

TOWARDS A MODEL FOR MEASURING HOLISTIC PERFORMANCE OF PROFESSIONAL FOOTBALL CLUBS

Abstract: This paper introduces an experimental model to measure the holistic performance of professional football clubs. The model utilises a selection of established financial and sporting indicators, which are weighted in accordance with their perceived relative importance and in relation to components of financial management and governing body regulations. The paper uses data pertaining to clubs competing in the English Premier League to demonstrate the outputs of the model. The authors argue that although the model is experimental, it still provides a useful platform to analyse performance of football clubs through further scientific investigation.

Keywords: economics of football; English Premier League; ExPAM; performance analysis; UEFA Financial Fair Play

Introduction

Substantial increases in revenue have been well documented in European football in recent years. Indeed, the European football market continued to show resistance to wider economic pressures, growing by 4% to €16.9 billion in 2010/11 (Deloitte, 2012). However, in light of such economic pressures, Drut and Raballand (2012) state that debt accumulation of European football clubs is an increasing source of concern for football authorities. Furthermore, there is an argument that a turning point has been reached after Portsmouth Football Club in England became the first club in a major domestic league to enter administration in 2010, coupled with the threat of many other European clubs encountering similar problems. Subsequently, the Union of European Football Associations (UEFA) has introduced its Financial Fair Play (FFP) regulations across the European game in an attempt to alleviate debt and encourage clubs to spend within their means. As detailed later in the paper, there are areas of FFP that appear to be somewhat simplistic and consequently the authors argue that a more holistic approach to analysing performance of professional football clubs is required supplementary to the actual regulations enforced by the football authorities. The paper is structured as follows. The main legislative and theoretical issues are discussed before an experimental performance assessment model (hereafter referred to as ExPAM) is introduced. The ExPAM is then applied to a sample dataset that includes football clubs from the English Premier League (EPL) to demonstrate its workings and outputs. Finally, the limitations of the ExPAM are acknowledged and future direction for the formation of a more definitive model discussed.

The Economics of European Football

The most recent set of figures available from Deloitte (2012) indicate that revenues of the 'big five' leagues (the EPL in England, the Bundesliga in Germany, La Liga in Spain, Serie A in Italy and Ligue 1 in France) grew collectively by 2% in to €8.6 billion in 2010/11. Alongside this market growth, academics within the sport management field have become increasingly interested in the financial performance of professional football clubs during the last decade and the academic literature surrounding the subject has grown substantially during this time. Entire textbooks are now dedicated to the subject (see Dobson and Goddard, 2011; Szymanski and Kuypers, 1999; Hamil and Chadwick, 2010; Conn, 2000 and Morrow, 2003 among others), whilst the financial performance of football clubs across Europe have been scrutinised in a number of peer reviewed journal articles (see Andreff, 2007; Ascari and Gagnepain, 2007; Barros, 2006; Buraimo, Simmons and Szymanski, 2006; Dietl and Franck, 2007; Dimitropoulos, 2010). It is within these journal articles that the imbalance between revenues and costs in the top European leagues, namely England, Spain, Germany, Italy and France, is outlined. It is clear that a paradox between revenues and costs exists in European football and UEFA have since intervened with the introduction of FFP.

UEFA FFP

Financial discipline is an essential element of FFP which, among other things, seek to curb the spiralling transfer fees, and the main component of the regulations - the 'break-even' requirement - will come into force for financial statements in the reporting period ending 2012. Under the break-even requirement clubs may not spend more than the income they generate. Clubs will also be assessed on a risk basis, in which debt and salary levels are taken into consideration and they will also have to ensure that liabilities are paid in a punctual manner (UEFA, 2010).

Admittedly, there are areas of FFP that will take time to implement and there are also considerable grey areas within the proposals. Following transitional implementation, the aggregate break-even result will be the sum of three reporting periods (T, T-1 and T-2), plus the surplus (if any) of the preceding two periods (T-3 and T-4). If a club has an aggregate break-even surplus, or a deficit which is within the acceptable deviation, then the break-even requirement is fulfilled. Initially the acceptable deviation is €5m or up to €45m if the excess over €5m is covered by unconditional contributions from equity participants and/or related parties (which relates to cash injections from wealthy owners and/or investors). This upper threshold will reduce to €30m from 2015/16, and a lower amount (to be defined) from 2018/19 (Deloitte, 2012). UEFA go on to state that:

"...the regulations do not impose a limit on owner investment, but do seek to limit a club's losses over time whilst encouraging owner funding to be directed more towards spending on facilities and activities for the longer term benefit of football."

(Deloitte, 2012; 71)

Such regulations would require many clubs to reinvent their respective business models, whether in a period of economic uncertainty or not. UEFA's stance is that the FFP measures are not a means of punishing clubs but a way of helping them and also to help improve financial standards in European football. However, anecdotally at least, it would appear that many clubs - particularly in England - would struggle to reach the break-even requirement at the present time. Indeed, the results of a simulation exercise by UEFA for reporting periods ending in 2008-10 illustrated that 35 (16%) of the clubs in UEFA club competitions for the 2011/12 season had an aggregate break-even deficit of greater than €5m. Of these, 12 clubs had an aggregate deficit within the €45m upper threshold which was covered by contributions, leaving 23 clubs from across Europe that appear not to satisfy the break-even requirement had the regulations been in place at that time (Deloitte, 2012).

There is also scope within the requirements for clubs to enhance future sponsorship deals to increase revenue streams and to commit funds to enhance training facilities and talent development in accordance with UEFA's licensing requirements on youth development. Manchester City is a particularly relevant case with respect to the issues raised above. The club recorded an annual loss of £194.9m in 2011, the biggest in English football history, and a £73.9m increase on the previous year (2010) where the club lost £121m. However, this figure does not take into account the club's sponsorship deal with Etihad Airlines, worth an estimated £400m over ten years, or the income from their 2010/11 Champions League campaign. The club continue to work closely with UEFA and insist that the club will comply with FFP and that the losses sustained in the meantime are necessary for the club to become sustainable and grow in the future.

There is more concern that certain clubs in other European leagues - where the brand is weaker than the EPL and television revenues and media exposure are not as high - could be in danger in relation to the new regulations. Recently, Italian club Juventus announced plans to raise €120m through a share sale to combat the worst financial loss in the club's history (losses of €95.4m were revealed for the year ending June 2011), whilst the financial problems Valencia has encountered in recent seasons are well documented, highlighting the dominance of Real Madrid and Barcelona in La Liga and the financial gulf between these two clubs and the rest of the Spanish first division clubs. The Bundesliga's club ownership model and the 50+1 rule (see Dietl and Franck, 2007) has been praised in recent years but clubs such as Schalke 04 and Borussia Dortmund have recently encountered financial problems and the way in which clubs are run in Germany may need to be revised in the near future.

UEFA has undoubtedly laid strong foundations with FFP and there are a number of advantages to the proposals. The regulations can help clubs in their negotiations to better rationalise their player costs (both wages and transfer fees), limiting inflationary increases and, potentially, implementing pay structures that are more strongly based on a club's on-pitch results and the consequent financial implications (Deloitte, 2012). There is an argument, however, that FFP will actually achieve very little, other than to further widen the gap between the more established clubs that regularly compete in European competitions and those that do not. FFP is directly related to clubs who wish to apply for a UEFA license and qualify for European competitions; yet most European clubs wish to conform to the regulations. This makes sense, as running the club as a sustainable business should be a priority, but the spending power and commercial appeal of the more established clubs will make it very difficult for the so called 'lesser' clubs to catch up and level out the financial playing field. Even then, the top clubs will continue to generate more revenue from maintained on-pitch success and driving commercial revenues off-pitch meaning that they will have more money to invest in player talent than other clubs under the 'spending within your means' principle outline by UEFA in FFP.

Despite the strong foundations laid by UEFA within FFP, the regulations effectively only analyse a club's capacity to break-even and the regulations offer only suggested guidelines with regards to wage costs. In light of the increasing paradox between revenues and costs referenced previously it is also pertinent for clubs to consider their financial sustainability, taking into account a number of different factors, which are not solely limited to financial measures. Football and finance are now so inextricably linked that it is often easy to overlook the essential element of the game; winning a football match on the pitch in order to gain points to move further up the league table. However, as discussed later, the on-pitch performance of a club is arguably related to its financial performance, although there is no apparent consensus on which one is the cause and which one is the effect. In this context, the author's offer a more holistic model of performance assessment that incorporates a number of factors, both sporting and financial, which the authors deem to be valid in relation to principles of financial management and FFP.

Measuring Financial Performance in Sport

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). Nevertheless, there is already partial recognition that on-field and off-field performances may be linked (e.g. Cornwall, Pruitt and Van Ness, 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. Despite this, however, there is convergence in certain areas. One of the most popular forms of measurement is ratio analysis. Ratio analysis can be a very effective method of making objective statements about an organisation. Many academic textbooks refer to the processes of ratio analysis and the ratios calculated are normally divided into five different sections under the headings of growth, profitability, liquidity, return on capital employed (ROCE) and defensive positioning (Wilson, 2011). The measurement of variables under these headings have been utilised extensively in academic research, ranging across different industries. Indeed, Feng and Wang (2000), Sueyoshi (2005) and Ponikvar, Tajnikar and Pusnik (2009) 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. Furthermore, to supplement the use of ratio analysis, both Sueyoshi

(2005) and Ponikvar, Tajnikar and Pusnik (2009), used more detailed statistical approaches to data analysis which is more closely related to Data Envelopment Analysis (DEA).

DEA has often been used to augment ratio analysis in academic papers (see Feroz, Kim and Raab, 2003; Yeh, 1996) and is a popular tool to analyse efficiency in many fields, such as banking (Hauner, 2005) and financial services (Fiordelisi and Molyneux, 2004). It is a mathematical programming methodology that can be applied to assess the relative efficiency of a variety of institutions using a variety of input and output data (Yeh, 1996). Readers are referred to the work of Haas (2003) for a more detailed discussion of DEA. Guzman and Morrow (2007) provide an example of how DEA can be applied to the EPL, highlighting a number of inputs that relate to the various expenses of football clubs derived from the financial statements and outputs such as points won in a season and total revenue for the corresponding financial year (see Guzman and Morrow, 2007). One of the key concerns with the majority of studies that focus on measuring performance is that, at the present time, there appears to be no set definition as to which measures should be applied. Rather, it is the author who selects the measures entirely at their discretion in order to best fit the industry that the research focuses on. Furthermore, in relation to the professional football industry, there is a need to consider on-field factors as well, or non-financial measures as defined by Romero Castro and Pineiro Chousa (2006). They also outline the importance of weighting factors to add robustness to the analysis but state that it has been commonplace for analysts to assign an equal weight to all ratios considered in the analysis. This, however, could be argued as being too simplistic and the opportunity to uncover more purposeful results may ultimately come from the application of weighting each ratio or variable in terms of its importance. Subsequently, this paper attempts to enhance the research in this area by proposing an experimental model that considers both financial and sporting variables and weights them in accordance to their perceived importance and relevance to UEFA FFP.

Measuring Sporting Performance

The rationale put forward above by UEFA suggests that it would be beneficial for a club's pay structure to be more strongly aligned to the club's on-pitch results. This relates to the debate surrounding profit and utility maximisation (see Dobson and Goddard, 2011 among others) and further underlines the fact that financial and sporting performance in professional football are closely linked. In essence, UEFA argue that the financial performance of football club should be driven by its performance on the pitch. In recent years, conversely, there have been examples of financial performance driving what happens on the pitch (e.g. the cases of Chelsea and Manchester City where a wealthy investor has injected money to pay for better players and higher wages in order to fund short term success on the pitch). To understand further how the two components (financial and sporting) are connected it is important to obtain an understanding of some of the factors that affect the sporting performance of professional team sports.

Playing success versus financial success

Szymanski and Kuypers (1999) argued that there are three possibilities when considering the relationship between playing success and financial success (or, to use their definition, profit and performance). First, higher profits might automatically lead to better team performance and greater playing success might lead to greater profit, so that there would be no conflict between trying to satisfy the fans' desire for success or the shareholders' desire for profit. Second, playing success might be unrelated to profitability meaning that the pursuit of profit would not interfere with playing success or vice versa. Lastly, playing success might automatically lead to lower profits, in which case shareholders would have to decide upon the

appropriate trade-off between profit and playing performance. Upon correlating the relationship between profit and league position for forty football clubs between 1978 and 1997 Szymanski and Kuypers (1999) found little evidence of a powerful 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 recent years, directors have become more concerned with the creation of financial profits from football. Using a more inclusive range of indicators of financial and sporting performance Wilson, Plumley and Ramchandani (2013) revealed that, in the EPL, the stock market model of ownership returned better financial health relative to privately owned (domestic and foreign) clubs; however, clubs owned privately by foreign investors or on the stock market performed better in the league in comparison with domestically owned clubs. They also suggested that the stock market model was more likely to comply with FFP regulations.

Furthermore, there are arguments put forward in recent literature that relate to motivations of new foreign owners of EPL clubs. Garcia-del-Barrio and Szymanski (2009) reference the number of sports franchise owners from North America who have recently acquired control of EPL clubs (the Glazer family and Manchester United; Randy Lerner at Aston Villa; Tom Hicks and George Gillett previously at Liverpool and now John W. Henry) and deliberate whether or not profit maximisers could successfully invade a population of win maximisers (and vice versa). It appears as though this could be a possibility although there is currently no empirical evidence to support this and Andreff (2011) argues that historically the European open market model has been more closely related to utility maximisation or win maximisation operating under a soft budget constraint. It is apparent in previous literature that the choice of variables is often at the discretion of the authors. 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.

Uncertainty of outcome

Perhaps the most fundamental aspect of professional football - an aspect that makes the product an attractive one and perhaps explains to some extent the exponential rises in revenue in recent years - is competition. As previously stated, it is not beneficial for one football team to establish a monopoly owing to the joint 'production' of team sports (Dobson and Goddard, 2011). On the pitch, at least, teams need other teams to compete against in order to be able to survive. Economists have often championed the argument that the greatest benefits to a team is where the competition is close to equal (i.e. either team in any one match has an equal chance of winning that match). This is known as uncertainty of outcome - a term used exclusively in economics but it also has implications for both financial and sporting performance in professional team sports.

Uncertainty of outcome not only relates to how competitive a match is predicted to be; it can also influence gate attendance and, more broadly, television viewing figures. For example, in investigating the state of competitiveness in top division football leagues in ten European countries, Ramchandani (2012) found a moderately strong, albeit insignificant, effect of a league's competitive balance on attendance levels. As the probability of either team winning approaches one, it is possible that gate receipts may fall substantially. Morrow (2003) believed this to be a significant problem for the football industry in England stating that if viewers perceive games as one-sided then viewing figures may fall accordingly. However, this is not reflected in the live game fixture lists on pay-per-view channels. The trend since the late 1990s has been that the so called 'big' clubs, or clubs that are more likely to finish

higher up the league table, have been selected for live television coverage more often than teams at the bottom end of the league. Indeed, the latest figures support the trend owing to the fact that the teams shown the most number of times on live television in 2011/12 - Manchester United (26 live games), Manchester City (25) and Tottenham (23) - also happened to be the clubs that occupied three of the top four league positions in the same season. Despite the concerns of Morrow (2003), and the wider implications for competitive balance, Simmons (2008) does not view this as a particular problem. Conversely, Simmons (2008) found that an increase in uncertainty of outcome is actually more associated with reduced gate attendance implying that, ultimately, fans (in particular fans of the home team) prefer to see their team play an inferior team and beat them.

The vast majority of literature surrounding the economics of professional team sports is concerned with competitive balance or competitive imbalance. Indeed, Dobson and Goddard (2011) assert that the problem of measuring competitive balance or competitive inequality within a sports league has attracted considerable attention in the sports economics literature in recent years. Researchers have applied several measures of concentration or inequality, some of which are borrowed from industrial economics, to sports teams' win ratio or league points data (Dobson and Goddard, 2011). However, the economic aspects of sporting performance (in general sports economics textbooks) are often considered in isolation and there is little reference as to how these can be linked together with financial performance factors to contribute to an overall measure of performance.

The Proposed Model

To enable the calculation of an overall performance score (OPS), the paper utilises an adaptation of the *FOrNeX* model (see Andrikopoulos and Kaimenakis, 2009) which outlines how the intellectual capital of a football club is measured. In their paper, through the application of a holistic approach to the organisational analysis of a football club the authors build an intellectual capital map of a clubs' value-creating intangible resources, such as player talent, fan base and athletic performance. The culmination of this approach is the Football Organisation Nexus Index (FOrNeX), a decision-making instrument based on a multidimensional approach to a football club's organisational performance (Andrikopoulos and Kaimenakis, 2009). The authors produce an exploratory study which outlines an approach that could be followed. This paper aims to adapt this approach to produce an experimental model, offering an exploratory insight into how the model could be constructed to measure both financial and sporting performance of professional football clubs. The FOrNeX model applies a weighted average methodology, drawing on the Balanced Scorecard model of Kaplan and Norton (1996). Furthermore, in practice, the model proposed by Andrikopoulos and Kaimenakis (2009) relies heavily in cooperating with league decision-makers so as to assign the correct magnitude to each weight. For this paper, the measures and weights are assigned by the authors in relation to their perceived relevance to FFP and principles of financial management. It is envisaged that the robustness of the experimental model will be developed through future research using a wider range of methodological techniques. An explanation of the indicators used in the ExPAM is shown in Table 1 and the mechanics of the model are summarised in Table 2.

<TABLE 1 HERE>

The weights attached to the financial indicators (in Table 2) are assigned broadly in accordance with UEFA FFP. Within FFP clubs will be monitored on a number of factors, most notably break-even, but also clubs are advised to make sure that wages do not exceed 70% of turnover and that debt levels do not exceed 100%. To this end, these two factors have been

assigned the greatest weight within the financial performance domain. Additionally, the wages/turnover ratio can be classed as an efficiency measure rather than an economy measure owing to the fact that there are two measures for this indicator as opposed to one. The gearing ratio, a measure of defensive positioning, is also associated with debt and is given a 10% weight. The remaining financial indicators are assigned a weight of between 5% and 10% depending on their perceived fit with the break-even requirement. Turnover increase is the most obvious factor linked to break-even as is the profit percentage for each year. Accordingly, each of these factors has been assigned a weighting factor of 10%. Furthermore, the current ratio is also linked to break-even as it outlines how capable a business is at paying its liabilities as they fall due. Arguably the least two important factors in relation to FFP are profit increase and return on capital employed (each assigned a 5% weighting). Profit increase is less relevant than year on year profit as this is effectively a by-product of the profit figure for each year. Similarly, return on capital employed is not considered to be of great importance to owners of modern day football clubs, evidenced by the shift from public to private ownership of professional football clubs during the last 10 years (see for example, Wilson, Plumley and Ramchandani, 2013).

For the ExPAM, three sporting factors have been included to provide a more holistic analysis - win ratio, league points and capacity utilisation. Evidence from the preceding literature review (see Szymanski and Kuypers (1999) and Guzman and Morrow, 2007 among others) suggests that financial and sporting performance is inextricably linked. For example, a higher win ratio may lead to higher gate receipts which will in turn contribute to turnover. Win ratio has been assigned the highest weight of the sporting factors. League points will be a by-product of win ratio and is assigned a 10% weighting. The third sporting factor, capacity utilisation, is a measure of the number of seats sold in relation to stadium capacity. As previously stated, this may affect club turnover and subsequent profit. This indicator is not, therefore, strictly limited to sporting performance even though it has been categorised as such for the purpose of this study.

<TABLE 2 HERE>

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 which 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. Turnover increase has a weight of 0.10 which is multiplied by the hypothetical league rank of 2 to give an indicator score of 0.20. The sum of all sub domain scores for finance gives a dimension score of 3.20. Similarly, the sum of all sporting sub domain scores gives a dimension score of 3.90. These two dimension scores are then multiplied by their individual dimension weight to produce an OPS of 3.41. 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).

The Proposed Model in Practice

Having defined the various inputs to the ExpPAM and the relative importance attached to both financial and sporting dimensions as well as that of the specific indicators that make up each dimension, we now proceed to consider a real-world example. In order to do this, we have used five years' data between 2006 and 2010 from a sample of clubs competing in the EPL. A total of 13 clubs were included in the analysis (see Table 3), the criteria for inclusion being two-fold: first, clubs must have been part of the EPL in the above mentioned time frame consistently; and, second, the availability of annual data for each club during this period pertaining to all indicators of financial and sporting performance as identified within the proposed holistic club performance assessment model. Adopting this approach meant that it was possible to compare and contrast the performance of individual clubs, as revealed by the proposed model, on a like for like basis over time. The data required to calculate the financial ratios was collated from scrutiny of clubs' company accounts whereas the sporting indicators were calculated from publically available sources on the internet.

The application of EPL data to the ExpPAM to indicates that the most successful performers in recent years have been Arsenal (2008 and 2010), Manchester United (2007 and 2009) and West Ham (2006). On the other hand, the clubs emerging as the least successful include Fulham (2006 and 2008) and Wigan (2007, 2009 and 2010). Taken across the five-year period, there is a strong, statistically significant, correlation between clubs' OPS and financial performance ranks ($r = 0.84$, $n = 65$, $p = 0.00$). The strength of this relationship might be expected given that the finance dimension was allocated a 70% weighting to derive the weighted index score for each club. The relationships between clubs' OPS and sporting performance and between the financial and sporting dimensions are also moderately strong and statistically significant ($0.63 < r < 0.67$, $n = 65$, $p = 0.00$). This latter finding supports the view that the pursuit of financial and sporting objectives by professional football clubs is not necessarily mutually exclusive (see for example, Wilson, Plumley and Ramchandani, 2013).

<TABLE 3 HERE>

Further scrutiny of the data using correlation analysis (see Figure 1) illustrates that, with the passage of time, comparative overall performance has remained relatively unchanged for two of the 13 clubs - Tottenham and Chelsea ($0.00 < r < 0.22$) - declined either moderately or strongly for five clubs - Liverpool, Manchester City, Wigan, West Ham and Bolton - ($0.53 < r < 0.85$) - and improved either moderately or strongly for the remaining six clubs - Blackburn, Everton, Arsenal, Manchester United, Fulham and Aston Villa ($-0.93 < r < -0.53$). A caveat to this interpretation is that, with the exception of Aston Villa, the club-specific trends are not statistically significant ($p > 0.05$) on account of the limited number of observations per club ($n = 5$) based on the time period under review. Nonetheless, there is indicative evidence that, for the majority of these clubs, overall performance, as measured using a mix of financial and sporting indicators, varies over time.

<FIGURE 1 HERE>

Concluding Comments

This paper has introduced an experimental model to measure performance of professional football clubs. The model incorporates selected financial and sporting indicators to provide a more holistic view of clubs' performance. The development of the model is based on two key judgments: first, the choice key performance indicators used; and, second, the weighting factors attached to the chosen indicators. Whilst these have been constructed to broadly

reflect the requirements set out in UEFA FFP and principles of financial management in general, the authors do not claim that the ExPAM is definitive. Nonetheless, it provides a useful platform for more rigorous scrutiny. In particular, future research efforts should endeavour to make the judgement aspects of the analysis more scientific and create a model that is derived statistically and is better defined. This may include, for example, using techniques such as factor analysis to determine the relationship between performance variables and identify the most important indicators in relation to both financial and sporting performance.

References

- Andreff, W. 'French football: A financial crisis rooted in weak governance'. *Journal of Sports Economics* 8 (2007): 652-661.
- Andreff, W. '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 (2011): 3-27.
- Andrikopoulos, A. and Kaimenakis, N. 'Introducing FOrNeX: a composite index for the intangible resources of the football club'. *International Journal of Sport Management and Marketing* 5 (2009): 251-266.
- Ascari, G. and Gagnepain, P. 'Evaluating rent dissipation in the Spanish football industry'. *Journal of Sports Economics* 8 (2007): 468-490.
- Barros, C.P., 'Portuguese football'. *Journal of Sports Economics* 7 (2006): 96-104.
- Buraimo, B.; Simmons, R. and Szymanski, S. 'English football'. *Journal of Sports Economics* (2006): 29-46.
- Chadwick, S. 'From outside lane to inside track: sport management research in the twenty-first century'. *Management Decision* 47 (2009): 191-203.
- Conn, D. *The Football Business*. Edinburgh, Mainstream Publishing Limited, 2000.
- Cornwell, T.B., Pruitt, S.W. and Van Ness, R. 'The value of winning in motorsports: sponsorship-linked marketing'. *Journal of Advertising Research* 41 (2001): 17-32.
- Deloitte. *Annual Review of Football Finance 2011: New Rules, Narrow Margins*. Manchester, Deloitte Sport Business Group, (2012)
- Dietl, H.M and Franck, E. 'Governance failure and financial crisis in German football'. *Journal of Sports Economics* 8 (2007): 662-669.
- Dimitropoulos, P. 'The financial performance of the Greek football clubs'. *Choregia* 6 (2010): 5-27.
- Dobson, S. and Goddard, J. *The Economics of Football*, 2nd ed. Cambridge, University Press, 2011.
- Drut, B. and Raballand, G. 'Why does financial regulation matter for European professional football clubs?' *International Journal of Sport Management and Marketing* 11 (2012): 73-88.
- Feng, C. and Wang, R. 'Performance evaluation for airlines including the consideration of financial ratios'. *Journal of Air Transport Management* 6 (2000): 133-142.

Feroz, E.H; Kim, S. and Raab, R.L. 'Financial statement analysis: a data envelopment analysis approach'. *The Journal of the Operational Research Society* 54 (2003): 48-58.

UEFA. 'Financial Fair Play Explained'. UEFA, <http://www.uefa.com/uefa/footballfirst/protectingthegame/financialfairplay/news/newsid=1494481.html>.

Fiordelisi, F. and Molyneux, P. 'Efficiency in the factoring industry'. *Applied Economics* 36 (2004): 947-959.

Garcia-del-Barrio, P. and Szymanski, S. 'Goal! Profit maximisation versus win maximisation in soccer'. *Review of Industrial Organisation* (2009): 45-68.

Guzman, I. and Morrow, S. 'Measuring efficiency and productivity in professional football teams: evidence from the English Premier League'. *Central European Journal of Operations Research* 15 (2007): 309-328.

Haas, D.J. 'Productive efficiency of English football teams - a data envelopment analysis approach'. *Managerial and Decision Economics* 24 (2003): 403-410.

Hamil, S. and Chadwick, S. *Managing Football: An International Perspective*. Oxford, Elsevier, 2010.

Hauner, D. 'Explaining efficiency differences among large German and Austrian banks'. *Applied Economics* 37 (2005): 969-980.

Kaplan, R.S. and Norton, D.P. *The Balanced Scorecard: Translating Strategy into Action*. Boston, MA: Harvard Business School Press, 1996.

Morrow, S. *The People's Game?: Football, Finance and Society*. Hampshire, Palgrave Macmillan, 2003.

Ponikvar, N., Tajnikar, M. and Pusnik, K. 'Performance ratios for managerial decision-making in a growing firm'. *Journal of Business Economics and Management* 10 (2009): 109-120.

Ramchandani, G. 'Competitiveness of the English Premier League (1992-2010) and ten European football leagues (2010)'. *International Journal of Performance Analysis in Sport* 12 (2012): 346-360.

Romero Castro, N. and Pineiro Chousa, J., 'An integrated framework for the financial analysis of sustainability'. *Business Strategy and the Environment* 15 (2006): 322-333.

Simmons, R. 'Do sports fans really value uncertainty of outcome? Evidence from the EPL'. *International Journal of Sport Finance* 3 (2008) 146.

Sueyoshi, T. 'Financial ratio analysis of the electric power industry'. *Asia-Pacific Journal of Operational Research* 22 (2005): 349-376.

Szymanski, S. and Kuypers, T. *Winners and Losers: The Business Strategy of Football*. London, Viking Books, 1999.

Wilson, R. *Managing Sport Finance*. London, Routledge, 2011.

Wilson, R.; Plumley, D. and Ramchandani, G. 'The relationship between ownership structure and club performance in the English Premier League'. *International Journal of Sport Business and Management* 3 (2013): 19-36.

Yeh, Q. 'The application of data envelopment analysis in conjunction with financial ratios for bank performance evaluation'. *Journal of Operational Research Society* 47 (1996): 980-988.

Table 1: Indicators and their interpretations

Indicator	Calculation	Interpretation
Turnover Increase (%)	(This year's turnover - Last year's turnover) / Last year's turnover	Higher score is more desirable
Profit Increase (%)	(This year's profit(loss) after taxation - Last year's profit(loss) after taxation) / Last year's profit(loss) after taxation	Higher score is more desirable
Profit (%)	After tax return on sales as a percentage of turnover	Higher score is more desirable
ROCE (%)	Profit after taxation as a percentage of net assets	Higher score is more desirable
Current Ratio	Current assets / Current liability	Higher score is more desirable
Debt (%)	The absolute amount of debt divided by total fixed assets and current assets put together	Lower score is more desirable
Gearing (%)	Total amount of borrowings both short and long term. Calculated as gearing percentage of shareholders' funds	Lower score is more desirable
Wages/Turnover (%)	Total wage costs as a percentage of turnover	Lower score is more desirable
Win Ratio	Percentages of games won during a season	Higher score is more desirable
League Points	Number of league points gained during a season	Higher score is more desirable
Capacity Utilisation (%)	Average attendance for a season/Capacity of the stadium	Higher score is more desirable

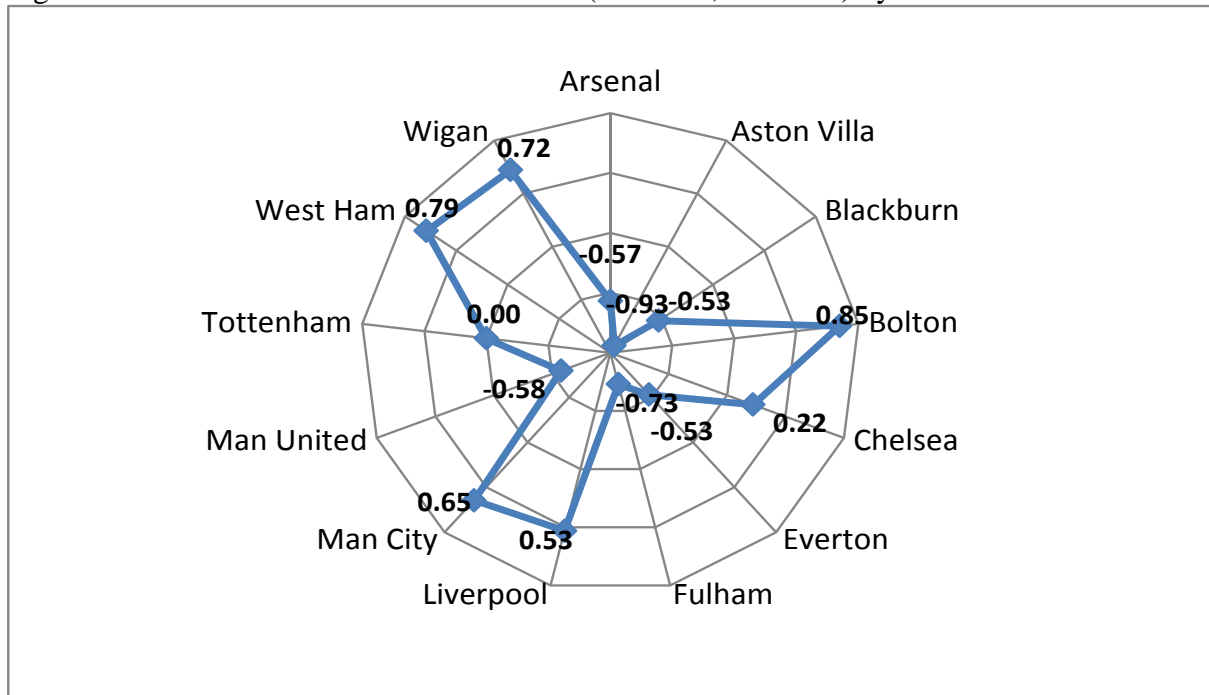
Table 2: A holistic ExPAM for a football club

Dimension	Sub domain				Dimension		OPS
	Indicator	Hypothetical league rank	Weight	Score	Score	Weight	
Financial	Turnover Increase	2	0.10	0.20	3.20	0.70	3.41
	Profit Increase	4	0.05	0.20			
	Profit (Year)	3	0.10	0.30			
	ROCE	8	0.05	0.40			
	Current ratio	4	0.10	0.40			
	Debt	1	0.20	0.20			
	Gearing	3	0.10	0.30			
	Wages/Turnover	4	0.30	1.20			
Sporting	Win ratio	5	0.70	3.50	3.90	0.30	
	League Points	2	0.10	0.20			
	Capacity Utilisation	1	0.20	0.20			

Table 3: OPS and dimension ranks for EPL clubs 2006-10

Club	2006			2007			2008			2009			2010		
	<i>Finance</i>	<i>Sport</i>	<i>Overall</i>	<i>Finance</i>	<i>Sport</i>	<i>Overall</i>	<i>Finance</i>	<i>Sport</i>	<i>Overall</i>	<i>Finance</i>	<i>Sport</i>	<i>Overall</i>	<i>Finance</i>	<i>Sport</i>	<i>Overall</i>
Arsenal	2	4	2	4	3	3	1	3	1	2	4	2	1	3	1
Aston Villa	7	13	11	6	10	8	6	6	5	5	5	5	4	7	4
Blackburn	12	6	12	7	9	7	5	8	6	6	13	10	5	9	6
Bolton	9	8	9	9	7	10	9	13	12	9	12	11	11	11	12
Chelsea	11	1	7	10	2	5	13	2	9	12	2	7	12	2	7
Everton	10	10	10	11	6	11	7	5	7	8	6	6	7	8	9
Fulham	13	11	13	12	12	12	10	12	13	7	9	8	8	10	10
Liverpool	5	3	3	5	4	4	4	4	3	4	3	3	6	6	5
Manchester City	4	12	6	3	11	6	8	7	8	13	9	12	9	5	8
Manchester United	6	2	5	2	1	1	2	1	2	1	1	1	3	1	2
Tottenham	3	5	4	1	5	2	3	10	4	3	7	4	2	4	3
West Ham	1	7	1	8	8	9	11	9	10	10	8	9	10	12	11
Wigan	8	9	8	13	13	13	12	11	11	11	11	13	13	13	13

Figure 1: Correlation between OPS and time (2006 = 1; 2010 = 5) by club



Note: A higher (positive) value correlation coefficient in this instance implies an inverse relationship with time (i.e. declining trend in club performance) whereas a lower (negative) value correlation coefficient implies an improvement over time.