# Introduction

*John Goddard and Peter Sloane*

The economic analysis of football dates back over 40 years. The editor of a collection of previously published articles (Gerrard, 2006) concluded that:

> In common with other professional sports, there has been a marked increase in the application of economic analysis to football, particularly in the UK, from the early 1990s onwards. This coincided with the formation of the FA [Football Association] Premier League in England and the accelerated rate of commercialisation in the 'beautiful game', particularly in Western Europe.

In the few years since the publication of that volume we have witnessed a new television contract between the English Premier League (EPL) and a number of broadcasters, which with foreign sales is likely to amount to over £5.5 billion over the seasons 2013 to 2015, an increase of some 40 per cent or so over the previous contract. Yet, the number of clubs going into administration continued at a high level and in Scotland Glasgow Rangers, which held the record for most championship titles, entered administration with substantial debts in 2012, which eventually resulted in liquidation, the formation of a new club and relegation to the fourth tier of the Scottish Football League. In an attempt to control escalating player costs the Union of European Football Associations (UEFA) introduced new Financial Fair Play regulations in order to limit the extent to which clubs entering the two major European club competitions could operate at a loss. This was followed by an agreement by the Premier League clubs themselves to limit wage growth for each club over the following three years together with a ceiling on the amount of losses permitted over the same period. In England also a House of Commons Culture Media and Sports Committee threatened in January 2013 to impose various cost control measures if the football authorities did not implement their earlier suggestions to reform governance structures, including the introduction of a more diverse representation on the FA, the development of a licensing system and greater financial transparency.

Gerrard identified the main research themes in the economics of football as attendance demand, the sporting production function, the labour market and transfer system, competitive balance, industrial performance and betting market efficiency. Each of these is represented in this specially commissioned collection of chapters, but we also include chapters on corporate governance, sponsorship, international migration of footballers, studies of national leagues, rules infringements and corruption. The *Handbook* divides naturally into four parts: the product market, the labour market, country studies of individual leagues and policy issues.

# PART I

Part I begins with a consideration of club objectives (Chapter 1). It is normally assumed that business enterprises attempt to maximise their profits, but this does not seem to be the case with football clubs, many of which make losses on a long-term basis and only survive because wealthy patrons are prepared to bail them out. The propensity to lose money is so common that leagues have imposed sanctions against clubs going into administration, amounting to the deduction of nine points in the case of the EPL and ten points in the case of the English Football League (EFL). In this chapter, Peter Sloane considers the possibility that clubs focus on maximising the number of games won, subject to the finances currently available to them. Mutual interdependence suggests that this type of strategy will lead to more unbalanced leagues given their zero-sum nature. There are in fact a number of different governance structures found in various countries including privately owned clubs, public joint stock companies and clubs run by their members, each with different predicted outcomes in terms of the objectives pursued. It is likely, however, that whatever the objectives of individual clubs the league organisation as a whole will operate more like a profit maximiser. This is perhaps most clearly illustrated by the example of Major League Soccer in North America which operates under a single entity structure with each team owned by the league organisation itself. Differences between club and league objectives are also indicated by the attempt of UEFA to control escalating costs among the major clubs qualifying for European club competitions by imposing Financial Fair Play regulations, as outlined above, and by the fact that similar arrangements are being contemplated by leagues in individual countries.

A key characteristic that distinguishes the competitive structure of professional football at club level in most European countries from that of major league soccer and other North American major league sports is the hierarchical divisional league structure that operates throughout Europe (and in some other countries). Membership of the highest tiers evolves naturally over time as a natural outcome of sporting competition, and in principle any team can enter the league at a low level and work its way up to the top level by means of a sequence of promotions. By contrast, the North American major leagues award a fixed number of franchises, and the only means by which a city that does not already hold a franchise can obtain one are via league expansion or the relocation of an existing franchise from another city. John Goddard (Chapter 2) discusses the sporting, economic and financial consequences of the promotion and relegation system, and presents some data on the implications of this system for English Premier League and Football League teams' sporting performance, attendances, revenues and expenditures on players' wages. By opening up competition, the promotion and relegation system has had detrimental consequences for the profitability of many football teams, owing to a pervasive tendency to overspend in an effort to achieve promotion or avert relegation. In particular, the ever-widening financial gulf that separates the top two tiers in English football has created a situation in which many promoted teams fail to survive in the Premier League for more than one season, while relegated teams commonly experience severe financial duress upon arrival in the Football League.

Competitive balance and uncertainty of outcome have long been regarded as central concepts in the attractiveness of games to spectators. Dorian Owen (Chapter 3) focuses on how one can measure these concepts. Competitive balance means that teams in a league are of roughly equal strength, so that the difference in the number of points obtained by the different teams is relatively small. Uncertainty of outcome is a related concept insofar as it is concerned with the unpredictability of the outcome of an individual game (win dispersion), or of the eventual championship winner at the end of the season (performance persistence), or the number of clubs winning the league over a number of seasons (prize concentration). Though these appear to be relatively simple concepts the actual measurement of them has to overcome a number of obstacles. Optimal competitive balance does not require perfect balance in the sense that all teams are of equal strength, where teams are of different size. The *ex post* standard deviation of teams' win ratios within a single season is a natural measure of variation, but has to be adjusted because some games are drawn. Comparisons of standard deviations over time across leagues have to allow for differences in the number of matches played by each team. Another factor is home advantage, since in cases where teams are of equal strength the team playing at home will have a higher probability of winning. Some studies focus on inequality of championship outcomes, using either the Gini coefficient or the Herfindahl–Hirschman index, but a drawback of such 'off-the-shelf' measures is that they ignore the specific design characteristics of leagues. Dynamic competitive balance measures may compare the number of different teams appearing in the top positions over a number of successive seasons, while dynamic performance persistence is concerned with the degree of persistence of individual teams' points outcomes over successive seasons. Measures of uncertainty of outcome tend to focus on match uncertainty, but a lack of consistent empirical evidence identifying significant effects on match attendance may be partly due to difficulties in measuring its different dimensions. Often betting odds are used to measure it, but these may themselves be subject to biases of various sorts. Measures of seasonal uncertainty of outcome are usually based on the number of games a team needs to win at a particular point in the season, in order to win the championship, but this is relatively crude as the number may alter as events unfold. Thus, the words of Owen, there is 'a disconcertingly large set of possible indicators'.

Following on from Owen's analysis Babatunde Buraimo (Chapter 4) examines spectator demand in English league football including five tiers, each modelled separately, over six seasons (2006/07 to 2011/12). He models attendances using bookmaker odds to measure uncertainty of outcome. It should, however, be noted that this relates only to match uncertainty and does not consider seasonal or long-run uncertainty. The author himself argues that promotion and relegation add to uncertainty of outcome by removing the strongest and weakest teams from each tier. Most of the variables turn out to be significant with the expected signs, but the variable for home probability of winning does not behave as expected. Home fans seem to prefer to see their team winning, regardless of the quality of the opposition. However we should also consider those who stay at home or visit the pub to watch the game on television. This is especially so since they outnumber those who attend games at the stadia, being nearly twice as many in the case of the Premier League. Further, there is some evidence that TV viewers do prefer to watch games where match uncertainty is higher.

Media rights, and particularly television revenues, have, as outlined above, become the most important component in many club's total revenues. Stefan Kesenne (Chapter 5) examines from a theoretical viewpoint the impact of the selling and distribution of media rights on both competitive balance and investment in players on the assumption that clubs are win maximisers. Though collective selling of television rights raises questions in relation to competition law, the European Commission has given it qualified approval on the grounds that this is beneficial in relation to income distribution considerations. Kesenne, however, argues that clubs should sell their home games individually, as in Spain and some other countries, but suggests also that league organisations should tax the clubs' media revenues and distribute the proceeds among all clubs on the basis of performance. This, he argues, will improve both competitive balance and investment in players.

In his analysis of football finances Stephen Morrow (Chapter 6) notes that over the five years from 2006 to 2010 the aggregate income of football clubs under the jurisdiction of UEFA grew by 42 per cent at a time when the economies of Europe grew by only 1 per cent. The primary driver of this relative advantage was the growth of broadcasting income. Yet, at the same time, a substantial number of clubs found themselves in financial difficulties, with no less than 56 per cent of Europe's top division clubs reporting operating losses. In Italy only 19 out of 107 league clubs reported a profit. This was the background to the introduction by UEFA of the Financial Fair Play (FFP) regulations as part of its club licensing scheme, which Morrow explains in some detail. The regulations cover five separate categories – sporting, infrastructure, personnel and administrative, legal, and financial – that clubs must meet in order to be licensed to compete in European-wide club competitions. The key requirement is that clubs should break even with respect to relevant income and relevant costs over a rolling three-year period, with some limited deviation allowed. (Since the latter is measured in absolute terms, Morrow notes that this will operate to the disadvantage of smaller clubs.) FFP seeks to restrict the behaviour of owners by limiting their ability to make good any operating losses caused by overspending on players through *ex post* financial bail-outs. There is a danger, however, that this will just give rise to creative accounting.

In Chapter 7 on insolvency in English football, Stefan Szymanski contrasts two periods. First, between 1949 and 1980 attendances halved, but there were few cases of insolvency. Second, in contrast, between 1986 and 2010 attendances almost doubled, yet there were 59 cases of insolvency. Changes in insolvency law undoubtedly played a part in creating this paradox, but there must be other explanations. There is little doubt that the creation of the Premier League changed the economic climate in which clubs operated, and many of them were induced to spend more than they could afford in pursuit of playing success.

Sponsorship has become an increasingly important component of football revenues, and football is the most sponsored sport in financial terms, amounting to $2714 million in 2011, according to one estimate. Its principal forms are naming rights for competitions, stadium naming rights and shirt sponsorship. For example Coca-Cola has had stadium advertising at every World Cup since 1950 and has been an official World Cup partner since 1978, as well as being official UEFA partner for Euro 2012 and Euro 2016. Likewise McDonald's and Adidas sponsor each of these competitions. In England, Barclays Bank has been the EPL's sponsor since 2001. The current agreement runs from 2010/11 to the end of 2012/13 and is worth £82.25 million. The Football League is currently sponsored by npower, the FA Cup by Budweiser, and the League Cup by Capital One. The Emirates airline has an agreement with Arsenal for the naming rights of the stadium and shirt sponsorship worth £100 million. Manchester United has agreed a shirt sponsorship deal with General Motors (Chevrolet) worth £50 million per year. Manchester City has an agreement for stadium naming rights and shirt sponsorship with Etihad Airways. Additionally the sponsor has invested the remaining part of £400 million in the club's state-of-the-art training facilities, one of the largest sponsorships of its kind in the world. The significance of these developments is outlined in Chapter 8 by Sue Bridgewater in terms of brand awareness, image transfer and brand loyalty.

Ian McHale and Rose Baker (Chapter 9) analyse three types of econometric models which have been used to predict match results and scores. They refer to the so-called Moneyball phenomenon in which the Oakland Athletics baseball team attempted to gain a competitive advantage by using statistical methods to identify and purchase undervalued players. They note, however, that it is important to allow for time-varying team strengths, which they attempt to do in their estimates of the ranking of the total strengths of Premier League teams since 1992, taking into account both the attacking and the defensive capabilities of teams since 1992. Unsurprisingly, Manchester United dominates the rankings over a period of 20 years.

## PART II

Sporting production functions measure outputs in terms of sporting success resulting from inputs measured in terms of player performance. In football the estimation of such production functions has been assisted by the appearance in 1996 of the Opta index, which provides detailed match statistics on various aspects of play. In Chapter 10 Fiona Carmichael and Dennis Thomas examine the 2012 African Nations Cup, using Opta data. Their estimating model consists of four behavioural equations measuring tournament success, goals scored and conceded, attacking performance and defensive performance, which are used to derive frontier estimates. They conclude that different competitions can provide evidence regarding the effectiveness of different football styles and tactics. Carlos Pestana Barros, Eduardo Couto and Antonio Samagaio (Chapter 11) adopt a somewhat different approach by analysing unobserved managerial ability, strategy and tactics among Portuguese football clubs, which are ranked in terms of technical efficiency over the period 2000 to 2012. Efficiency scores reveal that Porto is the most efficient club, though the least efficient club is 90 per cent as efficient, suggesting that all clubs operate at a high level of technical efficiency. The regional distribution and size of clubs explain what inefficiencies remain. Club performance is a function both of the location of the club and how well management makes use of the resources available to them.

One component of efficiency is the ability to identify, recruit and retain cost-effective playing talent, either by purchasing players from other clubs or by developing them through youth development programmes, which also involve considerable costs. The former requires the valuation of players in terms of both acquisition and wage costs. The next task is to utilise the players to maximum effect in terms of league points. In Chapter 12, Bill Gerrard discusses alternative methods of valuation. The comparative valuation of playing talent uses observable market values from recent transactions, whilst fundamental valuation involves the conversion of the expected stream of future benefits into discounted cash flows. These approaches have become more fashionable with the advent of the commercial provision of performance data.

In their analysis of the labour market Bernd Frick and Rob Simmons (Chapter 13) examine developments prior to and post-Bosman, examining patterns of wages, transfer fees and contract length. There is an examination of the German Bundesliga, but some reference also to other countries including the UK, Spain, France and Italy. In Germany there was a rising share of players signed on free transfers, contract duration increased and the number of foreign players rose. Productivity spillovers appear to be generated by player migration. Mobility was also influenced by the tax regimes operating in various countries such as the so-called Beckham Law in Spain. One interesting aspect is that over time player contracts appear to have become more complex, with a larger component of bonus payments and the inclusion of contingency clauses dealing with relegation issues and sell-on returns to the previous club. There are also moral hazard issues relating to performance and the length of contract. Thus bonuses limited to goals scored may have an adverse effect on the number of assists and vice versa.

International migration of professional footballers has become increasingly commonplace with both pull and push factors evident. This results in a core–periphery outcome in which talent is increasingly concentrated in the richest leagues found in Europe and income is redistributed to poorer leagues elsewhere. As Raffaele Poli observes in Chapter 14, not everyone regards this as a benign process. Historically, quotas have been introduced to limit the extent of these international flows, but such controls were eventually eased, particularly following the Bosman judgment. Indeed, by the 2010/11 season the percentage of non-indigenous players in the top five European leagues reached 43.5 per cent. But the global professionalization of the game has also led to migration to growing leagues outside Europe and substantial return migration to net exporting countries such as Argentina, Brazil and Serbia (the three top exporting countries). Poli argues in favour of some regulation of these markets.

Concerns about discrimination, particularly on the grounds of race, have surfaced on a regular basis and led to the creation in 1993 of a campaign under the banner of Let's Kick Racism out of Football, while Kick It Out, football's body for equality and inclusion, supported by the FA, EPL and the Professional Footballers' Association (PFA), goes back some 16 years. Yet it was not until 2008 that an English black manager (Paul Ince at Blackburn) was given a top-flight job. Black players now account for 25 per cent of the total playing population, so that there appears to be no problem in black players gaining employment in the major leagues. In Chapter 15, Barry Reilly examines various theories of discrimination, noting that the source of it may be employers (the clubs), employees (white footballers) or consumers (the fans). If employment is not an issue, as seems to be the case, then pay might be, but data on this is difficult to obtain. An alternative measure is the size of transfer fees paid for players of particular abilities, but this turns out to be insignificant in studies attempting to measure this aspect of discrimination according to race. However, examining the extent to which the racial composition of teams, controlling for the size of club wage bills, influences team performance produces evidence consistent with discrimination as raising the ratio of black players further would lead to improved performance according to the model. In general, however, evidence for discrimination is somewhat mixed.

At the highest levels of professional football the remit of the first-team manager may include the selection, supervision and coaching of playing staff, devising team tactics, and media relations. The managers of many lower-tier clubs may also assume responsibilities for the buying and selling of players, wage negotiations and various administrative duties; but at the leading clubs these functions, and perhaps much of the coaching, are commonly delegated to specialists in the various functional areas of management. Chronic job insecurity is, notoriously, a defining characteristic of the first-team manager's role in modern professional football, and in Chapter 16, John Goddard reviews a number of empirical studies of the determinants of managerial departure in professional football. Unsurprisingly, a poor run of recent match results is found to be a key trigger for departure. A key methodological issue that must be addressed by any empirical investigation of the short-term impact of managerial departure on team performance is mean reversion: the natural tendency for any spell of poor performance to be followed by an improvement, regardless of whether the team concerned changes or retains its manager. Goddard's chapter concludes by reporting an empirical investigation of the impact on team performance of managerial departure in English professional football. The post-departure performance of teams that changed their managers is compared with the performance of a matched control group of teams that retained their managers, after having achieved a similar level of performance over their current manager's spell up to the point of comparison. The teams that changed their managers are found to have underperformed relative to the control group over the matches played immediately after the previous manager's departure.

## PART III

In Part III information is provided on five national leagues from different parts of the world.The English Football League was developed in the second part of the nineteenth century and eventually developed a pyramid structure based on promotion and relegation, together with a system of play-offs to determine which clubs would be promoted, together with those gaining automatic promotion. In the latter part of the twentieth century engagement in international club competitions became increasingly significant and widened the number of clubs in contention for prizes. A major evolution was the creation of the Premier League in 1992, and the reorganisation of the remaining divisions into the Championship and Leagues 1 and 2 in 2004. Paul Downward (Chapter 17) outlines the key elements of control as the retain and transfer system, limitation of dividend payments, gate revenue sharing arrangements, a movement to all-seated stadia for Premier League clubs, the joint selling of TV rights and a relatively equal sharing of TV income in a market which grew exponentially. Measures such as these were successful in stopping the long-run decline in attendances and raising club incomes to new highs. Yet this could not eradicate the financial difficulties which had plagued clubs from the very start, and the gap between the large and small clubs widened. Profound changes took place in the market for players, first with the abandonment of the maximum wage, then the weakening of the retain and transfer system, and finally the Bosman ruling. In the 1980s clubs experimented by floating on the stock exchange to gain new sources of revenue, but this proved to be short-lived and was followed by a period when many of the big clubs were taken over by wealthy investors, while others became insolvent, particularly in the lower leagues, where it was harder to attract outside investors.

In Chapter 18, Wladimir Andreff describes the French league as an exception, representing good financial management, but weak sporting performance at the international club level compared to the rest of the five major leagues in Europe. For instance over the last 13 years no French club has won any UEFA competition. However, the French international team, managed by the French Football Federation, has performed much better. In terms of seasonal competitive balance the French league appears to be one of the more balanced of the European leagues, and in terms of long-run balance even more so. This leaves Andreff to ask if a less balanced league with more dominant teams might have performed better in UEFA competitions. The three pillars of French football are claimed to be a well-developed youth training scheme, strong solidarity in the league, and strong auditing and financial control by an external auditing body to control club deficits and having the power to prevent clubs signing new players and under extreme circumstances relegate them. Though in terms of revenues growth has been rapid, clubs tend to be located in small-population areas, so that revenues are relatively small by international standards, and despite wage inflation the league is a net exporter of players. Andreff then considers, on the basis of data envelopment analysis, whether French professional clubs are efficient. The average efficiency score in Ligue 1 is only 0.625, much lower than in the Portuguese league referred to earlier. It is suggested there has been an overinvestment in players, bolstered by large TV income. Therefore, perhaps France is not such an exception after all as a consequence of a relatively soft budget constraint.

The Italian league is in crisis with declining attendances, worsening losses, rising debts and an absence of external investors. In Chapter 19, Tito Boeri and Battista Severgnini suggest that there are three main critical areas. First, revenues are too dependent on TV rights and thus vulnerable to changing conditions. Second, there has been an exponential growth in player salaries, which has pushed up costs to unsustainable levels. Third, there is a lack of credibility due to a series of scandals, including match fixing discussed elsewhere in this volume. These problems are illustrated by the fact that a quarter of Series A teams had to declare themselves bankrupt over the period 2001/02 to 2010/11. TV media rights represented 56 per cent of total revenues in 2010/11. Attendance revenues are stable or declining, affected by hooliganism and the need for increased safety measures for fans. Revenues from commercial activities are relatively small. Total wage costs increased by 55 per cent from 2004/05 to 2010/11. The authors conclude that a new framework and governance rules are required and that there are too many clubs.

The Netherlands is an example of a small country with a strong football heritage, but which has found it difficult to retain its star players following the Bosman ruling. As in England, attendances declined up to the mid-1980s, but then recovered with controls on hooliganism and the construction of new stadia. In Chapter 20 Ruud Koning focuses on three aspects: organisation, the development of broadcasting rights and the introduction of end of season play-offs. Clubs are highly regulated, with licencing requirements enforced through plans for improvement where found wanting and a financial rating system with limitations on the buying and selling of players where results are unsatisfactory. Broadcasting has a chequered history with several failures of TV companies and low fee income. Play-offs have been introduced to determine entry into European competitions as well as promotion and relegation. Match significance appears to have increased as a result for Champions League entry, but has fallen for Europa league entry.

In the US football has to compete with long-established major team sports. Todd Jewell notes in Chapter 21 that attempts to create a profitable and sustainable league have required adjustments both to the structure of the league and the competitive framework in order to appeal to fans and allow for the peculiarities of the US sports market. Major League Soccer (MLS) started with ten teams in 1996, but by 2010 had grown to 19 teams. There is a closed system with no promotion or relegation, similar to the other North American team sports. A summer schedule was adopted to minimise clashes with the major league sports. A unique feature is the single-entity structure with the league having an ownership interest in all teams and a control of player contracts, salaries, sponsorship and broadcasting. Players are contracted to the MLS rather than the franchises themselves, so that the MLS is able to engage in practices which are anti-competitive in nature, drive down player salaries (through the use of a soft salary cap) and restrict player movement. Yet only a third of franchises are profitable, possibly because TV revenue is small compared to those of the majors. Attendances have tended to fluctuate, though influenced by the signing of marquee players who can have a substantial impact. Thus, David Beckham is estimated to have increased attendances by as much as 28 per cent. Such players are subject to a designated player rule to accommodate them within the salary cap, but this has been at the cost of inflated salaries. Nonetheless, the league has exhibited a high degree of competitive balance. Ten of the current 18 MLS teams are ranked as having 100 per cent relative efficiency, but teams in larger markets are less efficient.

As in the US, football in Japan had to challenge the dominant position of other sports – namely, baseball and sumo wrestling – when top-level football was first established in the 1960s. However, as Wolfram Manzenreiter and John Horne point out in Chapter 22, when the J League was set up in 1993 it was immediately successful. By the start of 2013, 18 clubs were playing in the first division and 22 in the second division, with a pyramid structure below and promotion and relegation. The business model is a mixture of the North American and European models. The League itself is a non-profit membership body, similar in structure to the German Bundesliga. The J League controls centrally broadcasting deals, image rights and licensing, with income distributed to clubs after deductions for operational expenses. Clubs must have annual revenues of at least ¥150 million per annum, sponsorship income of ¥100 million and no capital deficits. Teams in the top J League are required to have at least a 15 000 seat capacity. The average attendance in the J1 League is in fact in excess of 18 000, but sponsorship income is the biggest single source of revenue, amounting to 40 to 50 per cent of income, while gate revenue is less than 20 per cent.

## PART IV

In Chapter 23 on football and betting, David Forrest notes that the two activities are at least in part complementary, but there are also negative externalities arising from match fixing by criminals, particularly in Asia, which threatens the integrity of the game. This is much more significant in the case of fixed-odds betting on individual games and with the emergence of online betting, where the bribing of players and referees is much more feasible. On the negative side, the number of cases of attempted match fixing has grown substantially. On the positive side, betting may have contributed to the growth in television rights income. Attempts to influence the outcome of games particularly affects players in low-paid leagues, such as in Finland, where players may be more open to accepting bribes, particularly if they think that the probability of detection is low. Responses by the football authorities may include the allocation of referees to matches only shortly before a game takes place, the introduction of partially deferred payment schemes to reward players with blame-free careers, and increased monitoring.

The standard of refereeing is an important component in the success of football as a spectator sport and on occasion gives rise to heated debates. Peter Dawson (Chapter 24) examines this in the context of uncertainty in decision-making, with particular attention to the extent to which referee behaviour is influenced by social pressure and persuasion. He finds that in World Cup final competitions there has been an upward trend in the number of yellow and red cards issued. Yet in the major European national leagues the trend has been in the opposite direction, at least in the number of fouls recorded. Further, more yellow and red cards are issued to away teams than to home teams. There is also evidence of home team bias in the context of the amount of time added on at the end of regular time according to the state of play. A popular explanation for such outcomes is social pressure. To some extent also player transgressions can be explained in economic terms as a response to rule changes. Thus, the change from two to three points for a win in the mid-1990s generated an increase in the number of fouls committed and in the number of yellow cards issued. The outlawing of tackles from behind in the 1990s resulted in fewer red cards being issued as players responded to the rules change.

There are several forms of cheating in professional football including drug taking to enhance performance; sabotage or actions which increase the marginal costs of production for opponents (such as deliberately trying to injure an opponent, simulation – diving – and altering match conditions); and as outlined by Forrest in Chapter 23, match fixing by bribing players or referees to influence the outcome of a game in order to bet on the outcome. The last of these is the focus of Chapter 25 by James Reade, who uses what he refers to as forensic economics to examine a particular case in the lower divisions of Italian football, where the lower salaries of players make them more susceptible to accepting bribes. In several cases match fixing was proven to have taken place in the 2010/11 season and punishments were handed out to clubs, players and other participants. Reade investigates betting market outcomes and compares them to modelled outcome probabilities, focusing on outliers, using data from over 1800 Series B matches between 2008 and 2012. If a match is fixed, this will affect the odds quoted by bookmakers. Provided the vast bulk of previous matches are not fixed, these can be used to predict outcomes, using an econometric model, with the significance of the error term suggesting corrupt activity. Having established the quality of fitted values for the probability of home wins, draws and away wins, one can then establish whether any significant outliers exist between the probabilities generated from the econometric model and those produced by bookmakers, recognising that some of this could be produced by chance. Towards the end of the season many games do not matter in terms of deciding the outcome of the competition and players may be easier to bribe at that time. Reade's results are consistent with such an outcome with one proven high-profile case being one of those with large residuals and a large proportion of the others leading to at least one team being punished.