The above-mentioned Internet sources are also used to cross-check the turnover dates of the initial sample and to collect manager characteristics, such as age and relevant soccer experience as a player.

Additionally, we collect three categories of data: (i) performance data, (ii) individual manager data, and (iii) manager turnover data. *Performance* is measured by the on-field performance of a team and requires information on the date of each soccer game, the teams playing (home and away), their scores, and the league in which they play. *Manager* data include manager characteristics, such as age, prior appointments as club manager, and experience as a player in the team currently managed or in a national soccer team. *Turnover* data comprise the exact date of the succession as well as its nature, that is, whether it was forced or voluntary.

Forced Versus Voluntary Turnovers

The identification of whether a manager was fired or not[8] deserves particular attention, because this information is seldom correctly disclosed by companies (Weisbach, 1988) and sometimes not even critically discussed in the media (Warner et al., 1988). In fact, it is very likely that both parties (the board as the principal and the manager as the agent) have an interest in letting a dismissal appear to be a consensual agreement. To minimize the risk of misclassification, we adopt the following procedure.

Manager changes within the regular season are, in general, treated as sacking, unless we find evidence that the manager left the team for any of the following reasons: (i) new appointment in a more prestigious team, (ii) illness, or (iii) tragic circumstances, such as death, the illness of a family member, and others.[9]

Manager changes during the *off*-season are, in general, treated as voluntary successions, unless we find evidence that the manager was forced to leave the team. We reclassify a turnover during the off-season from voluntary to forced if it is clearly described as such in news articles commenting on the event or if any of the following circumstances apply to the succession: (i) The manager leaves the team and retires before the age of 60, (ii) there is still a valid contract between the manager and the team at the time of the succession, or (iii) the manager leaves the team and starts managing a less prestigious soccer team, for example, one in a lower division.

Sample Description

The total sample includes 2,376 manager turnovers. While in 425 of those turnovers the departing manager is a caretaker, the other 1,951 cases involve a regular manager. Since caretakers are appointed to manage the team for a short period of time, often as the consequence of the sudden dismissal of a regular manager, we exclude them from the analysis. Of the 1,951 turnovers of regular managers, 1,213 are classified as firings. As a matter of comparison, the manager succession samples studied in Engel, Hayes, and Wang (2003), Huson et al. (2001), and Parrino (1997) include 171, 213, and 127 dismissals, respectively. Even in the field of sports economics, the analysis with the largest data sample is Audas et al. (1999), with 699 firings. In addition, the percentage of forced departures in our sample is, with 62.2%, much higher than the analogous percentages reported for corporations (between 12.8% and 16.2% in the papers mentioned) but lower than the 84.62% reported for English soccer teams by Audas et al. (1999) and the 79.31% reported for Bundesliga soccer teams by Frick, Barros, and Prinz (2010).

Table 3 presents statistics related to the turnovers in our sample. Overall, all four leagues considered display a remarkably homogeneous picture with respect to the numbers of turnovers and dismissals. Based on the numbers reported in Panel B of Table 3, the unconditional probability of observing the dismissal of a regular manager during one season lies between 21% and 25% in any of the four leagues. However, Panel A of Table 3 shows that both the numbers of turnovers and dismissals have increased (although not monotonically) over the years. Moreover, the percentage of forced turnovers has risen significantly over time, which is in line with the findings of Huson et al. (2001) for corporations between 1971 and 1994 and the results of Audas et al. (1999) for soccer teams between 1972 and 1997. In the overall sample, the average seasonal probability of being fired is 22.4%, which translates into an average survivor time of $n = 2.73$ seasons, where n solves $(1 - [1 - 0.224]^n = 0.5)$.

Table 3. Statistics on Manager Turnover.

Time Period	Total Number of Successions	Number of Successions of Reg. Managers	Forced Successions of Regular Managers		
			Absolute Number	Percent of Reg. Successions	Percent of Team Years
Panel A: Breakdown by seasons					
1950-1954	97	90	43	47.8	9.4
1955-1959	126	118	47	39.8	10.2
1960-1964	110	106	58	54.7	12.6
1965-1969	168	159	95	59.7	20.7
1970-1974	152	138	74	53.6	16.1
1975-1979	199	172	112	65.1	24.3
1980-1984	199	177	115	65.0	25.0
1985-1989	192	169	107	63.3	23.3
1990-1994	211	183	110	60.1	23.9
1995-1999	294	218	154	70.6	33.5
2000-2004	341	230	159	69.1	34.6
2005-2008	287	191	139	72.8	37.8
1950-2008	2376	1951	1213	62.2	22.4
Panel B. Breakdown by leagues					
Division 1	570	467	282	60.4	22.3
Division 2	614	501	329	65.7	24.6
Division 3	600	503	306	60.8	21.6
Division 4	592	480	296	61.7	21.1
All leagues	2,376	1,951	1,213	62.2	22.4

Figure 1 shows the fraction of managers (y-axis) that did not get fired before a given number of weeks (x-axis). It refers to complete manager spells, that is, regular managers who started managing a team after August 1949 and got fired before May 2008. As indicated in Figure 1, the median manager survived 62.2 weeks before being sacked, which corresponds to less than two (40-week) seasons and slightly more than one-and-a-half seasons ($62.2/40 = 1.56$). The fact that the median survivor time (1.56 seasons) is much shorter than the average survivor time (2.73 seasons) is due to the strong skew of spell durations (see Figure 2). For instance, Matt Busby was manager of Manchester United for more than 24 years. On the other extreme, Kevin Cullis was appointed manager of Swansea on February 8, 1996, but was fired only six days later.

Explanatory Variables

According to economic theory, the most important variable in explaining firing decisions should be the manager's performance. In this article, we construct two

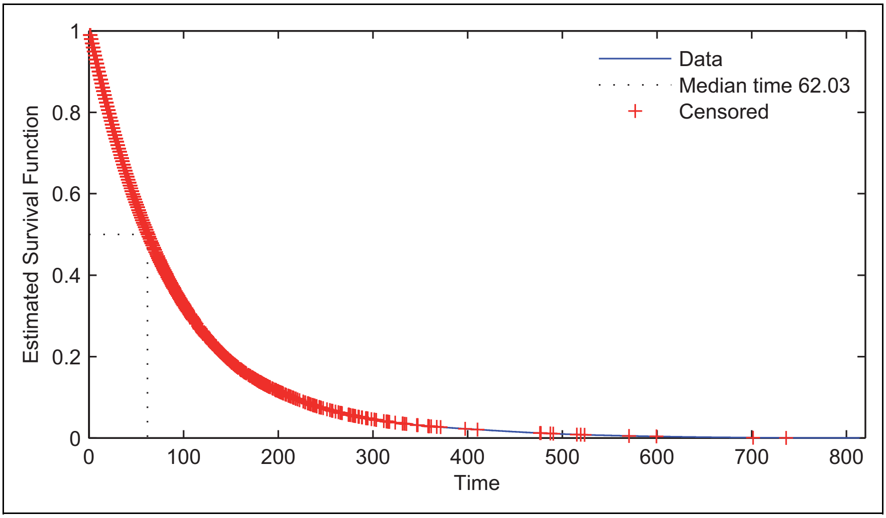

Figure 1. Kaplan–Meier survival function.

measures of managerial performance that have been widely used in the related literature (see, e.g. Audas et al., 1999).

The variable PERFSHORT captures the short-term performance of a manager and focuses on the most recent history of match outcomes. It measures the ratio of points obtained out of all points attainable in a certain period. To calculate PERFSHORT, we attribute a value of 0, $\frac{1}{2}$, or 1 to each match, depending on whether the match result was a loss, draw, or win, respectively. PERFSHORT represents the average of those values for all matches played in a two-week window[10] preceding the current week. To cope with the rules of three points for a win[11] (three and not two points for a victory, one point for a draw, and no points for a loss) and work with a consistent performance measure (percentage of points obtained by the team in a given period), starting from the 1982 season we attribute to each match a value of $\frac{1}{3}$ (and not $\frac{1}{2}$) for a draw. While we prefer this solution, attributing a value of $\frac{1}{2}$ to all draws in the sample (as done in Audas et al., 1999) does not alter our findings.

Table 4 reports descriptive statistics of the variables characterizing managers. Its three panels differ with respect to the time (frame) considered: At the beginning of the spell (Panel A), during the spell (Panel B), and at its end (Panel C). To make the interpretation easier, the descriptive statistics of PERFSHORT refer to the two points for a win version of this variable applied to the whole sample. Not surprisingly, the average performance across all managers and weeks (Panel A) is very close to 0.5. While at the beginning of a manager's spell, PERFSHORT is not meaningful (and thus not reported), at the end of the spell (Panel C) it has an average value of 0.369, which indicates below-average performance before a turnover.

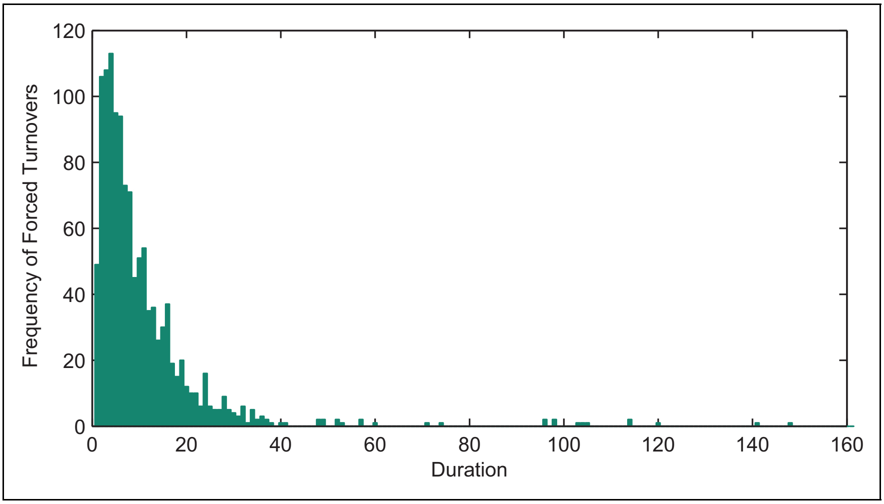

Figure 2. Distribution of spell durations: forced turnovers.

The variable PERFLONG captures a manager's long-term performance. It counts the number of positions won (or lost) by the current manager since he[12] took the lead of the team. Following Audas et al. (1999), to account for promotions and relegations, team positions are defined across all four leagues, thus assuming values from one to 92.[13] Positive integers for PERFLONG indicate an improvement of the initial position, and negative integers a deterioration.

The fact that the frequency of turnovers may differ across leagues is captured by three dummy variables that indicate participation to The Championship (DDIV2), League One (DDIV3), and League Two (DDIV4). The Premier League represents the reference category.[14]

Clearly, the decision to fire a manager may be related to individual characteristics. The following describes a set of individual variables used as regression covariates. The variable AGE measures the age of a manager (in years) at the time of appointment. The average age of a manager in the sample is 43.8 years (Table 4, Panel A). On average, a manager begins his spell at the age of 42.4 years (Table 4, Panel B) and ends it at 44.8 (Table 4, Panel C). Clearly, the age difference roughly reflects the average duration of a managerial spell. The youngest manager ever appointed was Billy Gray, who started as player-manager of Millwall when he was 25 years old. In our sample, the oldest manager ever appointed was Frank Buckley, who started as manager of Walsall at the age of 70. The number of data points is lower than 1,951 because it was not possible to obtain the birth dates for some managers.

The variable EXP measures the years of prior managerial experience at the beginning of the spell in English soccer teams. Thus, EXP does not increase as the spell

Table 4. Descriptive Statistics of Manager-Related Variables.

Variable	*Mean*	Min	Max	Median	Std.	*N*
Panel A. Total sample						
PERFSHORT	0.502	0	1	0.5	0.307	177,451
PERFLONG	4.364	−53	79	2	13.867	183,288
AGE	43.752	25.8326	70.534	43.008	6.865	180,290
EXP	1.494	0	24.65	0	3.227	186,901
DNTL	31.71%					186,901
DIN	35.29%					186,901
Panel B. Beginning of manager spell						
AGE	42.391	25.836	70.534	41.55	7.133	1,835
EXP	1.668	0	24.65	0	3.278	1,912
DNTL	33.99%					1,912
DIN	33.53%					1,912
Panel C. End of manager spell (turnover date)						
PERFSHORT	0.369	0	1	0.333	0.292	1,757
PERFLONG	–0.506	–53	73	−1	13.714	1,827
AGE	44.781	27.274	70.534	44.134	7.155	1,777
EXP	1.672	0	24.65	0	3.287	1,852
DNTL	34.34%					1,852
DIN	33.53%					1,852

duration of a manager increases. Since we only measure experience in the English soccer leagues, EXP may not capture important manager experience gained in foreign leagues. EXP varies widely from zero (no prior experience) to 24.65.

The terms DIN and DNTL indicate two dummy variables that measure the experience and merits of a manager as former soccer player, respectively. The variable DNTL indicates whether a manager has experience as a soccer player in a national soccer team and DIN indicates whether he has played as a soccer player in the same team he is now managing. In our sample, approximately 34% of all appointed managers have prior experience as soccer players in a national team and 33.5% played in the team they now manage. One would expect that, in both cases, higher credits are given to such managers, which would result, all else being equal, in a lower probability of being sacked.

In England, supporters' trusts are characterized by an interesting governance structure. A supporter trust is a not-for-profit organization of fans who attempt to strengthen their influence over the running of the club they support through democratic supporter ownership. To test whether supporters' trusts influence firing behavior, we consider as an explanatory variable of turnover decisions the dummy variable DTRUST.

The variable DRELEG is a dummy variable that assumes a value of one if a club is in a relegation position, and zero otherwise. Since relegation is a particularly adverse outcome, firing decisions in relegation-threatened teams may be more or less frequent. In constructing DRELEG, we make sure to account for the exact relegation rules of each league each season.

Finally, DSUB1 to DSUB5 are dummy variables that identify five equally spaced subperiods within each season. Including these time period variables as regressors accounts for the fact that manager turnover decisions may be more or less likely depending on the remaining duration of the season.

Results

Explaining Manager Turnovers

To get a first flavor of the performance sensitivity of firing decisions, we graph in Figure 3 the annualized weekly frequency of firings, unforced turnovers, and all manager turnovers in dependence of short-term performance (PERFSHORT; Figure 3a) and long-term performance (PERFLONG; Figure 3a). The negative relation between both short-term and long-term performance and turnover frequency is evident and particularly pronounced for firing decisions. This first result is consistent with economic theory and findings in the empirical corporate governance literature (see Coughlan & Schmidt, 1985; Huson et al., 2001; Warner et al., 1988; Weisbach, 1988, and others), as well as established papers in sports economics (see Allen et al., 1979; Audas et al., 1999; Barros et al., 2009; Kahn, 2004; Salomo & Teichmann, 2000).

To model managerial turnovers, we adopt three models: (i) a logit model with fixed effects, (ii) a logit model with random effects, and (iii) a duration model with a time-varying baseline hazard rate. The parallel estimation of three models ensures the robustness of the results. The first two models assume that the probability of a manager change can be expressed as a logistic function of a set of covariates:

$$\text{prob}(y_{i,t} = 1) = \frac{\exp\left(\beta' x_{i,t} + \alpha' z_{i,t}\right)}{1 + \exp\left(\beta' x_{i,t} + \alpha' z_{i,t}\right)}, \tag{1}$$

where $y_{i,t}$ assumes a value of one if a given manager i leaves a club in a given time period t, and zero otherwise; $x_{i,t}$ is a vector of explanatory variables with corresponding coefficients β; and $z_{i,t}$ is a vector containing a constant term and a set of (unobserved) group-specific effects with corresponding coefficients α.

To estimate the above model, we employ two empirical counterparts. The first one is a fixed-effects model (LOGIT fixed effects), in which the group-specific effects are assumed to be correlated with the explanatory variables:

$$\widehat{prob}(y_{i,t} = 1) = \frac{\exp\left(\beta' x_{i,t} + \alpha_i\right)}{1 + \exp\left(\beta' x_{i,t} + \alpha_i\right)} + \epsilon_{i,t}, \tag{2}$$

where $\alpha_i = \alpha' z_{i,t}$ collects all the groups-specific effects in a constant term and ϵ is an independent and identically distributed normal error term, $\epsilon \sim N(0, \sigma_\epsilon^2)$.

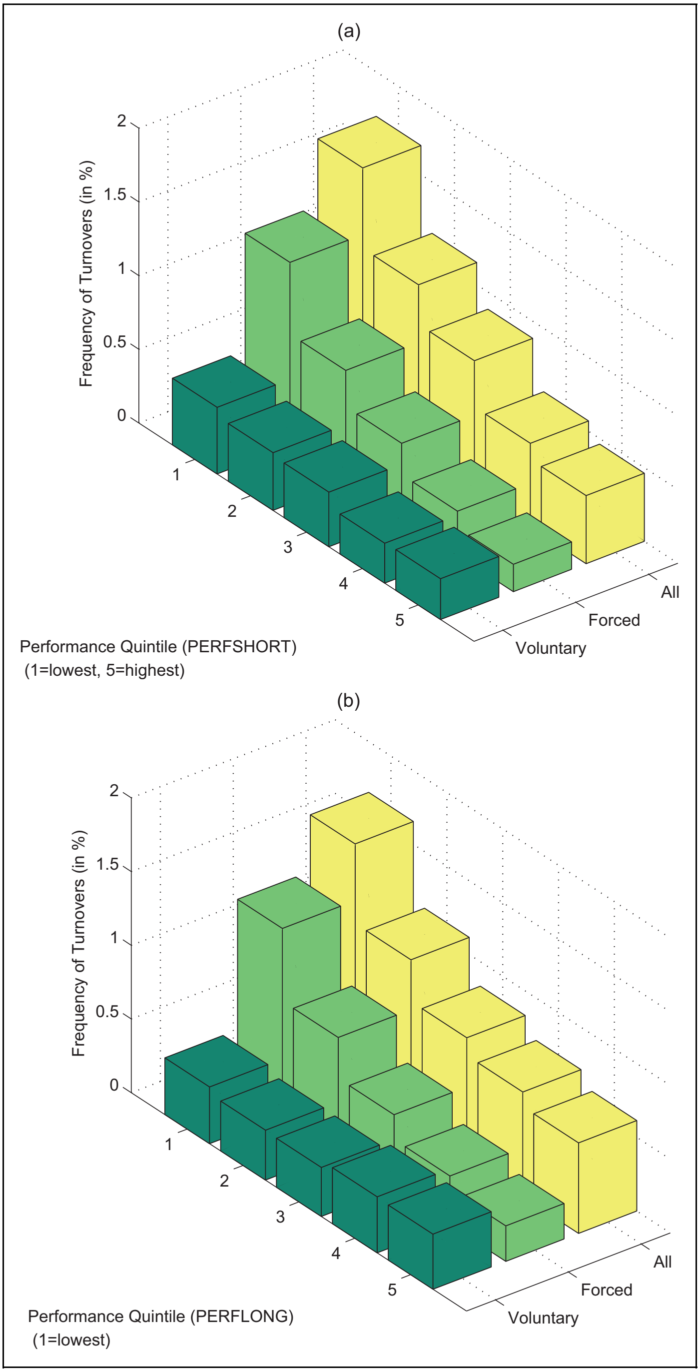

Figure 3. Turnover frequency and performance.

The second empirical counterpart of Equation 1 is a random-effects model (LOGIT Random Effects):

$$\widehat{prob}(y_{i,t} = 1) = \frac{\exp\left(\beta' x_{i,t} + \alpha + u_i\right)}{1 + \exp\left(\beta' x_{i,t} + \alpha + u_i\right)} + \epsilon_{i,t}. \quad (3)$$

This model assumes zero correlation between the group-specific effects and the covariates, where $u_i \sim N(0, \sigma^2_{u_i})$ is a group-specific random element and $\epsilon_{i,t} \sim N(0, \sigma^2_\epsilon)$ is an independent and identically distributed normal error term.

As pointed out by Jones and Branton (2005), logit models can lead to potential biases derived from the specific parametric assumption needed. To overcome this problem, we also use the proportional hazard model (HAZARD) introduced by Cox (1972), which is a semiparametric specification within the family of duration models.[15] The hazard rate[16] is defined as

$$\lambda(t_i) = \exp\left(-x_i'\beta\right)\lambda_0(t_i), \quad (4)$$

where $\lambda_0(t_i)$ is the baseline hazard function that collects the group-specific heterogeneity and x_i is a vector of explanatory variables.

The estimation of the three models is conducted using weekly data. Every season is subdivided into the number of weeks from the beginning to the end of the season, thus from 37 to 42 weeks, with an average of 39.7 weeks in our sample.[17] All three models only use the weekly data points of managers who start coaching a team within the sample period (1950-2008). For the proportional hazard model, this choice is naturally dictated by the need to observe the overall length of the managerial spell. In the two logit models, the use of managerial spells starting after the beginning of the sample derives from the inclusion of the long-term variable PERFLONG, which is not available for managers starting their spell before the 1950 season. A first upward-biased estimate of the total number of data points N used in the estimations results from the total number of team $\times$ week observations: 92 (# of teams per season) $\times$ 59 (# of seasons) $\times$ (40 + 1) (# of periods per year). Deviations from this number are due to incomplete manager spells (spells beginning before the 1950 season or spells not ended as of August 1, 2008) or missing values of any of the dependent variables, for example, if no game was played during a certain week.

Table 5 shows the regression results of the three models used to explain the probability of forced manager turnovers. In general, the χ^2 test statistics are highly significant and indicate that the regressions are well specified when compared to the simple benchmark of a constant-probability model.

The probability of a manager being fired is negatively related to both short-term and long-term managerial performance. This result is highly significant for all three model specifications and reinforces existing evidence obtained in the same soccer leagues by Audas et al. (1999). To put the results into perspective, we report

Table 5. Forced Turnovers.

	LOGIT Fixed Effects	LOGIT Random Effects	HAZARD Function
PERFSHORT	−1.4657*** (0.1152)	−1.4685*** (0.1147)	−1.4462*** (0.1133)
PERFLONG	−0.0395*** (0.0029)	−0.0376*** (0.0028)	−0.0360*** (0.0026)
DDIV2	0.4424*** (0.1145)	0.3659*** (0.0967)	0.3858*** (0.0949)
DDIV3	0.3048** (0.1372)	0.1971** (0.0999)	0.2336** (0.0971)
DDIV4	0.5475*** (0.1565)	0.3965*** (0.1018)	0.4598*** (0.0990)
AGE	0.0343*** (0.0052)	0.0304*** (0.0049)	0.0247*** (0.0051)
EXP	−0.0256** (0.0113)	−0.0176 (0.0107)	−0.0087 (0.0106)
DIN	0.1810** (0.0730)	0.1462** (0.0688)	0.0943 (0.0675)
DNTL	0.0744 (0.0694)	0.1372** (0.0665)	0.1787*** (0.0653)
DTRUST	0.5719*** (0.1611)	0.4484*** (0.1367)	0.4954*** (0.1307)
DRELEG	1.2152*** (0.0724)	1.1896*** (0.0696)	1.2850*** (0.0698)
DSUMMER	1.9617*** (0.1143)	1.9582*** (0.1142)	1.8875*** (0.1147)
DSUB1	−0.2984** (0.1177)	−0.2836** (0.1175)	−0.2823** (0.1198)
DSUB2	0.1429 (0.0979)	0.1472 (0.0978)	0.2710*** (0.1004)
DSUB3	−0.0725 (0.1036)	−0.0700 (0.1036)	−0.0248 (0.1062)
DSUB4	−0.0198 (0.1023)	−0.0175 (0.1023)	−0.0204 (0.1046)
Constant		−6.5149*** (0.2594)	
N	169,219	169,293	169,293
Model χ^2	1,320.9	1,397.7	1,343.4
p Value	0.000	0.000	0.000

in Table 6 the estimated firing probabilities for selected quantiles of PERFSHORT (highest decile, median, and lowest decile) of an average manager, that is, a manager with average characteristics with respect to the remaining explanatory variables.

Annual turnover probabilities are obtained from the estimated weekly turnover probability, P_E, as follows:

$$P_A = 1 - (1 - P_E)^n, \qquad (5)$$

where n is the average number of weeks in one season, that is, about 40. The annual turnover probability is calculated as one minus the annual survivor probability. On average, a manager in the top performance decile faces a 6.8% probability of being fired during a given season. However, the firing probability rises to 26.2% if his performance is in the bottom decile. While this figure is comparable with the results of other studies on soccer, it contrasts with evidence from corporations. In an interesting survey article, Brickley (2003) notes that the probability difference of replacing a corporate manager between the top and bottom performance deciles is typically around 4 percentage points per year, which is quite different from the 19.4 percentage points found in this study. One possible explanation for this discrepancy is the strength of the performance signal in the soccer industry: The performance of a manager can readily be measured at a high frequency by the team's match outcome and there are very limited information asymmetries between the principal (the president of the team, investors, or supporters) and the agent (the manager), since the match outcomes are readily observable and represent common knowledge. Finally, there is no need to adjust the performance measure for market-wide or industry-wide effects.

According to Table 5, Divisions 2–4 have significantly higher baseline firing rates than Division 1. For instance, the annualized firing probability of a manager in the fourth division is 5.5 percentage points higher than that of a manager in the first division. Here and elsewhere in the article, annualized probability *differences* are obtained by annualizing (see Equation 5) both the turnover probability of an average manager (predicted probability with all variables set equal to their average values) and the turnover probability of a manager with all average characteristics expect one (in this case, DDIV = 1).

All else being equal, older managers are fired with a slightly higher probability: With every additional year the firing probability rises, on average, by 0.39 percentage points.

The sign of the coefficients related to the experience variables EXP, DIN, and DNTL are identical across models, even though statistical significance is not always given.

According to the logit model with fixed effects,[18] the more experienced a manager, the lower his dismissal probability. Economically, this may indicate that managers with longer prior experience can maintain the trust given to them for a longer period. This result (although not valid for the hazard model) is interesting because no earlier study (e.g., Audas et al., 1999; Barros et al., 2009) reports evidence of a significant impact of prior managerial experience on dismissal probabilities.

The two variables measuring prior experience as a player in the national team (DNTL) and in the team currently coached (DIN) are always associated with positive coefficients (although not always statistically significant). In other words, it seems that prior experience as a player tends to decrease job security, while prior experience as a manager has the opposite effect.

All three estimations show statistical evidence that the organizational form of supporters' trusts (DTRUST) is associated with higher dismissal rates. For example, clubs organized as supporters' trusts have weekly (annual) dismissal probabilities that are 0.2 (6.8) percentage points higher than for other clubs. Thus, from this analysis, clubs organized as supporters' trusts seem to be fiercer in monitoring their managers.

Manager of teams in relegation positions (DRELEG) get fired during a season with a probability that is 22.4 percentage points higher than equal managers in better positions. This result reinforces the findings of higher dismissal frequencies in relegation zones presented by Bachan, Reilly, and Witt (2008) and offers a reconciliation argument between the empirical evidence (provided, e.g., by Audas et al., 2002) that firing

Table 6. Estimated Turnover Probabilities and Performance Deciles.

Deciles	All Turnovers	Voluntary Turnovers	Forced Turnovers
Median	0.226	0.081	0.136
Lowest Decile	0.361	0.106	0.262
Highest Decile	0.136	0.062	0.068
Diff. (Annual.)	22.6 p.p.	4.4 p.p.	19.4 p.p.

Note. p.p. = percentage points.

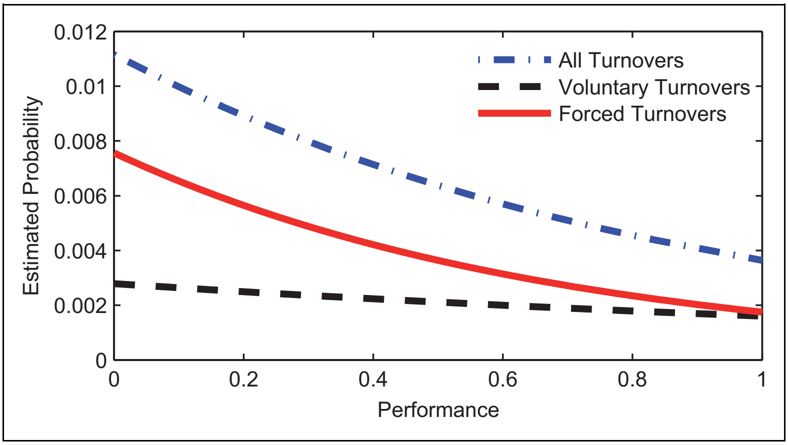

Figure 4. Estimated probabilities.

a manager deteriorates team performance and the rationality of firing decisions: While firing a manager may deteriorate a team's expected performance, it can still lower the probability of being relegated via an increase in performance volatility. Such firing strategies can be pertinently referred to as gambling for resurrection.

Finally, firings are, all else being equal, significantly less likely at the beginning of a season (DSUB1) than toward its end (DSUB5, reference category). The fact that the dummy variable DSUMMER is positive and strongly significant is not very surprising, since the summer break has a much longer duration than the other weekly time periods.

In Table 7, the same three regression models are used to explain managers' *voluntary* departures. In this case, managers tend to leave a team after poor short-term performance (PERFSHORT). However, the absolute magnitude of the PERFSHORT coefficient is significantly smaller than in the case of firings. This is also shown in Figure 4, where the turnover probability of managers (as estimated using the fixed-effects logit model) is plotted as a function of short-term performance.

Table 7. Voluntary Turnovers.

	LOGIT Fixed Effects	LOGIT Random Effects	HAZARD Function
PERFSHORT	–0.4841***	–0.5546***	–0.5444***
	(0.1362)	(0.1353)	(0.1348)
PERFLONG	0.0060*	0.0072**	0.0020
	(0.0034)	(0.0032)	(0.0032)
DDIV2	–0.1609	0.1737	0.2256*
	(0.1568)	(0.1326)	(0.1347)
DDIV3	–0.1833	0.3900***	0.4426***
	(0.1835)	(0.1280)	(0.1309)
DDIV4	–0.1198	0.6669***	0.7888***
	(0.2070)	(0.1292)	(0.1343)
AGE	0.0257***	0.0182***	0.0102
	(0.0074)	(0.0069)	(0.0072)
EXP	0.0175	0.0131	0.0200
	(0.0145)	(0.0131)	(0.0132)
DIN	–0.0349	–0.1392	–0.1782*
	(0.1010)	(0.0941)	(0.0938)
DNTL	0.2727***	0.2109**	0.2373***
	(0.0938)	(0.0878)	(0.0882)
DTRUST	0.3942	0.1943	0.2745
	(0.2551)	(0.2016)	(0.2014)
DRELEG	0.0127	0.1388	0.2680**
	(0.1387)	(0.1352)	(0.1361)
DSUMMER	3.0596***	3.0597***	2.9523***
	(0.1175)	(0.1175)	(0.1200)
DSUB1	–0.7073***	–0.7063***	–0.7738***
	(0.1819)	(0.1819)	(0.1859)
DSUB2	–0.2547*	–0.2569*	–0.2081
	(0.1450)	(0.1449)	(0.1483)
DSUB3	–0.3801**	–0.3823**	–0.3857**
	(0.1515)	(0.1515)	(0.1544)
DSUB4	–0.7358***	–0.7375***	–0.7739***
	(0.1699)	(0.1699)	(0.1720)
Constant		–6.7614***	
		(0.3531)	
N	166,085	169,293	169,293
Model χ^2	1,094.8	1,643.1	1,055.3
p Value	0.000	0.000	0.000

Estimated turnover probabilities refer to average managers, that is, managers with average attributes. From Figure 4, it is evident how the performance sensitivity of forced turnovers (solid line) is much more pronounced than that of voluntary turnovers (dashed line), although both are statistically significant.

Interestingly, managers with a player background in a national team (DNTL) are significantly more likely to leave a team on a voluntary basis. The same effect does not exist for managers with prior experience as a player in the team currently managed (DIN).

Performance Sensitivity of Firing Decisions: A Long-Term Perspective

After having established the importance of (short-term and long-term) team performance in manager turnover decisions, we focus on the development of this relation over time. Figure 5 shows forced turnover frequencies in dependence of prior performance quintiles and time. While in Figure 5a performance refers to the outcome of most recent matches (PERFSHORT), in Figure 5b it captures changes in position since the beginning of the manager spell (PERFLONG). As expected, both graphs show evidence that forced turnovers are negatively correlated with performance. Interestingly, both graphs seem to suggest that forced turnovers have become more frequent over time and that the firing–performance relation is more pronounced in recent decades than it was at the beginning of the sample.

To test whether this visual impression holds after accounting for different control variables, the regressions presented in Table 5 are rerun in Table 8 by including a time trend (TREND) and interactions of short-term and long-term performance with this time trend (PERFSHORT $\times$ TREND and PERFLONG $\times$ TREND).

The results presented in Table 8 show clear patterns with respect to the evolution of forced turnovers. The positive and significant coefficient of TREND confirms that forced turnovers have significantly increased over time. Furthermore, the negative link between short-term performance and manager firings has become significantly stronger over time. Interestingly, there are no significant changes in the relation between long-term performance and firing probabilities, which rectifies the visual impression obtained from Figure 5b.

In Table 9, the evolution of the link between short-term performance and firing decisions is further analyzed by means of dummy variables for each decade covered by the sample: D60-69, D70-79, D80-89, D90-99, D00-08.[19] In addition, by interacting PERFSHORT with every decade dummy variable, we obtain for each decade an autonomous estimate of the importance of short-term performance on the probability of a manager being fired. Strikingly, the probability of forced turnovers has increased almost monotonically over time. For example, for an average manager the probability of getting fired during one season is 30.0 percentage points higher in the 2000-2008 seasons than it was in the 1950s. Furthermore, the short-term performance sensitivity of firings has steadily decreased over time. While in the 1950-1959 seasons the link between short-term performance and firing probabilities is not significantly different from zero, in the 2000-2008 seasons it is significantly negative, with a *t* value of 7.5.

The magnitude of the change in the relation between short-term performance and firing decisions is made even clearer in Table 10. Table 10 reports for each decade

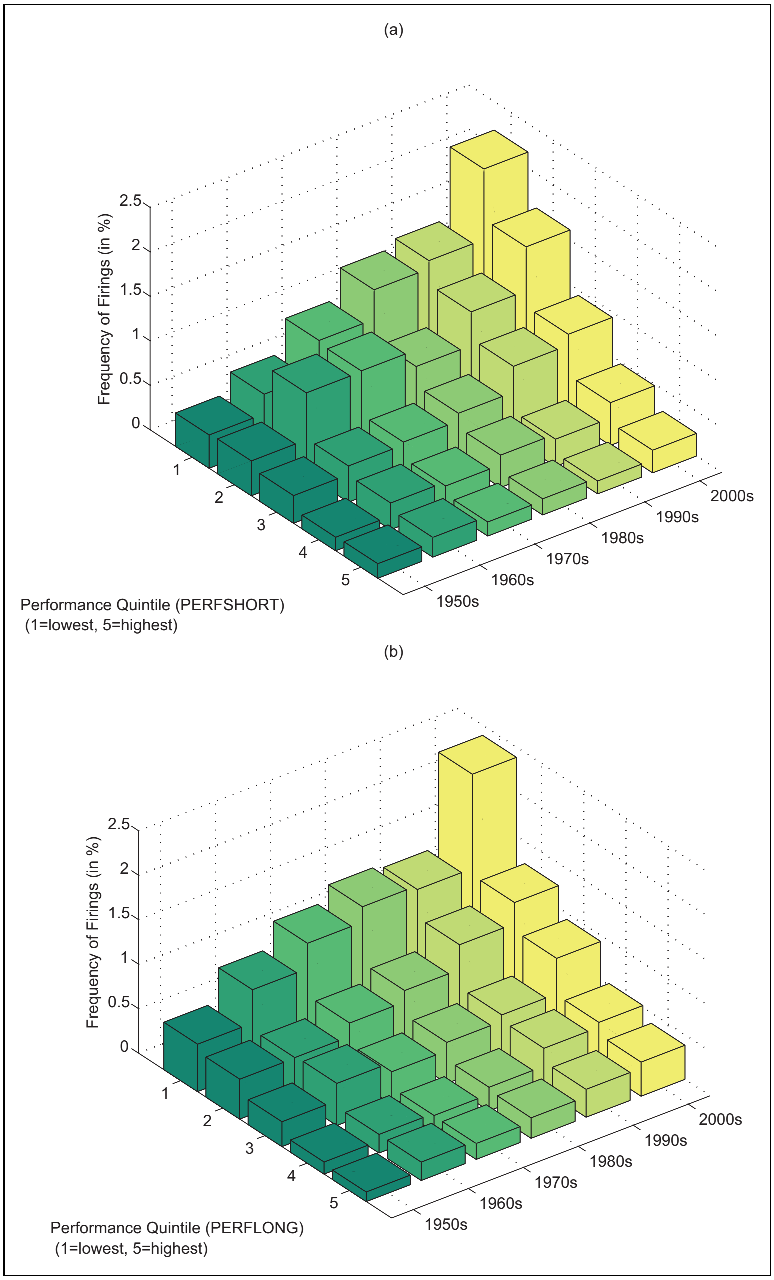

Figure 5. Firing frequency and performance across decades.

Table 8. Performance Sensitivity of Forced Turnovers: Time Trend.

	LOGIT		LOGIT		HAZARD	
	Fixed Effects		Random Effects		Function	
PERFSHORT	–0.4968 *	(0.2909)	–0.5263*	(0.2897)	–0.5432*	(0.2890)
PERFLONG	–0.0403 ***	(0.0077)	–0.0367 ***	(0.0074)	–0.0336 ***	(0.0069)
DDIV2	0.4137 ***	(0.1161)	0.3249 ***	(0.0966)	0.3641 ***	(0.0954)
DDIV3	0.2853 **	(0.1402)	0.1491	(0.0994)	0.1976 **	(0.0974)
DDIV4	0.5048 ***	(0.1593)	0.3365 ***	(0.1010)	0.4308 ***	(0.0997)
AGE	0.0333 ***	(0.0053)	0.0297 ***	(0.0051)	0.0230 ***	(0.0053)
EXP	–0.0373 ***	(0.0115)	–0.0311 ***	(0.0108)	–0.0223 **	(0.0107)
DIN	0.1326 *	(0.0739)	0.1019	(0.0694)	0.0377	(0.0681)
DNTL	0.0365	(0.0702)	0.1138 *	(0.0670)	0.1641 **	(0.0656)
DTRUST	0.0428	(0.1680)	0.0442	(0.1377)	0.0923	(0.1335)
DRELEG	1.2168 ***	(0.0724)	1.1896 ***	(0.0695)	1.3047 ***	(0.0697)
DSUMMER	1.9683 ***	(0.1147)	1.9632 ***	(0.1147)	1.8916 ***	(0.1152)
DSUB1	–0.3680 ***	(0.1180)	–0.3563 ***	(0.1178)	–0.3490 ***	(0.1201)
DSUB2	0.1233	(0.0981)	0.1286	(0.0979)	0.2465 **	(0.1003)
DSUB3	–0.0786	(0.1037)	–0.0736	(0.1036)	–0.0230	(0.1060)
DSUB4	–0.0224	(0.1024)	–0.0187	(0.1023)	–0.0072	(0.1045)
TREND	0.0341 ***	(0.0034)	0.0329 ***	(0.0033)	0.0345 ***	(0.0033)
PERFSHORT × TREND	–0.0231 ***	(0.0073)	–0.0223 ***	(0.0073)	–0.0209 ***	(0.0073)
PERFLONG × TREND	–0.0001	(0.0002)	–0.0001	(0.0002)	–0.0002	(0.0002)
Constant			–7.5790 ***	(0.2913)		
N	169,219		169,293		169,293	
Model χ^2	1,478.8		1,553.1		1,533.1	
p Value	.000		.000		.000	

Table 9. Performance Sensitivity of Forced Turnovers: Time Subperiods.

	LOGIT		LOGIT		HAZARD	
	Fixed Effects		Random Effects		Function	
PERFLONG	–0.0437 ***	(0.0030)	–0.0417 ***	(0.0028)	–0.0405 ***	(0.0026)
DDIV2	0.4180 ***	(0.1158)	0.3232 ***	(0.0964)	0.3558 ***	(0.0953)
DDIV3	0.3004 **	(0.1401)	0.1578	(0.0992)	0.1970 **	(0.0974)
DDIV4	0.5191 ***	(0.1592)	0.3425 ***	(0.1006)	0.4265 ***	(0.0997)
AGE	0.0334 ***	(0.0055)	0.0297 ***	(0.0052)	0.0225 ***	(0.0054)
EXP	–0.0357 ***	(0.0115)	–0.0297 ***	(0.0108)	–0.0211 **	(0.0107)
DIN	0.1379 *	(0.0740)	0.1048	(0.0694)	0.0373	(0.0684)
DNTL	0.0581	(0.0704)	0.1359 **	(0.0672)	0.1806 ***	(0.0659)
DTRUST	0.0870	(0.1683)	0.0747	(0.1375)	0.1112	(0.1337)
DRELEG	1.2125 ***	(0.0725)	1.1810 ***	(0.0695)	1.2932 ***	(0.0697)
DSUMMER	1.9755 ***	(0.1148)	1.9696 ***	(0.1148)	1.9005 ***	(0.1151)
DSUB1	–0.3684 ***	(0.1180)	–0.3576 ***	(0.1178)	–0.3518 ***	(0.1200)
DSUB2	0.1236	(0.0981)	0.1281	(0.0979)	0.2467 **	(0.1002)
DSUB3	–0.0812	(0.1037)	–0.0761	(0.1036)	–0.0230	(0.1059)
DSUB4	–0.0247	(0.1024)	–0.0211	(0.1023)	–0.0115	(0.1044)
D60-69	0.6208 **	(0.2870)	0.6060 **	(0.2841)	0.5224 *	(0.2821)
D70-79	1.0664 ***	(0.2782)	1.0932 ***	(0.2746)	0.9904 ***	(0.2718)
D80-89	1.2990 ***	(0.2715)	1.2724 ***	(0.2685)	1.1975 ***	(0.2654)
D90-99	1.4715 ***	(0.2678)	1.4559 ***	(0.2642)	1.4148 ***	(0.2612)
D00-08	1.9303 ***	(0.2659)	1.9050 ***	(0.2623)	1.9158 ***	(0.2595)
PERFSHORT50-59	–0.6696	(0.5063)	–0.6926	(0.5050)	–0.7830	(0.4997)
PERFSHORT60-69	–0.6351 **	(0.2854)	–0.6273 **	(0.2850)	–0.6439 **	(0.2860)
PERFSHORT70-79	–1.3100 ***	(0.2730)	–1.3202 ***	(0.2726)	–1.2509 ***	(0.2681)
PERFSHORT80-89	–1.3974 ***	(0.2625)	–1.4098 ***	(0.2614)	–1.3762 ***	(0.2562)
PERFSHORT90-99	–1.5336 ***	(0.2400)	–1.5451 ***	(0.2390)	–1.4516 ***	(0.2339)
PERFSHORT00-08	–1.7714 ***	(0.2346)	–1.7539 ***	(0.2340)	–1.7269 ***	(0.2311)
Constant			–7.6607 ***	(0.3732)		
N	169,219		169,293		169,293	
Model χ^2	1,475.6		1,541.6		1,528.4	
p Value	0.000		0.000		0.000	

Table 10. Estimated Turnover Probabilities and Performance Deciles Over Time.

Deciles	All Turnovers	Voluntary Turnovers	Forced Turnovers
Panel A: 1950-1959			
Median	0.213	0.081	0.121
Lowest Decile	0.319	0.103	0.211
Highest Decile	0.139	0.063	0.067
Diff. (Annual.)	18.0 p.p.	4.0 p.p.	14.4 p.p.
Panel B. 1960-1969			
Median	0.144	0.069	0.207
Lowest Decile	0.195	0.099	0.272
Highest Decile	0.106	0.048	0.156
Diff. (Annual.)	8.9 p.p.	5.1 p.p.	11.6 p.p.
Panel C: 1970-1979			
Median	0.308	0.088	0.228
Lowest Decile	0.458	0.120	0.393
Highest Decile	0.199	0.065	0.125
Diff. (Annual.)	25.9 p.p.	5.5 p.p.	26.8 p.p.
Panel D: 1980-1989			
Median	0.309	0.077	0.248
Lowest Decile	0.479	0.100	0.438
Highest Decile	0.189	0.059	0.132
Diff. (Annual.)	29.0 p.p.	4.1 p.p.	30.6 p.p.
Panel E: 1990-1999			
Median	0.346	0.094	0.269
Lowest Decile	0.531	0.119	0.491
Highest Decile	0.211	0.073	0.135
Diff. (Annual.)	32.0 p.p.	4.6 p.p.	35.7 p.p.
Panel F: 2000-2008			
Median	0.413	0.099	0.355
Lowest Decile	0.653	0.121	0.649
Highest Decile	0.235	0.081	0.167
Diff. (Annual.)	41.8 p.p.	4.0 p.p.	48.1 p.p.

Note. p.p. = percentage points.

(Panels A to E), the estimated annualized probabilities of (i) all turnovers, (ii) voluntary turnovers, and (iii) forced turnovers for average managers in three performance scenarios: median, lowest-decile, and highest-decile short-term performance. Consistent with economic theory and previous results, in every time subsample a manager in the lowest performance decile faces a higher probability of being fired than one with median or lowest-decile performance. However, the magnitude of this probability difference changes widely across decades, ranging from 11.6 percentage points in the 1960s to 48.1 percentage points in the 2000-2008 seasons. While the probability of an average manager being fired in the highest performance decile has not changed dramatically over time, the corresponding probability of a manager in the lowest performance decile being fired has increased from 21.1% in the 1950s to 64.9% in the 2000-2008 seasons. Interestingly, the same probability difference in connection with voluntary manager turnovers has remained remarkably constant over time.

The pattern according to which managers of English soccer teams get fired has dramatically changed over time. In particular, both the frequency of manager firings and the (negative) dependence on short-term performance have significantly increased over time. In other words, nowadays managers face a much higher probability of getting fired, and this probability depends to a larger extent on short-term rather than long-term performance. The increased performance dependence of manager firings is indicative of a more efficient and more competitive market for team managers. It suggests that the increased level of economic importance and competition in English soccer has gone hand in hand with a fiercer governance mechanism of manager firings. In our opinion, the empirical fact that manager firings seem to have an adverse performance impact and trigger higher performance volatility, on average (see Audas et al., 2002), does not alter this conclusion. First, the decision of firing poorly performing managers is not only dictated by the wish of substituting them with better ones. Economic theory recognizes that the threat of firing a manager also serves as an incentive to increase efforts. Consequently, for the firing threat to be credible, managers may be rationally dismissed in the presence of poor performance even in cases where the poor performance is simply the result of bad luck and no better successor is available. Second, since managers of teams in relegation positions are found to face a higher probability of getting fired, it is likely that owners of teams facing a high likelihood of being relegated tend to fire managers with the aim of inducing higher performance *volatility* (even at the expense of lower *mean* performance). Along this line of reasoning, team owners seem to play a gambling for resurrection game that can very well be rational, even though firing decisions have a negative impact on performance on average.

Finally, while in Table 5 the coefficient of the variable DTRUST is positive and significant, in Tables 8 and 9 their significance vanishes in all three models considered. We attribute this to the fact that supporters' trusts started to be established in 1992,[20] that is, toward the end of the sample. It is likely that the absence of time trends or time period dummy variables in Table 5 turned DTRUST into a proxy for time and let it pick up the higher firing frequency in the last part of the sample. Once time trends are included into the regression, DTRUST ceases to have a significant impact on the probability of a manager being fired.

Conclusion

This article investigates the determinants of (forced) manager turnovers in the four major English soccer leagues by using a large hand-collected data set of manager changes in the seasons from 1949-1950 to 2007-2008. As argued in the related literature (see, e.g., Audas et al., 1997, 1999), studying the performance sensitivity of manager turnovers in sports teams is particularly appealing because of the possibility of constructing simple, reliable, and uncontroversial performance measures based on match outcomes. While the focus of the article is on the evolution of the link between firing decisions and managerial performance, we also control for a number of variables related to the team position, the time period within the season, and individual manager characteristics, such as age and prior experience as team coach and former player.

By employing discrete-choice logit models and proportional hazard models, we show that, in accordance with economic intuition and prior evidence, the probability of a manager being fired is negatively related to both short-term and long-term managerial performance. Interestingly, while the relation between the probability of a manager being fired and long-term performance has remained remarkably stable, the sensitivity of firing decisions on the outcome of recent matches has steadily increased during the six decades covered by our sample. For instance, while in the 1950s a manager in the lowest performance quintile faced a 21.1% (seasonal) probability of being fired, in the 2000-2008 seasons a similar manager was sacked with a probability of 64.9%. The fact that nowadays soccer managers are fired more frequently and their jobs depend to a larger extent on the outcome of recent matches indicates that they are confronted with stronger short-term monitoring and that the governance mechanism of the firing threat has gained importance. In general, these findings seem to comply with the increased level of economic importance of and competition in English soccer.

Besides detecting a significant and economically important change in the performance sensitivity of manager firings, the analysis shows that the probability of being sacked is higher if a manager is (all else being equal) older and less experienced. The latter result is interesting on its own because previous studies could not detect any significant impact of experience variables on turnover probabilities.

Finally, managers of teams in relegation positions are found to face a higher probability of getting fired. The combination of this piece of evidence with the fact that manager firings seem to trigger, on average, lower mean performance but higher variance (see Audas et al., 2002) supports the hypothesis that owners of teams in relegation positions tend to play a gambling for resurrection game.

Acknowledgments

The authors thank David Offenberg and participants at the 2009 Financial Management Association Meetings in Reno and the Research Seminar of the University of Rome 3 for their very helpful comments. Moreover, the authors would also like to thank Marco Poltera for his excellent research assistance.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Notes

1. Revenues are classified in four categories depending on their source: Matchday, Broadcast, Sponsorship, and Other Commercial.
2. In contrast to the majority of studies, we distinguish between regular managers and caretakers. In our view, this distinction is important because caretakers only take temporary charge of the management of a club when a regular manager is ill or abruptly leaves the club. From a corporate governance perspective, caretakers are comparable to interim chief executive officers (CEOs), which are often excluded from turnover studies because of their temporary management role (e.g., Furtando & Rozeff, 1987).
3. Departing CEOs typically increase reported earnings in a last attempt to keep their position. On the other hand, newly appointed CEOs tend to lower reported earnings to credit the predecessor with poor performance and take credit for the subsequent increase in performance.
4. The authors would like to thank an anonymous reviewer for raising this point.
5. http://www.soccerbase.com.
6. See, for example, http://www.4thegame.com or http://www.talkfootball.co.uk.
7. The Internet addresses corresponding to the online newspapers and broadcasters are http://news.bbc.co.uk, http://www.guardian.co.uk, http://www.independent.co.uk/, http://www.timesonline.co.uk, and http://www.telegraph.co.uk.
8. For simplicity, this article defines all turnovers that are not induced by an explicit decision of the board as voluntary turnovers. However, to be precise, some of these so-called voluntary turnovers may be due to circumstances unrelated to managers' decisions, such as the death or illness of the manager or one of his relatives.
9. Since Wikipedia pages are likely to be subject to manipulation, we do not rely on them when searching for possible reasons to rule out a dismissal.
10. The two-week window is chosen arbitrarily to capture the impact of recent match results on the turnover probability. However, the main results of the article do not change qualitatively if shorter or longer time periods are considered. In particular, tests conducted on one- and four-week event windows do not alter the main findings.
11. The purpose of the three points for a win rule was to increase the incentives of a victory and thereby encourage more spectacular attacking play.
12. By using male pronouns, we do not intend to discriminate against possible female managers; however, all managerial spells analyzed in this article refer to male managers.
13. The only season in which 91 and not 92 teams participated in the four major leagues was 1961-1962, because Accrington Stanley did not complete the season due to financial difficulties.
14. The categorization into four divisions is kept throughout the sample, although the names of the four divisions as well as the number of teams playing in each of them have changed

on several occasions. Currently, the Premier League has 20 teams and The Championship, League One, and League Two have 24 teams each.

15. A review of duration models and related estimation techniques is provided in Kiefer (1988) and chapter 22 of Greene (2012).
16. In this class of models, the hazard rate is defined as the rate at which spells are completed after duration *t*, given that they last at least until *t*.
17. The summer break is considered an additional period. The fact that the number of manager turnovers is likely to be higher during the summer break is accounted for by the presence of the dummy variable DSUMMER.
18. The Hausman test rejects the null hypothesis that the difference in coefficients is not systematic. Thus, the logit estimation with fixed effects is preferable to the logit estimation with random effects.
19. The dummy variable D50-59 is not included in the regression because the seasons 1949-1950 through 1958-1959 serve as a reference category.
20. Northampton Town was the first supporters' trust, established in January 1992.

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