

1-1-2017

## A Holistic Performance Assessment of English Premier League Football Clubs 1992–2013

Daniel Plumley

Robert Wilson

Simon Shibli

Follow this and additional works at: <https://trace.tennessee.edu/jasm>



Part of the [Business Commons](#), [Education Commons](#), and the [Social and Behavioral Sciences Commons](#)

### Recommended Citation

Plumley, Daniel; Wilson, Robert; and Shibli, Simon (2017) "A Holistic Performance Assessment of English Premier League Football Clubs 1992–2013," *Journal of Applied Sport Management*. Vol. 9 : Iss. 1.

<https://doi.org/10.18666/JASM-2017-V9-I1-7353>

Available at: <https://trace.tennessee.edu/jasm/vol9/iss1/7>

This article is brought to you freely and openly by Volunteer, Open-access, Library-hosted Journals (VOL Journals), published in partnership with The University of Tennessee (UT) University Libraries. This article has been accepted for inclusion in *Journal of Applied Sport Management* by an authorized editor. For more information, please visit <https://trace.tennessee.edu/jasm>.

# A Holistic Performance Assessment of English Premier League Football Clubs 1992–2013

Daniel Plumley  
Robert Wilson  
Simon Shibli

## Abstract

This paper devises and tests a statistical model (the PAM) to measure the financial and sporting performance of professional football clubs. The PAM has been applied to a longitudinal data set of English football clubs (21 clubs between 1992–2013) to identify trends in performance. The results show that a small number of clubs have created an imbalance within English football and that there has been evidence of a “financial crisis” at individual clubs. For the majority of clubs, overall performance appears to vary over time in cycles. In addition to measuring holistic performance of professional football clubs in England, the paper has developed a statistically robust model that progresses research in the field. This new model has the potential to be adapted to fit other professional team sports to test league viability. It can also be used by the clubs themselves to set objectives and to analyse performance against competitors.

**Keywords:** *Economics, sports, finance, football, profit maximisation, utility maximisation*

---

**Daniel Plumley** is a senior lecturer in the Academy of Sport and Physical Activity at Sheffield Hallam University.

**Rob Wilson** is a principal lecturer in the Academy of Sport and Physical Activity at Sheffield Hallam University.

**Simon Shibli** is a professor of sport management and director of the Sport Industry Research Centre at Sheffield Hallam University.

Please send correspondence to Daniel Plumley, [d.j.plumley@shu.ac.uk](mailto:d.j.plumley@shu.ac.uk)

Contemporary sporting competition involves an abundance of statistics; whether it is the number of goals scored in a match, the number of points accumulated by a team during a league season, the time recorded by a sprinter in a race, or the number of medals won by a country during the Olympic Games. As such, sport is an ideal laboratory in which to test various economic theories (Sloane, 2015). Such statistics need not be exclusively confined to the field of play. Indeed, as the field of sports economics has grown since Sloane's seminal article on the objectives of football clubs (1971), there has been increasing interest among academics surrounding the off-field objectives and performance of, most notably, professional football clubs across Europe.

This interest has been stimulated, in part at least, by substantial increases in revenue in European football in recent years. In 2013–2014, the cumulative revenue of the “big five” European leagues (the English Premier League in England, the Bundesliga in Germany, La Liga in Spain, Serie A in Italy, and Ligue 1 in France) grew 15% to €11.3 billion, driving the total European football market beyond €20 billion (Deloitte, 2015). However, despite these positive revenue figures, Drut and Raballand (2012) state that debt accumulation of European football clubs is an increasing source of concern for football authorities. Of the five major European leagues, the English Premier League (the EPL) remains, by a distance, the highest revenue-generating league (€3.9 billion in 2013–2014). This figure is €1.6 billion more than the next best revenue-generating league in Europe (the Bundesliga in Germany), and during the last five years, the EPL has established itself as the league with the highest turnover in world football. At individual club level, however, the figures are less positive. With reference to the EPL, financial data shows that clubs are leveraged by significant levels of debt, often in the form of interest-free loans from their owners. In 2014, the total debt of EPL clubs was €3.3 billion with “soft loans” from owners totalling €2.3 billion (Deloitte, 2015). Despite EPL clubs' revenue totalling €3.9 billion, clubs are spending €2.6 billion (72%) on wages, and academics have confirmed similar imbalances between revenue and costs for clubs across Europe in recent years (see Andreff, 2007; Ascari & Gagnepain, 2007; Barros, 2006; Buraimo, Simmons, & Syzmanski, 2006; Dietl & Franck, 2007; Dimitropoulos, 2010; Plumley, Wilson, & Ramchandani, 2014; Wilson, Plumley, & Ramchandani, 2013).

In an attempt to address this imbalance, the Union of European Football Associations (UEFA) has introduced Financial Fair Play (FFP) regulations across the European game in an attempt to reduce the reliance on debt and borrowings and to make clubs spend within their means. The cornerstone of UEFA's FFP regulations is the break-even requirement, which aims to help clubs across Europe achieve a more sustainable balance between their costs and revenues while also encouraging investment for the longer-term benefit of football. The regulations, applied in UEFA competitions for the first time in 2013–2014, cover clubs' results from the 2011–2012 and 2012–2013 seasons, and there have recently been high-

profile examples of fines handed to clubs who have not fulfilled the break-even requirement, such as Manchester City in England and Paris St. Germain in France.

The advent of UEFA FFP has brought about an increase in pressure on clubs to become more financially prudent and sustainable. Additionally, the effect of investment and ownership structure within clubs is also being analysed as part of FFP (see Wilson et al., 2013). Surrounding these areas is the issue of how we assess the long-term viability of professional sports leagues and the future proofing of individual businesses, as arguably, from a fundamental business position, professional sports teams should be looking to operate as sustainable businesses focusing on long-term growth as opposed to seeking short-term gain and trophy acquisition through immediate cash injections. The problem with sports teams, however, is that they are ultimately guided by twin objectives. One is financial, in relation to business operations, and the other is sporting, in relation to on-pitch performance and trophy success. This strategic dilemma is a product of the phrase “peculiar economics” in relation to professional team sports as described in the seminal paper by Neale (1964). Central to this dilemma are the principles of competitive balance, uncertainty of outcome, and profit and utility maximisation; all underlying themes present in contemporary sports economics literature (e.g., Buraimo, Frick, Hickfang, & Simmons, 2015; Fort, 2015; Kesenne, 2015; Leach & Szymanski, 2015; Sloane, 2015; Vrooman, 2015). In addition to measuring financial performance, academics have also examined the relationship between financial and sporting performance and whether or not the two concepts are inter-linked or mutually exclusive.

Consequently, this paper reports on a new approach to performance measurement in professional team sports. The paper uses football, and the EPL, as an example, and while the model presented is exclusive to football at the present time, it has the potential to be adapted to fit other professional team sports, particularly those in England. The model builds on UEFA's approach to FFP, and can be used by academics, practitioners, and analysts to draw conclusions about club performance. It is important to note that the model is not used as a predictor for future performance, rather it is an analytical tool that can be used to check for performance health markers (both financial and sporting) to detect where clubs may be considered at risk. It outlines a composite index score that highlights how a club is performing in relation to its competitors. This paper outlines the formation of the model by first highlighting the key areas of literature and conceptual framework before discussing an exploratory pilot model that subsequently led to the production of the Performance Assessment Model (PAM) for football clubs following a test for the relationship between variables. The paper then utilises the PAM to evaluate the performance of English football clubs since the inception of the EPL in 1992 and concludes by discussing the findings in relation to the extant literature and the model's contribution to knowledge in the field of sport business management.

## Literature Review and Theoretical Context

### The Economic Theory of Professional Sports Leagues

Professional team sports are intrinsically different from other businesses, in which a firm is likely to prosper if it can eliminate competition and establish a position as a monopoly supplier (Dobson & Goddard, 2011). In sport, however, it does not pay for one team to establish such a position due to the joint nature of “production” in sports. The theoretical literature on the determinants of the degree of competitive inequality in sports leagues was first developed by U.S. sports economists, with North American team sports primarily in mind. Naturally, the development of this literature has led to comparisons between the North American and European model (see Hoehn & Szymanski, 1999; Andreff & Staudohar, 2000; Sloane, 2006; Szymanski, 2003). The European model is and will remain unique, but there appears to be convergence on certain features. In both Europe and the United States, we have seen the emergence of joint ventures that can be viewed as a single entity. Clubs are separately owned with discretion to set prices, market the games, and adopt strategies to compete with other clubs. There are, however, several key differences between the two models, all of which ultimately impinge on factors such as revenue generation and ability to compete. Firstly, the American sports model operates a draft system where the best performing rookie is assigned to the worst performing team. Furthermore, two American sports leagues operate under salary caps, share television revenue equally, and compete exclusively in domestically structured leagues (aside from a handful of Canadian franchises) (Andreff & Staudohar, 2000). In place of promotion and relegation, evident throughout the European model, changes in American leagues come from adding new franchises and relocating franchises to different cities.

Precisely why such differences have arisen in the two continents has never been fully explained (Sloane, 2015). However, Szymanski and Zimbalist (2005) contrast the development of baseball and soccer, with the latter spreading throughout the world, first under the influence of British expatriates and then by local elites, whereas baseball was much more inward looking and concerned with commercial development. Historically, the North American model of professional team sports has been argued to be closer to the profit maximisation end of a continuum, with the European model more closely linked to the utility maximisation end (Andreff, 2011) although Markham and Teplitz (1981), Fort and Quirk (2004), and Zimbalist (2003) refute these claims. Markham and Teplitz (1981) argued that some owners seek “playing success while remaining solvent” while others suggest that without detailed information on revenue functions, it is hard to make comparisons about profit or win maximisation choices. Various papers have also suggested that the European sports model is more closely related to utility or “win” maximisation (see Garcia-del-Barro & Szymanski, 2009; Kesenne, 2000; Sloane, 1971). Furthermore, Zimbalist (2003) found little convincing evidence distinguishing prof-

it-maximising behaviour from any other and concluded that “owners maximise global long-term returns” and that these are very different from a team’s reported operating profits. Zimbalist (2003) further argues that, in relation to American team sports, it is almost certain that different owners give different weights to the variety of arguments in their objective management functions. The omission of features such as salary caps and revenue sharing in the European model alongside a lack of regulation in the first instance ultimately gave rise to the inception of the EPL in 1992, which saw the most powerful clubs at the time break away and form their own league where they were able to negotiate their own broadcasting and sponsorship deals, sell them to the highest bidders, and retain the revenue for themselves. Furthermore, they were able to allocate these revenues as they saw fit.

### **Measuring Performance in Professional Team Sports**

Reconciling the “on-field/off field” dichotomy in professional team sport is not easy, and it has proved a highly contentious issue in recent years (Chadwick, 2009). Notwithstanding this, there is already partial recognition that on-field and off-field performances may be linked (e.g., Cornwell et al., 2001). It is within the measurement of both on-field and off-field performance that grey areas remain, and the overriding conclusion is that there is currently no set definition as to what measures to include each time (Plumley et al., 2014). Despite this problem, there is convergence in certain areas. First, measuring off-field performance is normally undertaken by conducting financial analysis on the financial statements of clubs. Under UK accounting law, every limited company must report its financial information in line with the principles and formats of UK Generally Accepted Accounting Principles (GAAP). As such, financial analysis can be undertaken on any registered company, particularly in larger organisations such as professional sports teams where more detailed information is available in a standardised format.

One of the most popular and applied forms of financial measurement is ratio analysis. The measurement of variables under these headings has been utilised extensively in academic research, ranging across a variety of industries. Indeed, Feng and Wang (2000); Ponikvar, Tajnikar, and Pusnik (2009); and Sueyoshi (2005) have all incorporated similar areas of financial performance, namely debt, liquidity, and profitability, in their respective analysis of the airline industry, the American power/energy industry, and the Slovenian manufacturing industry.

With regard to sporting performance, the literature suggests that there is a link between sporting and financial performance (e.g., Szymanski & Kuypers, 1999), but there remains a pragmatic problem with the debate surrounding cause and effect. Most studies that have focused on sporting performance have used “league position” or “league points won” as a measure for their analysis. Upon correlating the relationship between profit and league position for 40 football clubs between the years 1978–1997, Szymanski and Kuypers (1999) found little evidence of a

significant relationship between changes in league position and changes in profit, implying that there is no simple formula that relates financial success to success on the pitch. However, as stated by Szymanski and Kuypers (1999), in the past, when club directors did not place great emphasis on financial success, this did not matter. In practice, financial performance can be measured by more than just the profit figure taken from the club accounts, just as playing performance can consist of a number of different variables in addition to league position. Indeed, Guzman (2006) claims that professional football clubs are special businesses since their performance can be viewed from two different objectives; success on the field and success in business performance. Morrow (2003; cited in Guzman & Morrow, 2007) concurs, agreeing in the first instance that football clubs are unusual businesses. Although generally constituted as limited liability companies and hence ostensibly operating within the same legal and governance framework as companies in other areas of economic activity, they exist in a peculiar emotional and social space, where unusually strong relationships often exist between the company and stakeholders. Unsurprisingly, these relationships can have an impact on business behaviour and decision making. For example, the objectives of football clubs, in particular the desire for on-field success, are likely to have implications for business decision making (Morrow, 2003). In addition, the presence of nonfinancial objectives also raises the question of how to measure the performance of football clubs (Guzman & Morrow, 2007) in line with their pursuit of twin objectives that can potentially conflict with each other. This point is pertinent in respect of a paper by Rascher (1997) who examined the individual owner's choice of talent, the league's choice of revenue-sharing arrangement, and a salary cap policy in both a profit-maximising model and a utility-maximising model. In a profit-maximising model, the paper found that owners would be in favour of lowering the salary cap if it were a sufficiently small or a sufficiently large decrease and that the optimal revenue-sharing agreement and salary cap level are generally found to be 100% and 0%, respectively, from the owner's perspective (Rascher, 1997).

A further consideration in relation to financial performance is the application of weighting factors to each individual variable or measure. Previously it has been commonplace for analysts to assign equal weights to all ratios considered in the analysis. A more robust and scientific technique would be to weight factors of significant importance higher than others. However, there is no set definition for assigning weighting factors and, once again, it is at the discretion of the authors what weightings are set. Indeed, few academic papers cover this topic. Fadhil Abidali and Harris (1995) suggest a questionnaire or interview-based approach focusing on industry experts to determine how variables should be weighted, but there is very little empirical evidence in relation to this matter.

### Key Issues

It is evident that there are many different types of performance measurement and that each method has its respective strengths and weaknesses. However, it is

apparent from the literature that the choice of ratios is largely down to the discretion of individual researchers rather than rigorously tested scientific protocols. There is, at the present time, no set definition as to which ratios or variables to use. In actual fact, it appears that researchers instead opt for certain ratios or variables that fit best within the context of the study and the industry in which a business operates. It is important to understand that ratio analysis is also often used as a benchmarking tool within industries, and it makes good business sense for organisations to benchmark themselves against their direct competitors. However, in the context of sport, and more specifically professional football, this is difficult to replicate. For example, both Manchester United and AFC Bournemouth were in the EPL in the 2015–2016 season, yet it is unrealistic that the two clubs would be in direct competition in a financial sense. Furthermore, despite the importance of benchmarking, there is little literature about benchmarking in professional team sports or indeed football.

In summary, sport is different from other products and industry sectors (Chadwick, 2009). There is a performance measurement objective of balancing on-field success with business performance that makes sport so unique and different from other industries. At present, the performance measurement debate is seen as being one which involves a tension between the effectiveness of on-field performances and the effectiveness of off-field financial performance (Chadwick, 2009).

## Methodology

In this study, the original selection of variables was a consequence of a two-stage process. The first, involved a systematic literature review from the lead author's Ph.D. dissertation that covered search terms for financial performance measurement both in professional sport and general business. The systematic review returned a total of 80 relevant articles that were analysed from an original total of 2,635. These articles were then reviewed to extract the measures of financial performance used across multiple industries (some of which have been discussed in the literature review section of this paper). The second stage was to finalise the variables to be used in the first iteration of the model through a discussion with a panel of experts in the field and through a cross-reference of Deloitte's suggested key performance indicators (KPIs) for a football club. Through this two-stage approach, the authors are confident that the initial variables put forward are indicative of both the actual performance measures that football clubs objectivise against and the variables put forward in previous academic research on the topic. The authors are confident that the selection of variables (both financial and sporting) is rigorous and logical given the academic literature available on the topic and the context of the industry. First, from a playing perspective we have devised measures that accurately describe how on-field success (or failure) can be captured easily in a series of indicators that are logical and for which the raw data

is readily available in the public domain and, second, for the financial indicators we are using industry standard measures that again can be sourced from data in the public domain and have been justified through a systematic search of relevant academic literature.

Originally, the neutral model was made up of 18 different variables, 9 financial and 9 sporting, with equal weights applied to each variable (see Table 1). A definition of each variable and its interpretation is provided in Table 2. Financial data was gathered from the *Deloitte Annual Review of Football Finance* publications, which use the annual financial statements of the legal entity registered in the United Kingdom, which is the “top” ownership structure in respect of each club to produce their figures. Where data was missing from this publication, data was extracted manually from the company accounts. Sporting data was gathered from the *Sky Sports Football Yearbooks*.

**Table 1**

*The Neutral Model in Practice*

| Dimension        | Sub domain                                    |             |        | Dimension |              | Overall Score (OPS) |
|------------------|-----------------------------------------------|-------------|--------|-----------|--------------|---------------------|
|                  | Indicator                                     | League rank | Weight | Score     | Score Weight |                     |
| <b>Financial</b> | Revenue                                       | 2           | 0.111  | 0.222     |              |                     |
|                  | Operating Profit/(Loss) before player trading | 4           | 0.111  | 0.444     |              |                     |
|                  | Pre-tax profit/(loss)                         | 3           | 0.111  | 0.333     |              |                     |
|                  | Net Assets/(Liabilities)                      | 8           | 0.111  | 0.888     | 3.552        | 0.50                |
|                  | Cash/(bank loans and overdrafts)              | 4           | 0.111  | 0.444     |              |                     |
|                  | Other loans and leases                        | 1           | 0.111  | 0.111     |              | 4.218               |
|                  | Net funds/(debt)                              | 3           | 0.111  | 0.333     |              |                     |
|                  | Wages/Turnover                                | 4           | 0.111  | 0.444     |              |                     |
|                  | TV Revenue                                    | 3           | 0.111  | 0.333     |              |                     |
|                  | League Points                                 | 5           | 0.111  | 0.555     |              |                     |
| <b>Sporting</b>  | Total Home Games                              | 2           | 0.111  | 0.222     | 4.884        | 0.50                |
|                  | Total Home Game Variance                      | 1           | 0.111  | 0.111     |              |                     |
|                  | Total Games                                   | 4           | 0.111  | 0.444     |              |                     |
|                  | Total Game Variance                           | 6           | 0.111  | 0.666     |              |                     |
|                  | Total Win Ratio                               | 8           | 0.111  | 0.888     |              |                     |
|                  | Perfect Season                                | 11          | 0.111  | 1.221     |              |                     |
|                  | Attendance Spread                             | 4           | 0.111  | 0.444     |              |                     |
|                  | Revenue per Average Spectator                 | 3           | 0.111  | 0.333     |              |                     |
|                  |                                               |             |        |           |              |                     |

**Table 2***Neutral Model Variable Definitions and Interpretations*

| Dimension        | Indicator                                     | Definition                                                                                                                                                                                                                                                                                                                    | Interpretation                   |
|------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <b>Financial</b> | Revenue                                       | A club's total revenue figure taken from the first line of the income statement.                                                                                                                                                                                                                                              | Higher figure is more desirable. |
|                  | Operating Profit/(Loss) before player trading | A club's operating profit/(loss) before player trading is accounted for.                                                                                                                                                                                                                                                      |                                  |
|                  | Pre-tax profit/(loss)                         | A club's profit/(loss) before any tax charges are deducted.                                                                                                                                                                                                                                                                   | Higher figure is more desirable. |
|                  | Net Assets/(Liabilities)                      | A figure to show whether a club has more positive net assets or negative liabilities.                                                                                                                                                                                                                                         | Higher figure is more desirable. |
|                  | Cash/(bank loans and overdrafts)              | A figure to show whether a club has a positive cash figure or whether it is more reliant on bank loans/overdrafts.                                                                                                                                                                                                            | Higher figure is more desirable. |
|                  | Other loans and leases                        | A figure to show any other loans or leases a club has.                                                                                                                                                                                                                                                                        | Lower figure is more desirable.  |
|                  | Net funds/(debt)                              | A figure to show whether a club has positive net funds or debt.                                                                                                                                                                                                                                                               | Higher figure is more desirable. |
|                  | Wages/Turnover                                | A figure to show the percentage of turnover that is spent on staff wages                                                                                                                                                                                                                                                      | Lower figure is more desirable.  |
| <b>Sporting</b>  | TV Revenue                                    | A figure to show how much income a club receives from TV broadcasting deals                                                                                                                                                                                                                                                   | Higher figure is more desirable. |
|                  | League Points                                 | The amount of points a club acquires through sporting performance in a given season                                                                                                                                                                                                                                           | Higher figure is more desirable. |
|                  | Total Home Games                              | The total number of home games a club plays in a given season. This will fluctuate in line with performance in cup competitions.                                                                                                                                                                                              | Higher figure is more desirable. |
|                  | Total Home Game Variance                      | The difference between the fixed number of home games a club is guaranteed to play versus the actual number they play (fixed home games in the EPL is 19 per club).                                                                                                                                                           | Higher figure is more desirable. |
|                  | Total Games                                   | The total number of games a club plays in any given season. A higher number typically indicates more sporting success.                                                                                                                                                                                                        | Higher figure is more desirable. |
|                  | Total Game Variance                           | The difference between the fixed number of games a club is guaranteed to play versus the actual number they play (fixed games in the EPL is 40 per club (38 in the league plus a guaranteed 2 games in domestic cup competitions).                                                                                            | Higher figure is more desirable. |
|                  | Total Win Ratio                               | A ratio that considers the amount of wins a club achieves against the total number of games played in any given season.                                                                                                                                                                                                       | Higher figure is more desirable. |
|                  | Perfect Season                                | The total number of games played should a club win every trophy possible and play in every round of the cup competitions (perfect season in the EPL is defined as 63 games (winning all four trophies of league, FA Cup, League Cup and Champions League). Perfect season is expressed as a ratio of total games played.      | Higher figure is more desirable. |
|                  | Attendance Spread                             | The difference between highest and lowest league match attendances expressed as an absolute figure. A low percentage score might indicate capacity constraints and robust match day revenue streams whereas a high percentage might indicate a more fragile fan base and more dependence on the quality of the visiting team. | Lower figure is more desirable.  |
|                  | Revenue per Average Spectator                 | The figure for revenue per average spectator is derived from calculating a club's revenue less Premier League TV revenues and UEFA central TV distributions divided by the average league attendance. This figure represents a 'broad measure' of a club's ability to generate revenue from its fan base.                     | Higher figure is more desirable. |

The neutral model takes its origins from the FOrNeX model (see Andrikopoulos & Kaimenakis, 2009), which outlines a way to model the intellectual capital of a football club. For each dimension of performance (financial and sporting) a weight is assigned which sums to 1. The performance of the football club is the weighted average of the performance in both these dimensions. Within these two dimensions of performance, there are a number of indicators that are also weighted and sum to 1, so each club has a dimension score for each sub-domain (using the Hypothetical league rank column), which is then used to calculate the overall performance score for each club. The league rank for each sub-domain is derived from how well a club is performing in relation to other clubs in the league on that indicator. For each sub-domain, the league rank will range from 1 (best performance) to  $n$  (worst performance)—the latter is categorised by how many teams compete in the league. Therefore, a team with the best turnover figure in a given year will score 1; the team with the second best turnover figure will score 2, and so on. The multiplication of the scores and subsequent overall performance score (OPS) is described in Table 1. A lower OPS is more desirable owing to the fact that clubs are ranked against each other (i.e., the perfect score for each indicator would be 1).

### **Alterations to the Neutral Model**

After the completion of the pilot study, further alterations to the model were made in an attempt to define which factors were most important within the neutral model. The statistical analysis method utilised was factor analysis. In this research, factor analysis was underpinned by an initial correlation matrix, which provides an opportunity to eliminate variables from the investigation where certain variables correlate highly and essentially measure the same thing. A very strong correlation (either positively or negatively) is deemed to be an  $r$  score of greater than 0.7. The correlation matrixes for both financial and sporting variables are outlined in Tables 3 and 4.

### **The Model Restated—The PAM**

Following correlation analysis on the neutral model ten variables (four financial and six sporting) were omitted owing to very strong correlations with other variables (variables shaded grey in Tables 3 and 4). Where multiple correlations occurred, a logical rationale was provided as to the exclusion of certain variables. A financial variable example of this was to include “revenue” over “TV revenue” owing to the fact that the TV revenue figure is a complete subset of the total revenue figure and therefore total revenue is deemed to be the better variable for inclusion in the model. A sporting variable example was to include “total game variance” over “total home game variance” for similar reasons.

Table 3

## Correlation Matrix (Financial)

|                 | Revenue                          | Operating Profit | Pre-Tax Profit | Net Assets/(Liabilities) | Cash/(bank loans and overdrafts) | Other Loans | Net Funds/(Debt) | Wages/Turnover | TV Revenue |
|-----------------|----------------------------------|------------------|----------------|--------------------------|----------------------------------|-------------|------------------|----------------|------------|
| Correlation     | Revenue                          | .239             | -.389          | .219                     | -.009                            | -.704       | -.602            | .295           | .807       |
|                 | Operating Profit                 |                  | .432           | .574                     | -.270                            | .089        | .114             | .925           | .100       |
|                 | Pre-Tax Profit                   |                  |                | .453                     | .240                             | .411        | .623             | .433           | -.504      |
|                 | Net Assets/(Liabilities)         |                  |                |                          | -.111                            | .082        | .202             | .632           | .054       |
|                 | Cash/(bank loans and overdrafts) |                  |                |                          |                                  | -.077       | .346             | -.149          | -.209      |
|                 | Other Loans                      |                  |                |                          |                                  |             | .830             | .154           | -.588      |
|                 | Net Funds/(Debt)                 |                  |                |                          |                                  |             |                  | .188           | -.596      |
|                 | Wages/Turnover                   |                  |                |                          |                                  |             |                  |                | .002       |
|                 | TV Revenue                       |                  |                |                          |                                  |             |                  |                |            |
| Sig. (1-tailed) | Revenue                          | .163             | .050           | .184                     | .486                             | .000**      | .003**           | .110           | .000**     |
|                 | Operating Profit                 |                  | .033           | .005**                   | .132                             | .358        | .321             | .000**         | .342       |
|                 | Pre-Tax Profit                   |                  |                | .026                     | .161                             | .040*       | .002**           | .032*          | .014*      |
|                 | Net Assets/(Liabilities)         |                  |                |                          | .326                             | .369        | .204             | .002**         | .412       |
|                 | Cash/(bank loans and overdrafts) |                  |                |                          |                                  | .377        | .074             | .271           | .196       |
|                 | Other Loans                      |                  |                |                          |                                  |             | .000**           | .264           | .004**     |
|                 | Net Funds/(Debt)                 |                  |                |                          |                                  |             |                  | .221           | .004**     |
|                 | Wages/Turnover                   |                  |                |                          |                                  |             |                  |                | .497       |
|                 | TV Revenue                       |                  |                |                          |                                  |             |                  |                |            |

a. Determinant = 5.440E-005  
 \*\* Correlation is significant at the .01 level (1-tailed)  
 \* Correlation is significant at the .05 level (1-tailed)

Once the variables had been reduced, they were weighted according to their respective importance to the model. The restated model is subsequently referred to as the Performance Assessment Model (PAM). The restated PAM (Table 5) also uses a justified weighting system that takes into account the different measures in the model as well as current regulations in the industry. For example, wages/turnover is an efficiency measure (i.e., it is composed of two variables to create one measure). It is also a component of FFP with UEFA stating a suggested wages/turnover ratio as a benchmark for clubs. The measure is therefore allocated greater weight (0.4) within the PAM. A further reason behind this decision was the relationship between the three original models that were derived (the neutral model and two PAMs with different weighting factors). Correlation analysis of the results obtained in each model (the results of one year's worth of data for 19 clubs) found a strong relationship between the results for all three models, essentially identifying that all three models were stating identical results. The correlation  $r$  score between the results returned for the neutral model, the PAM (equal weights) and the PAM (justified weights) was 0.980 and 0.979 respectively while the  $r$  score between the two PAMs was 0.997.

**Table 5**

*The PAM (Justified Weights)*

| Dimension        | Sub domain               |                    |               |              | Dimension    |               | OPS  |
|------------------|--------------------------|--------------------|---------------|--------------|--------------|---------------|------|
|                  | <i>Indicator</i>         | <i>League rank</i> | <i>Weight</i> | <i>Score</i> | <i>Score</i> | <i>Weight</i> |      |
| <b>Financial</b> | Revenue                  | 2                  | 0.15          | 0.30         |              |               |      |
|                  | Pre-tax profit/(loss)    | 4                  | 0.15          | 0.60         |              |               |      |
|                  | Net assets/(liabilities) | 3                  | 0.15          | 0.45         | 4.15         | 0.625         | 3.59 |
|                  | Net funds/(debt)         | 8                  | 0.15          | 1.20         |              |               |      |
|                  | Wages/Turnover           | 4                  | 0.40          | 1.60         |              |               |      |
| <b>Sporting</b>  | League Points            | 5                  | 0.333         | 1.665        |              |               |      |
|                  | Total Game Variance      | 2                  | 0.333         | 0.666        | 2.66         | 0.375         |      |
|                  | Attendance Spread        | 1                  | 0.333         | 0.333        |              |               |      |

## Results

### Applying the PAM—An Analysis of English Football Clubs since the Inception of the EPL

The paper now applies the PAM to a longitudinal dataset of English football clubs that have competed predominantly within the EPL since its inception in

1992. The results include data from 21 clubs in total (the selected clubs were the clubs that had spent the most seasons in the EPL at the time of data collection [2012]). However, the results have since been updated to include the most recent set of figures available at the time of writing (2012/13 season) meaning that performance has been analysed over a period of 21 years for 21 clubs.

**Table 6**

*Average OPS for All Clubs 1993–2013*

| Rank | Club                | Average Finance Score | Average Sporting Score | Average OPS |
|------|---------------------|-----------------------|------------------------|-------------|
| 1    | Manchester United   | 2.89                  | 3.08                   | 2.96        |
| 2    | Arsenal             | 6.20                  | 3.65                   | 5.24        |
| 3    | Tottenham Hotspur   | 5.10                  | 8.16                   | 6.25        |
| 4    | Liverpool           | 8.27                  | 6.30                   | 7.53        |
| 5    | Newcastle United    | 9.48                  | 7.86                   | 8.87        |
| 6    | Chelsea             | 11.79                 | 5.71                   | 9.51        |
| 7    | Aston Villa         | 9.30                  | 12.24                  | 10.40       |
| 8    | Leeds United        | 9.36                  | 12.81                  | 10.65       |
| 9    | West Ham United     | 10.72                 | 11.37                  | 10.96       |
| 10   | Everton             | 11.49                 | 11.97                  | 11.67       |
| 11   | Manchester City     | 12.23                 | 10.79                  | 11.69       |
| 12   | Southampton         | 11.75                 | 12.17                  | 11.91       |
| 13   | Sunderland          | 10.26                 | 14.71                  | 11.93       |
| 14   | Bolton Wanderers    | 12.55                 | 12.13                  | 12.39       |
| 15   | Leicester City      | 12.79                 | 13.51                  | 13.06       |
| 16   | Charlton Athletic   | 13.17                 | 13.03                  | 13.12       |
| 17   | Sheffield Wednesday | 11.26                 | 16.32                  | 13.16       |
| 18   | Blackburn Rovers    | 14.24                 | 11.40                  | 13.17       |
| 19   | Middlesbrough       | 14.81                 | 11.95                  | 13.74       |
| 20   | Fulham              | 16.25                 | 11.67                  | 14.53       |
| 21   | Coventry City       | 15.57                 | 15.25                  | 15.45       |

Table 6 indicates that Manchester United is the best performing club on average. The club has recorded one of the largest net debt figures in recent years (primarily due to the levels of borrowing attached to the takeover of the club by the Glazer family in 2005) but its ability to generate revenue and profit remains unrivalled, and its position at the top of the EPL and historically strong performance in both domestic and European cup competitions consolidates its position as the best performing club in England. A similar scenario can be found at Arsenal, although its net debt figure has been one of the highest across all clubs since 2003. This debt must be considered in context, however. It was in large part due to the construction of a new stadium, which was necessary to help Arsenal bridge the gap to clubs with higher attendances such as Manchester United. Despite Chelsea ranking third for sporting performance, the club ranked sixth in relation

to the overall performance owing to poorer financial performance, where the club ranked 13th. The three worst performing clubs in the study were Middlesbrough, Fulham, and Coventry City (see Table 6).

Figure 1 examines the relationship between financial and sporting performance over 21 seasons. Here a club's average financial score is plotted against its average sporting score. Figure 1 offers insights into how well English professional football clubs have performed against their closest competitors when also faced with the tension of the twin objectives of sports teams of winning and profit-making, which Smith and Stewart (2010) define as one of the special features of sport. In the United States, there is still no definitive conclusion as to whether teams are profit maximisers where the balance sheet rules, or utility maximisers where a high win-loss ratio is the true measure of superior performance (Fort & Quirk, 2004). As such, it is difficult to frame Figure 1 within a profit versus utility maximisation debate. Profit and utility maximisation ultimately represent motivations and there is not a unique relationship between motivation and outcome. For example, poor financial performance does not necessarily imply utility maximisation. Sport organisations share the same imperative in relation to having to pay wages to invest in the development of player talent in order to achieve winning performances that not only satisfy the shareholders and investors but also to keep the public interested and willing to pay for its product (Szymanski & Kuypers, 1999). Put simply, success is a function of a strong stream of revenue (Smith & Stewart, 2010). In relation to our findings, Figure 1 certainly supports this theory.

Manchester United has been the most consistent performer across the elite clubs in England since the formation of the EPL when analysed through the PAM. The top right hand quadrant indicated in Figure 1 highlights occurrences where a club is performing well both financially and on the pitch in relation to its competitors. Past research (e.g., Buraimo et al., 2006; Dobson & Goddard, 2011) has stated that occurrences like this have been rare in recent years and, superficially, Figure 1 offers a similar conclusion. Aside from Manchester United, only three other clubs are placed in the top right quadrant (Arsenal, Liverpool, and Tottenham Hotspur). Furthermore, all of these three clubs are closer to other quadrants than being closer to Manchester United. Tottenham Hotspur's financial performance is the closest challenger to Manchester United, while Arsenal is the closest in terms of sporting performance. It is arguably conceivable that large-market teams such as Manchester United could pursue profit maximisation and still rank highly in both sporting and financial performance. The same could be said for a number of other clubs, including Arsenal and, more recently, Chelsea and Manchester City. With reference to the data for this study, Chelsea is one of only two clubs located in the top left quadrant of Figure 1 indicating relatively good sporting performance but relatively poor financial performance.

Chelsea was one of the first clubs to be taken over by a new wave of foreign investors when Russian billionaire Roman Abramovich purchased the club in 2003

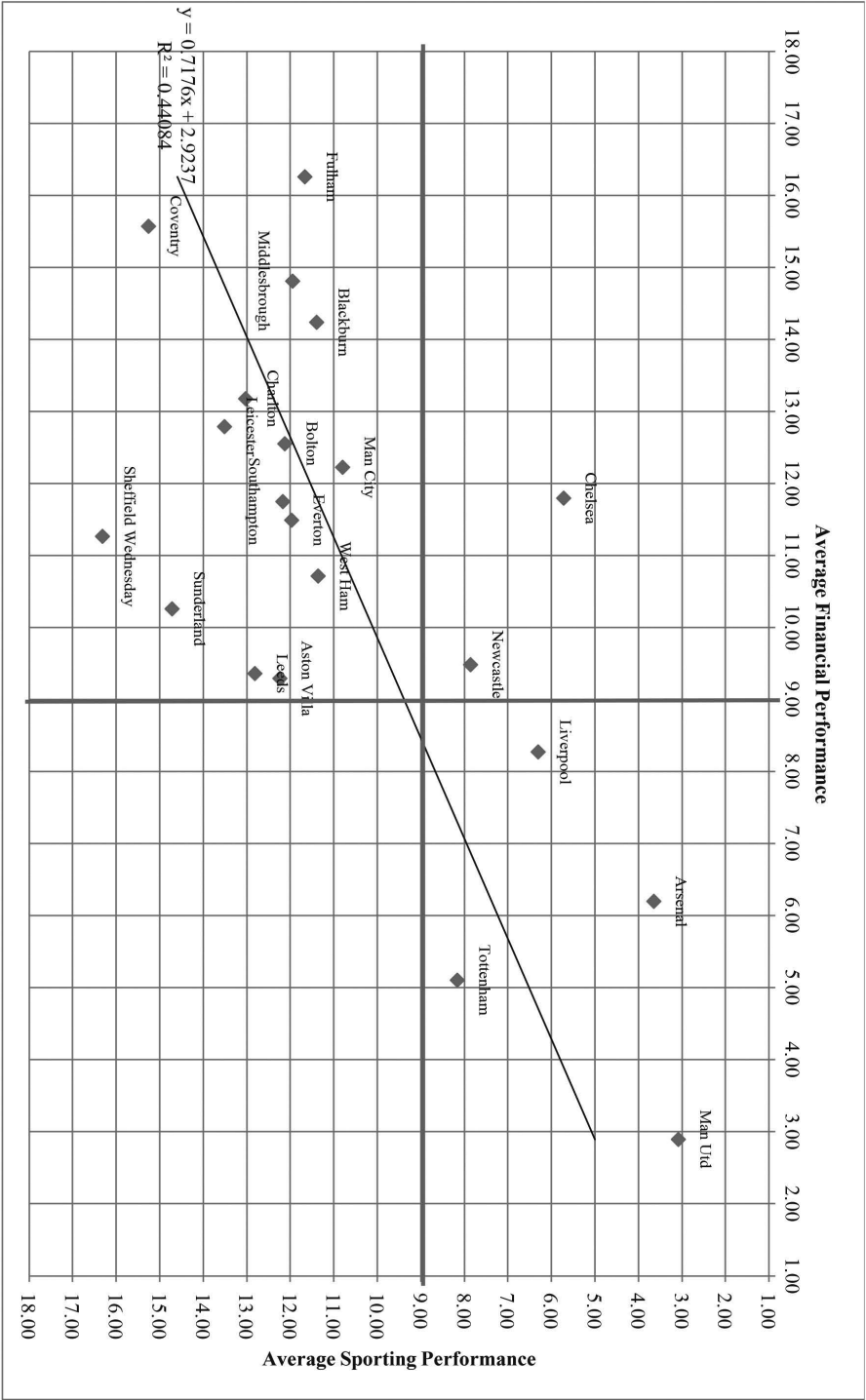


Figure 1. Average Financial Performance versus Average Sporting Performance 1993-2013

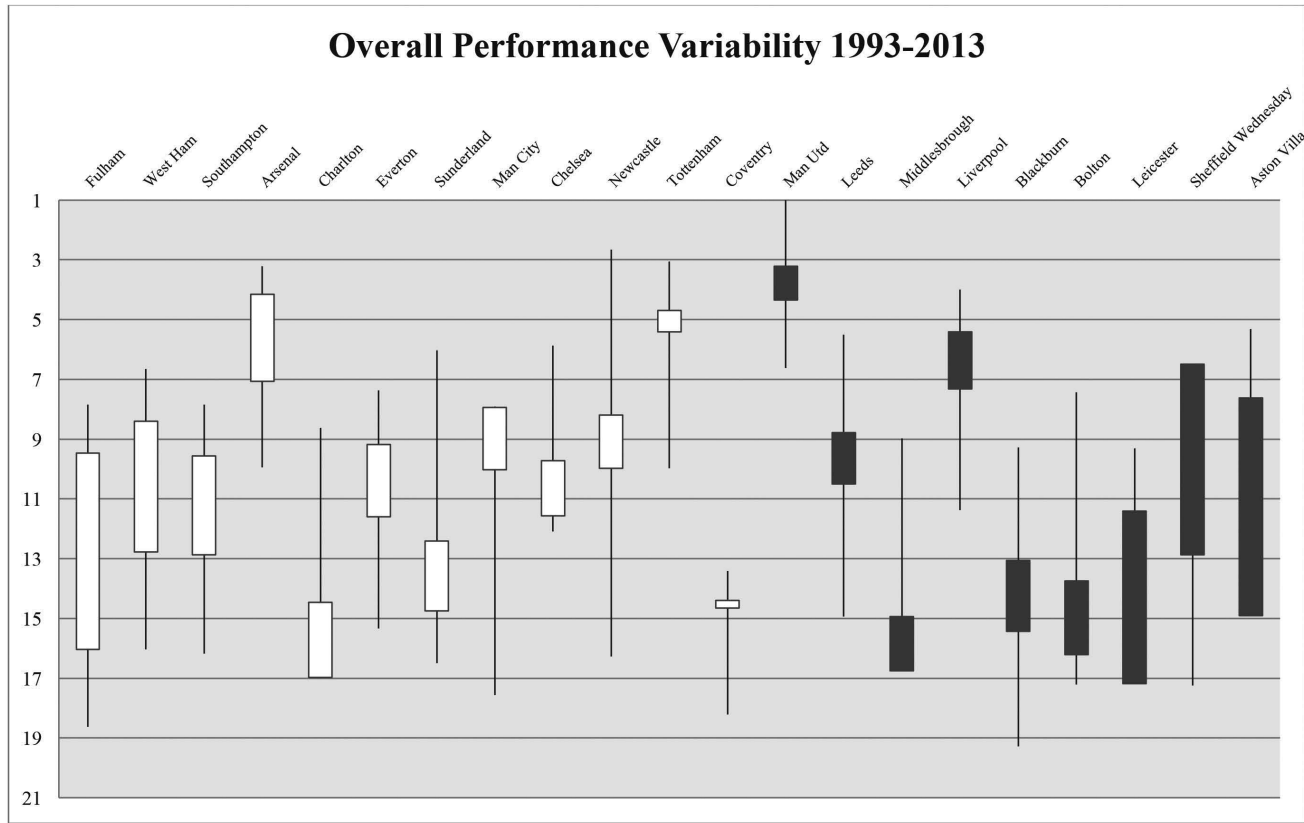
and recent literature has argued that this club has subsequently been following an approach most closely related to utility maximisation (Wilson et al., 2013). While it is impossible to say whether this is true or not, in light of the subjectivity surrounding profit and utility maximisation, the data does depict a trade-off between financial and sporting performance for Chelsea at a time when the owner was attempting to strengthen playing talent to drive success on the pitch.

Of more cause for concern for English football clubs is the fact that 13 of the 21 clubs in the study are placed in the bottom left quadrant of Figure 1. In essence, this quadrant depicts clubs performing insufficiently in all areas of measurement compared with their competitors in the industry. Hypothetically, this quadrant supports the aforementioned “financial crisis” in English football (see Buraimo et al., 2006) with certain clubs displaying neither good financial performance nor reporting any significant success on the pitch. In relation to the PAM, the worst performing clubs would be placed furthest toward the bottom left corner of Figure 1, meaning that Fulham, Coventry City, and Sheffield Wednesday can be categorised as the worst performing clubs overall in relation to the years analysed. It must be noted that some of these clubs (e.g., Coventry City, Sheffield Wednesday, and Leeds United) have been relegated from the EPL in recent years and are yet to return. However, it is also interesting to note that there are also some established EPL teams that are placed in this quadrant. Indeed, seven clubs in this quadrant are current EPL clubs at the time of writing (2014–2015 season), including Everton, which is one of only seven clubs that have competed in every EPL season since its formation in 1992. Additionally, Figure 1 highlights that financial performance and sporting performance are not mutually exclusive as there are occurrences where clubs have recorded good financial performance and good sporting performance (e.g., Manchester United).

Last, Figure 1 also indicates that there is a positive correlation between financial performance and sporting performance ( $r = 0.44$ ). While this is not a strong correlation in absolute terms, it is statistically significant ( $p < 0.05$ ), which means that the probability of achieving a correlation coefficient of this magnitude by chance is remote. This in turn indicates the presence of a real relationship rather than a statistical quirk. Superficially at least, better financial health is moderately and positively associated with better performance in the EPL. This is a finding that is consistent with Wilson et al. (2013) who also found a similar moderate and positive relationship between financial and sporting performance in EPL clubs.

### Time Series Analysis and Correlation Over Time

Figure 2 records the variability in overall performance for all clubs for the time period analysed by considering their highest and lowest scores and the variance. The unshaded bars show clubs that have recorded an improvement in performance based on their score in 1993 compared with their score in 2013, whereas the shaded bars show clubs that have seen a decline in performance. There is a high level of variability in relation to overall performance for the majority of clubs



**Figure 2.** Overall Performance Variability 1993–2013

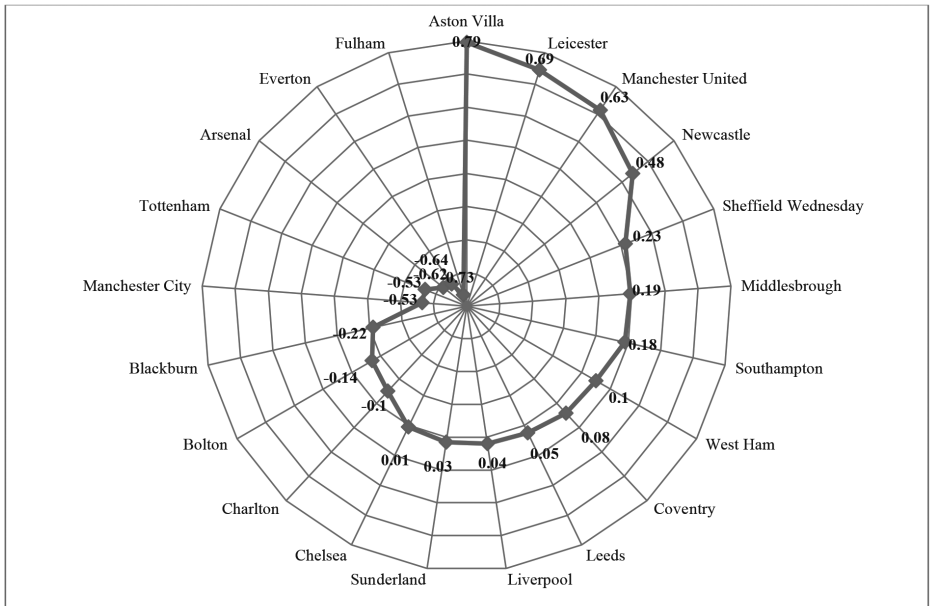
although this time the main variance is between the highest and lowest scores. This suggests that these clubs have experienced both positive and negative fluctuations between the years 1993–2013. Indeed, this is certainly the case at Manchester City and Newcastle United. Manchester City recorded a best score of 7.91 in 2012 and a worst score of 17.56 in 1998. There was a greater disparity in the scores recorded by Newcastle United, with the club recording a best score of 2.66 in 1997 and a worst score of 16.28 in 2010. These findings also suggest that football club performance often runs in cycles, where sometimes clubs have a successful period spanning a number of years before declining for a period of time.

The smallest variances in performance occur at Coventry City, Manchester United, and Tottenham Hotspur, although in the case of Coventry City this cannot necessarily be classed as a positive outcome as the club never recorded an OPS higher than 13.41. In the case of Manchester United and Tottenham Hotspur, smaller variances were attributable to consistently good OPS scores with all scores for both clubs falling between 1 and 8 for 18 of the 21 seasons analysed. With reference to Figure 2, it is evident that there is no clear pattern emerging over time in relation to performance. There are certain instances where a club returns an annual OPS that differs significantly from its average OPS (e.g., Chelsea in 1999, Leeds United in 2003 and 2004, Sunderland in 2001, Bolton Wanderers in 2005, 2006 and 2007, and Sheffield Wednesday in 1993) but these occurrences appear to be random rather than attributable to specific critical incidents. In order to test this assumption, further scrutiny of the time series analysis is considered through the correlation between overall performance and time for each club.

The correlation analysis (see Figure 3) illustrates that, with the passage of time, comparative overall performance has declined either moderately or strongly for four clubs—Aston Villa, Leicester City, Manchester United, and Newcastle United ( $0.30 < r < 0.71$ )—while five clubs have improved either moderately or strongly—Manchester City, Tottenham, Arsenal, Everton, and Fulham ( $-0.62 < r < -0.32$ ). For the remaining 12 clubs, performance was relatively unchanged ( $-0.30 < r < 0.30$ ). This provides further indicative evidence that, for the majority of these clubs, overall performance, as measured using a mix of financial and sporting indicators, varies over time in cycles.

## Discussion

The results suggest that performance is not evenly distributed and that there is in fact a considerable disparity between the best performing clubs and the worst. For instance, there is a substantial gap between the best performing club (Manchester United) and the worst performing club (Coventry). Furthermore, there is a substantial gap between the best performing club (Manchester United) and the next best performing club (Arsenal). There is an argument here that Manchester United had, over the period under review, established a form of a monopoly over the rest of the league, a scenario that Dobson and Goddard (2011) state is not ben-



**Figure 3.** Overall Performance Correlations Over Time 1993–2013

eficial for a football club or indeed the league as a whole. The EPL, however, does not appear to be hindered by this particular situation and it has established itself as a highly successful product, becoming the largest revenue generating league in world football during the last five years (Deloitte, 2015).

It is important not to dismiss the argument of Zimbalist (2003), who stated that, in relation to American team sports, it is almost certain that different owners give different weights to the variety of arguments in their objective management functions. This point was also made earlier in the paper in relation to the EPL and the fact that clubs' objectives will undoubtedly change over time, making arguments around profit versus utility maximisation increasingly difficult to contextualise with reference to the modern industry of professional team sports.

### The Problem with Objectives

It has been acknowledged in this paper that sports teams have to balance twin objectives (in this case these are financial and sporting objectives). There is a clear argument to support this in the academic literature that has preceded this paper. However, the authors are also aware that there are other factors that determine the objectives of professional sports teams that will subsequently impact on business and sporting performance. Primarily, in professional football clubs, there is a pragmatic problem with the objectives of owners. Indeed, this is further compounded by the fact that new owners might come into a club and that as a consequence business objectives might change over time. This is evidenced by the case

of Chelsea, Manchester City, and Manchester United in English football. When Roman Abramovich purchased Chelsea FC in 2003 (at a time when there were no restrictions) he primarily invested money into securing the best playing talent in an attempt to improve sporting performance. A similar scenario occurred at Manchester City in 2008 when they were purchased by the Abu Dhabi Group, although the introduction of FFP has since meant that Manchester City must now balance the books as well. The acquisition of Manchester United in 2005 by the Glazer family was slightly different as they purchased the club through a method of debt finance. It was suggested at the time that this was the first example of an American owner exerting profit maximisation principles on a UK professional sports team and Manchester United have since floated on the Singapore and New York stock exchange in an attempt to raise further funds.

Given this context, it is difficult to ascertain indefinitely what the objectives of clubs truly are. However, we are not necessarily trying to say that clubs are profit maximisers or utility maximisers, rather that they show the traits of these extremes to a greater or lesser extent. This issue is easily solved by examining the likes of Chelsea, Manchester City, and Manchester United to show how (if at all) things change in response to critical incidents. Notwithstanding the practical problem of owner objectives, it is clear from previous literature that success (in team sports) is a function of a strong stream of revenue (Smith & Stewart, 2010) primarily because teams have to pay the best wages to secure the best playing talent. As such, irrespective of what owner(s) actually wants to do, they must balance the financial and sporting objectives of the club accordingly in order to maximise playing success.

## Conclusion

The contribution to the paper is twofold. First, the paper offers insights into the holistic performance of professional football clubs in England over a longitudinal time period. Among other things, the paper offers new and relevant insights into the economic theory of professional team sports most notably around the relationship between financial and sporting performance, thus building on the seminal work of Sloane (1971) and others (e.g. Kesenne, 2000; Garcia-del-Barro and Szymanski, 2006; Sloane, 2015). Our findings suggest that financial and sporting performance are not dichotomous variables but a continuum along which clubs place themselves and move backwards and forwards to a greater or lesser extent.

Secondly, the paper has developed a robust statistically tested model that can be used to conduct data analysis over longitudinal time periods. This new model also has the potential to be applied to other professional team sports to investigate league characteristics in future research. The model adds progression in the field, as previously the choice of variables used has been discretionary and has not been tempered by tests for covariance. By contrast, the PAM has been developed using

recognised statistical techniques to inform its production and to minimise covariance. As outlined in the introduction, the aim of such a model is not to attempt to predict future performance but to pinpoint health markers to ascertain warning signs for when clubs may appear to be performing badly. The model can be used to quantify club objectives and help analysts outline in what way clubs are performing based on economic principles. The model could also be used by governing bodies and decision makers within respective sports in order to inform policy and set new regulations.

### Limitations and Future Research

While this paper has focused explicitly on the twin objectives of professional sports teams, the authors acknowledge that there are perhaps multiple objectives of professional sports teams that transcend financial and sporting performance. Indeed, a recent paper by Carlsson-Wall, Kraus, and Messner (2016) indicates that football clubs operate under multiple institutional logics, citing the work of Gammelsaeter (2010), who states that sports organisations are typically subject to several different logics. Notwithstanding this, Carlsson-Wall et al. (2016) also proceed to focus on two logics in their paper that they term *sports logic* and *business logic* respectively. These two logics are the same as the financial and sporting performance objectives that we use in our paper, thus outlining their continued importance in the performance measurement of professional sports teams.

As such, the omission of other performance measures or logics is a limitation of the current study, although it also presents a natural direction for future research. The model put forward in this paper is scientifically robust enough to stand up to scrutiny but is by no means perfect. Thus, progression of the model to incorporate different institutional logics is an area for future research development. Furthermore, a refinement of the model is possible through interviewing industry professionals to test whether the variables used are consistent with internal performance indicators. It is envisaged that the variables used in this paper would be confirmed to some extent through this approach given the systematic rigour applied to this paper, although it would provide an interesting qualitative aspect to the research agenda if interviews could be sourced with owners and chief executives to help us understand further the thought process behind setting performance objectives in football clubs.

A future quantitative research stream is to apply the model to other professional football leagues and other professional team sports. The aim would be to create a body of research in different sports that enables meaningful cross sport comparisons to be made and thereby contribute further to research into professional team sports. As Smith and Stewart (2010) highlight, sport has special features that demand a customised set of practices to ensure its effective operation. It is much more than just a business and is influenced by its rich history, emotional connections, tribal links, and social relevance. Factors such as these are difficult to objectively measure yet they will have a bearing on the business performance

of sporting teams. We have put forward a model that builds on previous research and provides a composite index score for financial and sporting performance. The application and expansion of the model across different sports would provide further enhancements to the field.

## References

- Andreff, W. (2011). Some comparative economics of the organisation of sports: Competition and regulation in north American vs. Europe professional team sports leagues. *The European Journal of Comparative Economics*, 8(1), 3–27.
- Andreff, W. (2007). French Football: A financial crisis rooted in weak governance. *Journal of Sports Economics*, 8(6), 652–661.
- Andreff, W., & Staudohar, P. D. (2000). The evolving model of professional sports finance. *Journal of Sports Economics*, 1(3), 257–276.
- Andrikopoulos, A., & Kaimenakis, N. (2009). Introducing FOrNeX: A composite index for the intangible resources of the football club. *International Journal of Sport Management and Marketing*, 5, 251–266.
- Ascari, G., & Gagnepain, P. (2007). Evaluating rent dissipation in the Spanish football industry. *Journal of Sports Economics*, 8(5), 468–490.
- Barros, C. (2006). Portuguese football. *Journal of Sports Economics*, 7(1), 96–104.
- Buraimo, B., Frick, B., Hickfang, M., & Simmons, R. (2015). The economics of long-term contracts in the footballers' labour market. *Scottish Journal of Political Economy*, 62(1), 8–24.
- Buraimo, B; Simmons, R., & Szymanski, S. (2006). English football. *Journal of Sports Economics*, 7(29), 29–46. doi: 10.1177/1527002505282911
- Carlsson-Wall, M., Kraus, K., & Messner, M. (2016). Performance measurement systems and the enactment of different institutional logics: Insights from a football organization. *Management Accounting Research*. doi:10.1016/j.mar.2016.01.006
- Chadwick, S. (2009). From outside lane to inside track: sport management research in the twenty-first century. *Management Decision*, 47(1), 191–203.
- Cornwell, T. B., Pruitt, S. W., Van Ness, R. (2001). The value of winning in motor-sports: Sponsorship-linked marketing. *Journal of Advertising Research*, 41(1), 17–32.
- Deloitte Sport Business Group. (2015). *Annual review of football finance: Revolution*. Manchester: Author.
- Dietl, H. M., & Franck, E. (2007). Governance failure and financial crisis in German football. *Journal of Sports Economics*, 8(6), 662–669.
- Dimitropoulos, P. (2010). The financial performance of the Greek football clubs. *Choregia*, 6(1), 5–27.
- Dobson, S., & Goddard, J. (2011). *The economics of football* (2nd ed.). Cambridge: University Press.

- Drut, B., & Raballand, G. (2012). Why does financial regulation matter for European professional football clubs? *International Journal of Sport Management and Marketing*, 11(1/2), 73–88.
- Fadhil Abidali, A., & Harris, F. (1995). A methodology for predicting company failure in the construction industry. *Construction Management and Economics*, 13(3), 189–196.
- Feng, C., & Wang, R. (2000). Performance evaluation for airlines including the consideration of financial ratios. *Journal of Air Transport Management*, 6(3), 133–142.
- Fort, R. (2015). Managerial objectives: a retrospective on utility maximization in pro team sports. *Scottish Journal of Political Economy*, 62(1), 75–89.
- Fort, R., & Quirk, J. (2004). Owner objectives and competitive balance. *Journal of Sports Economics*, 5(1), 20–32.
- Gammelsæter, H. (2010). Institutional pluralism and governance in “commercialized” sport clubs. *European Sport Management Quarterly*, 10(5), 569–594. doi: 10.1080/16184742.2010.524241.
- Garcia-del-Barrio, P., & Szymanski, S. (2009). Goal! Profit maximisation versus win maximisation in soccer. *Review of Industrial Organisation*, 34(1), 45–68.
- Guzmán, I. (2006). Measuring efficiency and sustainable growth in Spanish football teams. *European Sport Management Quarterly*, 6(3), 267–287.
- Guzmán, I., & Morrow, S. (2007). Measuring efficiency and productivity in professional football teams: Evidence from the English Premier League. *Central European Journal of Operations Research*, 15(4), 309–328.
- Hoehn, T., & Szymanski, S. (1999). The Americanization of European Football. *Economic Policy*, 28, 205–240.
- Kesenne, S. (2000). Revenue sharing and competitive balance in professional team sports. *Journal of Sports Economics*, 1(1), 56–65.
- Kesenne, S. (2015). Revenue sharing and absolute league quality: Talent investment and talent allocation. *Scottish Journal of Political Economy*, 62(1), 51–58.
- Leach, S., & Szymanski, S. (2015). Making money out of football. *Scottish Journal of Political Economy*, 62(1), 25–50.
- Markham, J. W., & Teplitz, P. V. (1981). Baseball economics and public policy. Lexington, MA: D.C. Heath.
- Morrow, S. (2003). The people’s game?: Football, finance, and society. Hampshire: Palgrave Macmillan.
- Neale, W. (1964). The peculiar economics of professional sports. *Quarterly Journal of Economics*, 78(1), 1–14.
- Plumley, D., Wilson, R., & Ramchandani, G. (2014). Toward a model for measuring holistic performance of professional football clubs. *Soccer and Society*, doi: <http://dx.doi.org/10.1080/14660970.2014.980737>
- Ponikvar, N., Tajnikar, M., & Pusnik, K. (2009). Performance ratios for managerial decision-making in a growing firm. *Journal of Business Economics and Management*, 10(2), 109–120.

- Sloane, P. (1971). The economics of professional football: The football club as a utility maximiser. *Scottish Journal of Political Economy*, 17(2), 121–146.
- Sloane, P. (2006). Rottenberg and the economics of sports after 50 years. In P. Rodriguez, S. Kesenne, J. Garcia (Eds.), *Sports economics after 50 years: Essays in honour of Simon Rottenberg* (pp. 211–226). Spain: University of Oviedo.
- Sloane, P. (2015). The economics of professional football revisited. *Scottish Journal of Political Economy*, 62(1), 1–7.
- Smith, A.C.T., & Stewart, B. (2010). The special features of sport: A critical revisit. *Sport Management Review*, 13, 1–13.
- Sueyoshi, T. (2005). Financial ratio analysis of the electric power industry. *Asia-pacific Journal of Operational Research*, 22(3), 349–376.
- Szymanski, S. (2003). The economic design of sporting contests. *Journal of Economic Literature*, 41(4), 1137–1187.
- Szymanski, S., & Kuypers, T. (1999). *Winners and losers: The business strategy of football*. London, UK: Viking Books.
- Szymanski, S., & Zimbalist, A. (2005). *National pastime: How Americans play baseball and the rest of the world plays soccer*. Washington DC: Brookings Institution Press.
- Vrooman, J. (2015). Sportsman leagues. *Scottish Journal of Political Economy*, 62(1), 90–115.
- Wilson, R., Plumley, D., & Ramchandani, G. (2013). The relationship between ownership structure and club performance in the English Premier League. *Sport Business and Management: An International Journal*, 3(1).
- Zimbalist, A. (2003). Sport as business. *Oxford Review of Economic Policy*, 19(4), 503–511.