



# sports **economics**

theory, evidence and policy

Paul Downard  
Alistair Dawson  
Trudo Dejonghe



# **Sports Economics**

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# **Sports Economics**

## **Theory, Evidence and Policy**

Paul Downward

Alistair Dawson

Trudo Dejonghe

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### ***Dedication***

To Cath, Sarah-Louise and Joe who know that I am marginally less irritable playing sport than writing about it, but without whom none of this would have been possible (PD).

To the friends whose affection sustained me during the writing of this book, and especially to the memberships of the January the Second Society, and of the Last of the Summer Walking Club (AD).

To Ann, Arno and Ferre who have seen their father a lot of hours working at his computer and the dogs Zeus and Dreyfus who accompanied me in the walks between the working hours (TD).

# Series Editor

Dr. Russell Hoye is an Associate Professor in the School of Sport, Tourism and Hospitality Management, La Trobe University, Victoria, Australia. Russell has been involved in sport management education since 1993, working in Australia at La Trobe University, Griffith University, and Victoria University and in China with The University of Hong Kong and Tsinghua University. He is a board member of the Sport Management Association of Australia and New Zealand (SMAANZ). He was the Guest Editor for the inaugural special issue of *Sport Management Review* on professional sport in Australia and New Zealand published in 2005.

Russell's areas of expertise include corporate governance, organizational behaviour, volunteer management and public sector reform within the sport industry. He has acted as a consultant for the Australian Sports Commission, Sport and Recreation Victoria and a number of local government and non-profit organizations. His research interests focus on examining how governance is enacted with sport organizations and how volunteers engage with and are managed by sport organizations. He has published papers on these topics in journals such as *Nonprofit Management and Leadership*, *Sport Management Review*, *European Sport Management Quarterly*, *Society and Leisure*, *International Gambling Studies*, *Third Sector Review*, *Sporting Traditions*, *Managing Leisure*, *Football Studies*, *Annals of Leisure Research*, and *the Australian Journal on Volunteering*.

## About the authors

Dr Paul Downward is Director of the Institute of Sport and Leisure Policy, University of Loughborough. Along with Alistair Dawson he is the author of the textbook *The Economics of Professional Team Sports* (Routledge, 2000). He is the editor of a book for the Office for National Statistics on the use of official data in understanding sports, leisure and tourism markets, and the author of numerous articles on the economics of sport. He has recently undertaken consultancy work for Sport England on participation, volunteering in sports clubs, and performance management, and for UK Sport on volunteering at the Manchester Commonwealth Games. He is a member of the International Association of Sports Economics, a founding member of the editorial board of the *Journal of Sports Economics*, and member of the British Philosophy of Sport Association. Outside of these areas Dr Downward has also published on the philosophy of economics, and pricing theory. As well as refereed papers he also has a book in each of these areas. He currently teaches a final year undergraduate module in Sports Economics, and contributes sports economics teaching to modules in Sports and the Leisure Industries, Managing Sports Organizations and Olympic Studies, at Loughborough University. Paul is currently playing veteran's rugby (and can be spotted on the cover) and coaches a junior side at his local club.

Alistair Dawson retired from Staffordshire University in 2000, but maintains an active research interest, particularly in the theoretical problems surrounding the measurement of uncertainty of outcome. Apart from *The Economics of Professional Team Sports*, with Paul Downward, Alistair has published articles in sports economics. Other fields in which Alistair has published include the econometrics of wage inflation, and the application of computer business and macroeconomic simulations to undergraduate learning and assessment. Alistair hopes to devote his remaining years to hill walking, photography, real ale and socializing with friends and family.

Dr Trudo Dejonghe is docent (professor) at the Lessius Business University Antwerpen and guest lecturer in VUB Brussels, Hogeschool Brugge and Copenhagen Business School. He is the author of *Sport en economie: een noodzaak tot symbiose* (sport and economics: a symbiotic necessity) (Arko Sports Media, 2004), *Sport en economie: een aftrap* (sport and economics: a kick off) (Arko Sports Media, 2007) and *Sport in de wereld: ontstaan, evolutie en verspreiding* (sport in the global space: evolution and diffusion) (Academia Press, 2001; 2004; 2007). He has researched the location-allocation problems of football clubs in Belgium (2001) and the Netherlands (2005).

# Sport Management Series Preface

Many millions of people around the globe are employed in sport organizations in areas as diverse as event management, broadcasting, venue management, marketing, professional sport, and coaching as well as in allied industries such as sporting equipment manufacturing, sporting footwear and apparel, and retail. At the elite level, sport has moved from being an amateur pastime to a significant industry. The growth and professionalization of sport has driven changes in the consumption and production of sport and in the management of sporting organizations at all levels of sport. Managing sport organizations at the start of the twenty-first century involves the application of techniques and strategies evident in the majority of modern business, government and nonprofit organizations.

The **Sport Management Series** provides a superb range of texts for the common subjects in sport business and management courses. They provide essential resources for academics, students and managers and are international in scope. Supported by excellent case studies, useful study questions, further reading lists, lists of websites, and supplementary online materials such as case study questions and PowerPoint slides, the series represents a consistent, planned and targeted approach which:

- provides a high quality, accessible and affordable portfolio of titles which match management development needs through various stages;
- prioritises the publication of texts where there are current gaps in the market, or where current provision is unsatisfactory;
- develops a portfolio of both practical and stimulating texts in all areas of sport management.

The **Sport Management Series** is the first of its kind, and as such is recognised as being of consistent high quality and will quickly become the series of first choice for academics, students and managers.

# Preface to Sports Economics

With the help of Trudo Dejonghe, this book radically extends and revises *The Economics of Professional Team Sports* by Paul Downward and Alistair Dawson. Not only has the coverage of professional team sports been radically updated, but the book also encompasses mass participation sport as well as aspects of sports events.

This has provided challenges. On the one hand mass participation sport has received relatively little research and textbook treatment in economics, although some notable contributions, cited within, stand out. In this respect, it is hoped that the book provides some innovative discussion. In contrast, professional sport and the economics of major events comprise burgeoning literatures, which provide challenges in summarizing its content. In this respect it is hoped that the book provides a good introduction to the main issues discussed in the literature.

A central reason for the combined treatment and coverage is that the different contexts of sport are now often integrated as economic activities in public policy discussion. As no previous economic literature exists that examines all of these contexts and their connections, we hope that the major contribution of the book is to show how this is possible, and that economics can contribute greatly to our understanding of sport.

In order to achieve this goal, core principles of economic theory coupled with specific conceptual innovations from economics in the context of sport are employed throughout the book, whilst recognizing that each aspect of sport has some distinctive characteristics. Relevant descriptive and inferential empirical evidence is cited, as well as the implications of the theoretical and empirical insights for policy. It should be emphasized that at no point are specific policy recommendations offered. Rather, the aim is to use theory and evidence to explore the underpinnings of alternative policy positions. Broadly speaking these include a choice of either allowing market forces to allocate resources in sport, or for policy makers to intervene in resource allocation to provide sport. The economic logic and trade-offs of each position is essentially compared.

A distinctive feature of the book is that its pedagogy aims to make sports economics accessible to those for whom economics is a relatively new area of study, or is not necessarily a major component of their studies, for example, for sports management students. In this respect, rather than using sports to exemplify a traditional economics curriculum, this book makes the contexts of sport the focus of analysis, and uses economics as and when it is needed to illuminate these areas.

Moreover, because the pedagogy of economics can be technical, drawing on mathematical and statistical analysis, most of each chapter, where possible, explores the issues at stake in verbal terms, providing historical and contextual commentary. Economic principles are presented in graphical format with the statement of, and commentary on, key equations. Derivations are kept to a minimum and developed most in appendices, for the more technically-minded reader. Reflection questions and boxes are also used in chapters to prompt the reader to think about specific points, as well as to provide the context for specific theoretical or empirical contributions that have been used to analyze sport.

The aim of the book was to be international in scope. However, partly as a result of language and partly as a result of the emphasis of the literature, it focuses primarily on comparisons between the US, the UK and mainland Europe. In this respect it is hoped that the book prompts research into sports economics in other contexts.

Chapters 1 and 2 provide overviews of key economic principles and methodology, and the definition and economic and political context of sport, respectively. Chapters 3 and 4 examine the demand for mass participation sport, introducing key theoretical features of consumption behaviour, as well as how economists analyze evidence. Evidence on participation is reviewed. Chapters 5 and 6 then examine the supply of mass participation sport, focusing on the policy rationale for public or private sector supply. The role of clubs and volunteers in sport are also discussed, as well as the growth of the private and informal sectors. In these chapters, the consumer–producer nature of the economic agent, and the activity of agents within “club goods” is emphasized.

Chapter 7 draws on this discussion to explain the origin and nature of professional sports competitions, as an evolution of club goods in which consumers and producers become specialized. Key aspects of the economics of competition – as detailed in contest theory – are discussed in connection with sport in general and then professional team sports. Themes in the economics of professional team sports are reviewed connected with the nature and objectives of the firm and the market structure of leagues. It is argued that sports leagues are cartels whose members’ mutual interdependence needs to be managed.

Chapter 8 provides a detailed digression on the nature and measurement of “Uncertainty of Outcome” as a characteristic of this interdependence, as highlighted in contest theory. This is because uncertainty of outcome has assumed a central place in the literature examining the management and evolution of sports leagues. Chapter 9 then reviews the efficacy of policies that have been used by sports leagues with the purported intention of managing uncertainty of outcome. It is shown that, broadly speaking, the impact of policies will either be ineffective, or possible but difficult to implement, depending on the assumptions made.

Chapters 10 and 11 then examine the key sources of revenues and costs for professional sports; attendance and broadcast demand, and the labour market. In Chapter 10 it is identified that uncertainty of outcome is more likely to be important for broadcast audiences, and that market sizes and team qualities and possibly loyalty are key drivers of attendance demand, which is price inelastic. Chapter 11 argues that economic liberalization has produced rising player costs for teams, but the specific nature of the market structure is unclear. In this respect it is implied that league management policies have traditionally exploited players rather than affected uncertainty of outcome. The role of player–agents and the coach–manager are also discussed.

The book closes with a discussion of the economics of sports events and investment in infrastructure in Chapter 12. Here a number of themes corresponding to participation in, and provision of, sports events as distinct economic entities to sports leagues are discussed, drawing on contest theory. The chapter also examines in detail the economic case for investment in sports infrastructure that could apply to events or professional team sports. It is argued that the claim that benefits to society can be leveraged from public sector investment in professional team sports or sports events lacks a strong evidence base. Consequently, while a case can be made for such investment, considerable caution and planning is required to harness any spillover effects from the investments.

In concluding, it should be noted that sports economics is a growing area of study and a number of individuals and contributions have added to a vibrant development of ideas and research interests. It should become apparent on reading the book where the driving force of these ideas originates. This said it is clear that a book cannot do justice to all of the contributions that have been made. It is also clear that much remains to be done in research terms, and it is hoped that this book helps to stimulate some of this work. Readers should note that there is now an International Association of Sports Economists that hosts an annual conference dedicated to sports economics (see <http://www.iasecon.net/>), and also a dedicated journal, *The Journal of Sports Economics*, edited by Leo Kahane (see <http://jse.sagepub.com/>), that provide key forums for current work.

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# The Economics of Sport

## OBJECTIVES

- To understand some main features of economics
- To understand the relationship between sport and economics
- To appreciate the main features of economic methodology
- To understand how the perfectly competitive model of resource allocation could apply to sport
- To appreciate why market failures are important in sport

## 1.1 INTRODUCTION

To understand how economics can be used to analyze sport requires an initial appreciation of some key tenets of economics on which to base subsequent, more detailed, discussion. To meet this need, this chapter begins by examining definitions of economics and shows, in the subsequent section, how these are related to the methodological emphasis of economic analysis. Section 1.4 illustrates the main emphasis of economics, and draws out the main policy thrust of economics, by outlining the key theory of the perfectly competitive model of resource allocation. A distinction is drawn between the production of predictions from theory, or “positive” economics, and the evaluation of the outcomes predicted, or normative economics. Section 1.5 presents elements of market failure that are invoked to provide a rationale for policy intervention. Each of the theoretical concepts, empirical approaches and policy implications discussed in this chapter are then referred to or elaborated on in subsequent chapters. Section 1.6 discusses the limits to policy action in sport, and a brief introduction to the empirical approach employed in economics to test predictions from theory is presented to conclude the chapter.

### BOX 1.1 DEFINITIONS OF ECONOMICS

1. "Writers on political economy profess to teach, or to investigate, the nature of wealth, and the laws of its production and distribution, including, directly or remotely, the operation of all the causes by which the condition of mankind, or of any society of human beings, in respect of this universal object of human desire, is made prosperous or the reverse. Note that any treatise on political economy can discuss or even enumerate all these causes; but it undertakes to set forth as much as is known of the laws and principles according to which they operate."

Mill, J.S. (1900) *Principles of Political Economy with Some of Their Applications to Social Philosophy*. London: George Routledge and Sons, p. 13.

2. "Political economy or economics is a study of mankind in the ordinary business of life; it examines that part of

individual and social action which is most closely connected with the attainment and with the use of the material requisites of well-being. Thus, it is on the one side a study of wealth; and on the other, and more important side, a part of the study of man."

Marshall, A. (1952) *Principles of Economics: An Introductory Volume*, 8th edn. London: Macmillan and Co., p. 1.

3. "Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses"

Robbins, L. (1940) *An Essay on the Nature and Significance of Economic Science*. London: Macmillan and Co., p. 16.

## 1.2 WHAT IS ECONOMICS?

Box 1.1 presents three historical definitions of economics that Lawson (2003) argues are widely acknowledged as foundations for the emphasis of economics. They are abstract and general, and have similarities and differences. Both Mill and Marshall, for example, emphasize the connection between individual human activity and society, particularly through the production and distribution of material that contributes to well-being. There is some implication that wealth is connected to measurable or tangible material that is, for example, exchanged on markets. It is this that tends to link the traditional study of economics with, for example, financial and industrial subject matter.

Clearly this could apply to professional team sports. In this context money changes hands in the production, distribution and consumption of sport. Money, of course, is the mechanism by which key sporting resources such as players are obtained and allocated between the various teams, to use in competition against their opponents on the field.<sup>1</sup> The purchase and sale of players, as well as payment to them to perform, requires financing decisions.

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<sup>1</sup> In this book the words "player," "labour," "talent" and "athlete" are used interchangeably to refer to the competitors who, through their practise, produce sport. Note that this use of the term is different to "athlete" in common language, which is often identified specifically for those engaged in the disciplines of athletics.

Consequently, gate and television revenues need to be earned to pay players' salaries. Clubs and their amalgamated organizations, such as leagues and governing bodies, must coordinate match schedules since they cannot be produced in isolation, and potential spectators must be informed where and when matches are to occur. In turn, spectators need accommodation and a means by which payment can be made, while restricting access to the sport to non-payers. Historically, stadia were necessary features of commercial sports supply. Spectators could also pay to watch broadcast sport, although payment has not always been necessary.

Characteristics such as these indicate that, rather like the production, distribution and consumption of other goods and services, professional sport can be viewed as an economic process. Inputs, or *factors of production*, such as labour (the athletes and manager/coach) are combined with capital (the sporting field, equipment and so on) to produce, along with another team in the league, a product (the fixture) that is sold to consumers (spectators and supporters) typically in a stadium, or via broadcast media.

Yet Robbins' definition in [Box 1.1](#), which has come to be embraced by economics, is broader in concept and consistent with recognizing that economic activity is not, of necessity, connected with the creation and redistribution of material wealth *per se*. In this regard there are similarities between professional team sports, as well as amateur sports and sport in general, as economic phenomena, if choices have to be made over the allocation of resources to supply and consume these activities. These issues are discussed in some detail, for example, in [Chapters 3](#) and [6](#). If nothing else, participating or volunteering in sports activities “costs” time, which is a resource that is scarce to everybody. This is in addition to the resource allocation issues associated with the commercial provision of non-professional sports activities, as discussed in [Chapter 5](#). Robbins has been one cornerstone of the development of economic methodology, which is now discussed.

### 1.3 ECONOMIC METHODOLOGY

Robbins' legacies for economics are two-fold. The first is that scientific propositions on economizing are associated with attempts to produce generalized understanding or “laws” of behaviour. The second is that economics becomes a tool for assessing rational choices between courses of action.

As far as testing economic theories is concerned, [Friedman \(1953\)](#) has been particularly important and emphasizes testing the predictions of theory regardless of the realism of its assumptions. Friedman's argument provides a link between theories that can be constructed on idealized conceptions of rational economic behaviour, that are literally false, for example motivated

by the definition of Robbins, and the empirical relevance of theory as an aid to policy.

This broad method of analysis, in which rational economic behaviour is postulated for economic agents which is used to deduce predictions that are tested against data, is applied to all economic problems, including those associated with sport. Economics purports to offer “covering law” explanations of phenomena. The specific subject matter analyzed is understood in terms of a general theory of behaviour. In its core assumptions connected with rational behaviour, economic analysis does not make allowance for the analysis of different sports taking place in different countries or in different time periods. However, it does attempt to accommodate different institutional contexts. It is important to bear this issue in mind, as this approach is different to those of disciplines such as sociology, history and politics, which may be more familiar to, say, sports management students, and in which the specific context and character of sports is explored.

The economic approach can be understood more clearly, as well as highlighting some important economic concepts, by considering the core economic model of perfectly competitive market allocation of resources. Both its “positive” and “normative” characters are discussed. Although philosophically contentious these terms reflect, as distinguished by [Friedman \(1953\)](#), that statements about economic activity can have the aspiration of being value-free and concerned with testable theoretical propositions, or be concerned with prescription, for example policy, based on value judgements.

### **1.4 A CORE ECONOMIC MODEL: PERFECT COMPETITION AND EFFICIENT RESOURCE ALLOCATION**

#### **1.4.1 Positive economics**

Although discussed in a more appropriate way in [Chapter 9](#), the representation of a sports league is used to illustrate the model of perfect competition. The sports league can be viewed as the industry, or synonymously the market, producing the output of sporting contests, i.e., fixtures, with individual teams or clubs within the league being viewed as firms within the industry. The fans who pay to watch games are the consumers who demand sports fixtures. As implied earlier, it is assumed that economic agents in markets are rational. They have perfect information about the implications of their decisions, and they pursue clearly defined goals. It is assumed that clubs or firms seek to maximize their profit, while the fans seek to maximize their utility, which is enjoyment, from viewing fixtures from the league, made possible through the purchase of tickets.

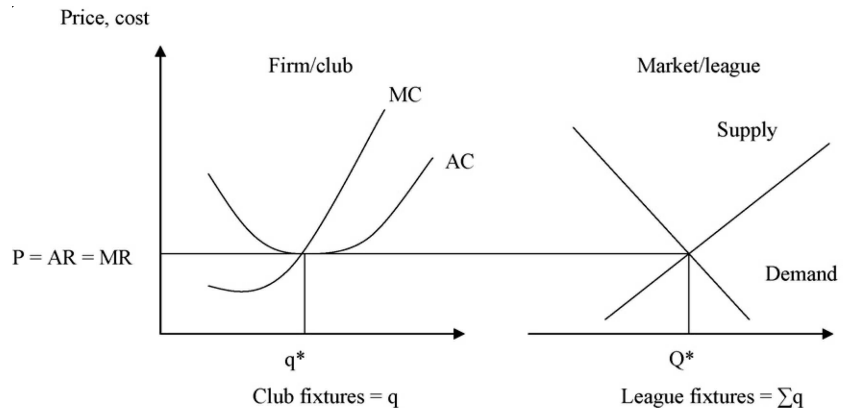
While this might seem to be a reasonably plausible scenario, notwithstanding the assumption about the information possessed by clubs and spectators, the model also assumes that each club and fan is “atomistic,” i.e., they are infinitesimally small relative to the total number of clubs or fans. In this regard, their individual decisions to buy and sell tickets to watch sports fixtures cannot affect industry-level activity as a whole. It is also assumed that there is freedom of entry and exit to the industry. This implies that unprofitable clubs can leave the market or league, while profitable clubs may attract the entry of other clubs looking to compete for their profits. Clubs may also offer more or less fixtures to the league as required. In this respect, resources in this sports market are free to come and go. It is also assumed that the product supplied by any set of teams – a sports fixture – is identical to all others,<sup>2</sup> and there are no differences assumed between the quality of sports fixtures or the identity of fans to particular teams. The only impetus to watching one particular fixture rather than another is the ticket price. However, because clubs cannot affect ticket prices, they cannot brand their fixture, and cannot draw on particular allegiances from fans. Everyone has to accept the ticket price as established in the market as a whole. Clubs are “price takers.” These are clearly unrealistic assumptions.

To explore the implications of these assumptions in more detail requires exploring the demand side and supply side of the market in more detail. [Figure 1.1](#) provides a diagrammatic representation of the league. On the right-hand side is a representation of the demand and supply of the league's fixtures as a whole. On the left-hand side is a representation of the costs and revenues facing an individual club within the league. As clubs are identical, this club is representative of all clubs. Prices and costs are measured on the vertical axis, and the number of club fixtures and the number of fixtures in the league as a whole are measured on the separate horizontal axes ([Figure 1.1](#)).

The full underpinnings of the demand side of the market are discussed in [Chapter 3](#), consequently it is practical at this juncture simply to note that, for the market as a whole, i.e., the sports league, it is assumed that a rise or fall in ticket prices, will, in the absence of changes in other factors, reduce or increase the demand for sports matches. The demand curve represents planned purchases of tickets on the market for various prices. The inverse relationship implied by the curve is often referred to as the “law” of demand. The supply curve in a perfectly competitive market is the sum of the marginal costs (MC) of the many, identical, clubs that supply the market. Marginal costs are the

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<sup>2</sup> The astute reader will note that, unlike manufactured goods, or say, gymnasium services offered by a sports facility, sports events need sporting competitors. This unique element of competitive sports is discussed at great length in [Chapter 7](#).



**FIGURE 1.1** A perfect competitive sports league.

Key:  $P$  = price;  $MR$  = marginal revenue;  $AR$  = average revenue;  $MC$  = marginal cost;  $AC$  = average cost;  $q^*$  = number of fixtures supplied by a club;  $Q^*$  = number of fixtures in the league.

extra costs incurred from producing an extra item of output. In this context these will be the costs incurred from producing an extra fixture.

In this price-taking market, as discussed above, the coincidence of market demand and supply determines the market ticket price ( $P$ ) and quantity ( $Q^*$ ). Here the intersection of these curves shows the mutually consistent set of plans for consumers to buy tickets to view fixtures and of clubs to supply fixtures in the aggregate. If demand and supply in the market set the price of the product, individual firms have to supply the product at this price. Consequently, the club's average ticket price for fixtures (average revenue,  $AR$ ) and ticket price for any extra fixture supplied, marginal revenue ( $MR$ ) are equal to the market ticket price ( $P$ ). The intersection of the demand and supply curves also determines the number of fixtures in the league  $Q^*$ .

### Reflection Question 1.1

How many fixtures should each club provide to the league total?

Hint: Think about the assumed objective of clubs.

The theory of perfect competition assumes that clubs wish to maximize profits. The maximum contribution to the firm's profit occurs where  $MC$  is equal to price or  $MR$ .<sup>3</sup> If the firm were to increase its output beyond  $q^*$ , then

<sup>3</sup> This is a necessary condition for profit maximization. It is not a sufficient condition because one has to consider what happens to fixed costs.

the added cost, as indicated by the MC curve, exceeds the revenue received from the additional sale at market price  $P$ . Likewise, if the firm reduced its fixtures below  $q^*$ , then contribution to profit is missed, as  $P = MR > MC$ , which implies that profits are not maximized. Because the demand curve is given to the firm by the market, it should be clear that the MC curve is essential to understanding how much output competitive firms, and hence the market, supply.

What, then, are the extra costs that a firm incurs as it increases output by one unit? In economic terms, costs are broadly classified into fixed and variable costs. Examples of fixed costs would be the debt payments on investments for a new stadium. These debts have to be paid regardless of whether or not the team actively competed in their sport. Variable costs measure the costs that can be varied as the club commits resources to produce fixtures; consequently, they only need to be paid when varying the level of output of the firm, which is supplying sports fixtures.

### Reflection Question 1.2

Consider a professional sports club. Which of its costs are likely to be viewed as variable, i.e., would vary directly with the number of fixtures offered?

Hint: Consider who actually produces the sports fixture on the playing field!

In economic theory labour costs are usually assumed to be the variable input to a firm's production in the short run, and clearly this is applicable to sports, if one considers who is actually required to produce a sports fixture and who would need to be paid to do so. The implication is that the firm can more easily adjust labour than capital. Labour markets are extremely important to the economics of professional sports, and are discussed more fully in [Chapter 11](#). Intuitively, however, it is common to observe players being transfer-listed or sold when clubs face financial problems. In contrast, clubs tend to relinquish their stadium only under extreme financial pressure – when they effectively close. Of course, clubs also often build new stadia, to accommodate new capacity or to relocate to new cities, which is common in the United States (US). This issue is discussed more fully in [Chapter 12](#). MC for clubs can be defined as in [Equation 1.1](#):

$$\text{Marginal cost} \equiv \frac{\text{Wage rate of players}}{\text{Marginal product of players}} \quad (1.1)$$

This relationship implies that the only reason that MC can rise for a given money wage rate is because the marginal product of labour (MPL) falls, as

**BOX 1.2 WHAT IS MARGINAL COST?**

In a competitive market, output such as fixtures can be sold at a specific price, this is marginal revenue. Each fixture also has a cost, its marginal cost. Equation 1.1 defines marginal cost as the money cost of producing the fixture, the wage rate, divided by the marginal productivity of the player producing the fixture. For example, if the wage rate that has to be paid to players to encourage them to be available for a

fixture is €10 and the player performs over the whole fixture, then the marginal cost is €10. If the player only played for one-half of the fixture, perhaps because they were viewed as underperforming, then the marginal cost of the player would be €20. This higher marginal cost reflects the lower productivity of the player.

illustrated in Box 1.2. In the theory of competitive markets this is assumed to apply, reflecting a “law” of “diminishing marginal productivity.” This implies that, in putting on more and more fixtures, clubs end up having to make use of less and less productive, i.e., skilful, players as the more skilful players are already being used, or need to be rested at times. This assumption is needed in the theory because without it there is no guarantee that MC would rise to equal price, which is constant, and hence the profit maximizing level of output for the firm identified where  $MR = MC$  at  $q^*$ .

**Reflection Question 1.3**

Does this imply that teams could be of any size?

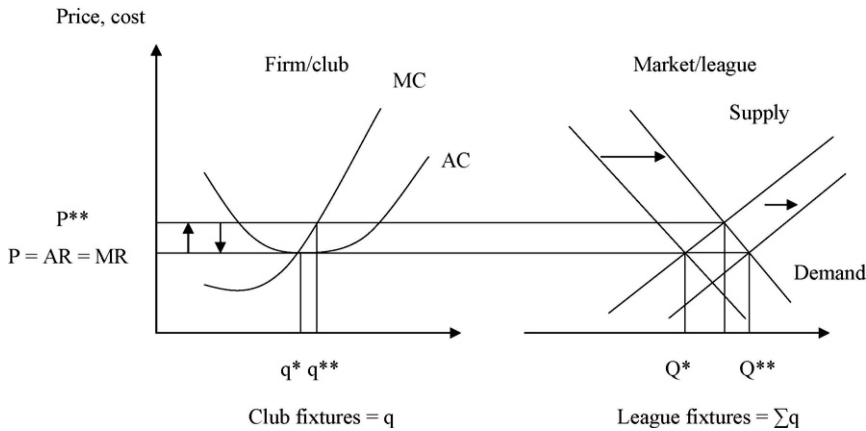
Hint: What is assumed about resource availability?

In principle, this means that the size of the team can vary according to profits. One could think of this as connected with variable squad sizes rather than actual players on the field. Better ways of viewing the employment of players in producing fixtures are discussed more fully in Chapter 9.

An important point to note from the above analysis is that actual profit for the club per fixture is indicated by the difference between the AR and AC curves. AC refers to both fixed and variable costs, and therefore describes the full, total cost per fixture. Note that, unlike with revenues, MC and AC are *not* the same. The former is the cost of producing the last fixture. The latter is the cost of producing each fixture on average. Consequently, as implied on the diagram, when MC is less than AC, AC falls. Conversely, when MC is greater than AC, AC rises. It follows that  $MC = AC$  at the lowest point of the AC curve. In Figure 1.1 the horizontal  $MR = AR$  curve was tangent to the AC curve at the point where  $MR = MC$ . This suggests that zero economic profit is earned. Technically this means that no supernormal profit is earned. In contrast, only the profit implied in the cost of capital, as incorporated in the AC

curve, is received by the club. An important distinction to note here is that accountants refer to this as “profit,” in economics it is viewed as the cost of keeping funds in the current line of economic activity. If this cost was not met, i.e., payment to the owner or investor in the club, they would invest their capital elsewhere. As discussed further in Chapter 12, economic costs reflect the opportunity costs of alternative uses of resources. It is clear from the above diagram that profit maximization in perfect competition ensures that costs are at their lowest possible level.

Predictions can be derived from the theory. Assume that interest in the sport rises from current levels. This can be illustrated on Figure 1.2 by drawing a new demand curve to the right of the existing demand curve, to show that spectators plan to view more fixtures for any given ticket price. This could occur if current spectators all wanted to see more fixtures or new spectators entered the market, or both. There is an important methodological point that needs to be noted at this juncture. In economics the effect of this change is considered *ceteris paribus*, that is holding other factors constant. This is not to suggest that economists view this as a description of the world as it operates. However, the focus of economic analysis is to examine the logical consequences of a change in one variable on another variable in isolation. This is a direct consequence of trying to establish causal links between variables as specified by various theories. It is these conditional or partial predictions that form the focus of testing in economics and why, in this particular case, a new demand curve is drawn as the only initial change taking place.



**FIGURE 1.2** Increased demand for sports fixtures.

In the current context, [Figure 1.2](#) illustrates that following the increased demand the consequent prediction is that the market initially establishes a new higher ticket price,  $P^{**}$ . For individual clubs this implies supernormal profits per fixture, as indicated by the fact that  $P^{**} = AR > AC$  where profit maximizing behaviour predicts an increased number of fixtures at  $q^{**}$ , where  $MR = MC$  in the short run. However, the assumption of free entry and exit to the market implies that new clubs will enter the league in the long run. In other words, capital can now vary and gets invested in this profitable industry. This suggests that the supply curve will now also move to the right, indicating that more fixtures can be supplied at any price. The consequent prediction is that ticket prices will fall.

#### Reflection Question 1.4

To what level will ticket prices fall?

Hint: Remember each club is assumed to be identical.

Because clubs are considered to be identical, the fall in prices will imply that supernormal profits will disappear and individual clubs will supply their original number of fixtures. The difference now is that more clubs will be in the league, which has expanded to  $Q^{**}$  fixtures overall. The “dynamic” process implied in the model is that prices act as a signal of profit opportunities for clubs to meet the utility or demands of fans. The league or market thus adjusts resources to ensure that more clubs emerge to meet this need.

### 1.4.2 Normative economics

Perfect competition also contains value judgements that are linked to economic policy prescription. The central normative proposition of the perfectly competitive model is that it represents the efficient allocation of resources.<sup>4</sup> Efficiency is concerned with the direction of scarce resources towards their best use, which produce maximum economic value or welfare. The current approach towards understanding this concept was introduced to economic discussion by [Pareto \(1906\)](#). The first and second fundamental theorems of welfare economics state that not only will a perfectly competitive equilibrium yield an optimal allocation of resources, for any given distribution of income,

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<sup>4</sup> Other normative propositions are that decisions should be understood as deriving from individuals, and that the general value or welfare experienced by society is, in essence, a simple aggregation of the utility of individuals. This reflects the utilitarian ethical tradition of economics.

but also that every optimum allocation of resources is a perfectly competitive equilibrium. The precise demonstration of these theorems is beyond the scope of this book but, intuitively, it can be seen that the model discussed above involved scarce resources, because costs were assumed in production. Moreover, in the analysis of [Figure 1.2](#), resources were attracted into the sports leagues in response to consumer demand. The consumer demand acted like a vote that was effective, because of the exercise of spending money on sports fixtures. How is this efficient though? To answer this question we can review two types of efficiency; productive and allocative efficiency. Each of these, although integrally connected, is best understood by considering the two sides of the market: supply and demand.

Production efficiency is connected to the idea of a production function, which conceptually describes how resources are employed in production or supply. [Equation 1.2](#) describes a production function in which output “Y” is postulated to flow from the use of three factors of production: land (Ld); labour (L); and capital (K), terms that were referred to earlier. In economics all resources are associated with these generic categories, which are used to describe resources as inputs to economic activity.

$$Y = Y(Ld, L, K) \quad (1.2)$$

A function is a shorthand description that indicates that a dependent variable, an object of analysis whose value can vary, is related to a set of independent variables, objects whose values can also vary. [Equation 1.2](#) is a general function because no specific relationship is identified. In the case of sports fixtures above, we can say that the number of fixtures produced by a club will result from the employment of players as labour, a stadium as land and equipment, such as strips, and the relevant ball, etc., as capital.<sup>5</sup> But, of course, in this general sense nothing is said about in what way and by how much. The role of such functions is central in economic analysis and they are referred to in the appendix to this chapter, and throughout the book. Production efficiency then implies generating the maximum number of fixtures from the minimum amount of each resource.

[Box 1.2](#) alluded to the concept of productivity. We can now understand this term more thoroughly by noting that marginal productivity is the additional output following the employment of an additional unit of a variable factor of production, or resource, combined with other factors of production, or

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<sup>5</sup> At this point the astute reader should recall footnote 1, in which it was indicated that the presence of an opposing team is also required to produce a competitive sports fixture. For the moment, accept the proposition that all players fall under the remit of labour.

resources, being fixed. Average productivity relates the total level of output produced to the total level of resource inputs. In the context of the example of sports fixtures above, the marginal productivity of a player is essentially the amount of the fixture that they participate in every time that they are included in the team to produce the fixture (to play in the particular stadium, etc.). Average productivity is thus the total number of fixtures divided by the total number of players employed to produce them. Maximum productivity would thus imply that all players participated fully in every match and that players were selected in order of their abilities, and that in perfect competition the size of the team can be variable.<sup>6</sup>

The reason for this is connected to the second aspect of productive efficiency, and this is associated with “economy.” The theory of perfect competition implies that clubs are price takers in the market for fixtures. Implicit in this discussion is that the purchase and sale of players and other resources is also facilitated on a perfectly competitive market. The wages of players are also given to the firm, as are the costs of land and capital, from their respective factor markets. As a result of this, the costs facing firms and the productivity of resources used by the firm are directly related. Indeed, costs are determined by the behaviour of productivity, as illustrated in [Box 1.2](#). Maximum productivity, i.e., productive efficiency, must imply minimum cost, i.e., economy, as it is clear that the pressure of competition in the market will ensure that profit maximizing firms seek to minimize their costs by being as efficient as possible in production. As [Figures 1.1 and 1.2](#) illustrate, under perfect competition the output of the club is determined at the lowest point on the AC curve. It can now be appreciated that this lowest point is determined by productivity being at the highest, so there are no better options for the employment of resources.

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<sup>6</sup> As the astute reader should now be beginning to appreciate, there is a degree of difficulty of interpretation of these basic economic concepts in sports. These issues are discussed much more thoroughly in Chapters 7 and 11. This is because the nature of output is rather elusive. In the discussion above it is assumed that a fixture of appropriate duration is the relevant output of a sports club. Casual observation tells us that many professional athletes participate in most fixtures, and that clubs are not interested in producing fixtures *per se*, as these have been agreed in setting the scale of the league and number of times each team play. In this respect, teams may be interested in making profit and/or maximizing their relative performance in the league, recognizing that player performances and qualities can vary. Identifying and measuring this performance is difficult. In the case of the physical production of goods, however, one might more easily observe the same hours' work producing more or less units of output depending on effort, monitoring and incentives, etc.

An important corollary of the above discussion concerns the markets for factors of production, such as labour. Equation 1.1 indicated that profit maximizing output for a perfectly competitive sports club would be determined where marginal costs were equal to the wage rate divided by the marginal product of labour. Recalling that in a profit maximizing club, in perfect competition, MR equals MC, and that MR also equals P, then Equation 1.1 can be rewritten as Equation 1.3.

$$\text{Price} \equiv \frac{\text{Wage rate of players}}{\text{Marginal product of players}} \quad (1.3)$$

Multiplying both sides of this relationship by the marginal product of players per fixture gives Equation 1.4:

$$\text{Price} \times \text{Marginal product of players} \equiv \text{Wage rate of players} \quad (1.4)$$

or:

$$\text{Marginal revenue product of players} \equiv \text{Wage rate of players}$$

The marginal revenue product (MRP) of players is their contribution, in producing fixtures, to the club's revenues, as the fixtures are sold at their ticket price. Perfect competition suggests that player's wage rates should be equal to this contribution, which could then be viewed as a "just wage." This relationship is very important to the discussions in Chapter 11.

In contrast to the above conditions that suggest necessary, if not sufficient, conditions for the best use of scarce resources, because the focus is on the supply decision only, allocative efficiency is directly concerned with both demand and supply conditions. It occurs when prices reflect the true costs of production and benefits to consumers. The above discussion implies the former. So, also, while Chapter 3 covers the detail of the consumer decision, a utility maximizing rational consumer might be expected only to pay a price that represents their true individual subjective valuation, i.e., utility, placed on the service or product consumed, that is the fixture whose ticket is bought. However, care should be taken to note that it is logically possible that the prices paid by consumers, or received by clubs, do not reflect the true costs and benefits involved to society. This is discussed further below under the heading of market failure. Consequently, additional assumptions have to be met before one can guarantee that perfect competition is, indeed, an optimal allocation of resources.

To summarize this section, however, the main point is that a perfectly competitive allocation of resources in sports, and generally, is typically

identified by economists as the most desirable situation, as it maximizes economic welfare. The core of conventional economic policy thinking, therefore, despite many conceptual concerns with the theory of perfect competition, is that policies that move towards the allocation of resources by a competitive market system are appropriate.

## 1.5 MARKET FAILURE AND THE RATIONALE FOR POLICY INTERVENTION

The desirability of a market allocation of resources in sport versus an alternative perspective in which active intervention is promoted in sports-related policy can be understood more clearly by reviewing what are traditionally referred to as market failures; these are defined as such because they stand in counterpoint to perfect competition. These failures, to a greater or lesser extent, relax the assumptions of the perfectly competitive model and suggest more realism. As a consequence, different predictions of behaviour become apparent.<sup>7</sup> This discussion also reveals that it may be conceivable that the economic logic of a competitive allocation of resources lies in direct conflict with the objectives of particular stakeholders in sport.

### 1.5.1 Monopoly

To begin discussion, perfect competition in markets has a polar opposite of monopoly, which, in the extreme theoretical sense, is when only one firm supplies the market. A league could be viewed as a monopoly. Theoretically this would mean, in comparison with perfect competition, that the supply curve of the market would represent the MC of the monopoly, and the equivalent sum of ACs would represent the monopoly league's AC. Likewise, the market demand curve would represent the monopolist's AR. Unlike the demand curve facing a perfectly competitive firm, this is not now horizontal. In contrast to the perfectly competitive club, in which AR and MR are equal, because the club cannot influence the ticket price on the market, the monopoly league can adjust its sales of tickets for fixtures by altering ticket prices. It faces the total market demand curve and is, therefore, a price maker.

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<sup>7</sup> This generates something of a methodological conundrum in economics. By producing more realistic assumptions on a case-by-case basis, economic predictions become fully contingent. Consequently, tests of predictions do not necessarily refute the model, but could also reflect the inappropriate application of the model. Of course, analysis outside of experimental conditions and any use of statistical analysis cannot provide definitive tests.

To increase ticket sales the monopoly league can reduce ticket prices and *vice versa*.

### Reflection Question 1.5

What will the monopoly league's marginal revenue curve look like?

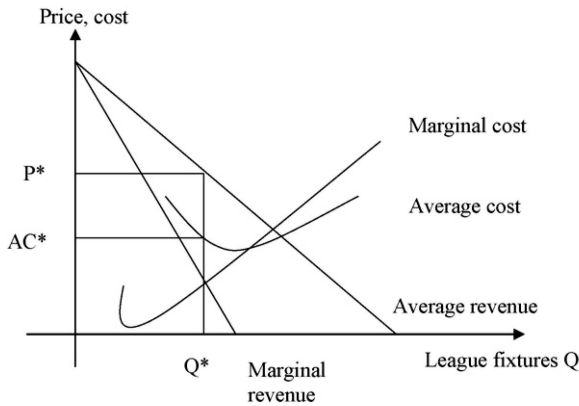
Hint: Remember the discussion of average and marginal cost.

Note that if, in order to increase ticket sales, additional tickets are offered at a lower price than before, the MR earned by the league on these additional tickets will be lower than the AR earned on previous ticket sales. Consequently, in general, MR will be less than AR for a monopoly or, indeed, any other form of market that is not perfectly competitive and where firms can influence the market price. [Appendix 1.1](#) illustrates that, with a straight line AR “curve,” MR will be twice as steep. [Figure 1.3](#) illustrates the situation of a monopoly league, using the same notation as previously.

Once again ticket prices and costs of production are measured on the vertical axis and the number of fixtures in the league on the horizontal axis. Profit maximizing behaviour implies that the number of fixtures supplied will be  $Q^*$  where MR is equal to MC. Because the monopoly firm faces the market demand curve, a ticket price of  $P^*$  can be set for each ticket, as this represents what consumers are prepared to pay to see  $Q^*$  fixtures. An important implication of monopoly supply is that even in the longer run, because of the lack of competition and inability of clubs to enter the league or rival leagues to be set up to supply the sport, supernormal profits can be earned. This is because, on each ticket sold, there is a mark-up above average costs (which, remember, includes normal profit) of  $P^* - AC^*$ .

From the normative perspective discussed earlier, this is viewed as problematic for economic welfare. Productive efficiency is not maximized, because the number of fixtures produced does not reflect the lowest AC. Even if demand fell, because of a reduction of spectator interest for the sport which could be indicated by a movement in the demand curve to the left such that ticket price mark-ups were squeezed to zero, and just normal profits were earned by the league,  $P = AR = AC$  would have to take place, in the diagram, to the left of the lowest possible value of AC, where the demand curve was at a tangent to the AC curve.<sup>8</sup>

<sup>8</sup> It has also been argued that because monopolies do not face competition they become “slack” organizationally, i.e., exhibit x-inefficiency, consequently productive efficiency falls and costs rise (Leibenstein, 1966). The term “x-inefficiency” suggests that the inefficiency is neither due to productive nor allocative inefficiencies.



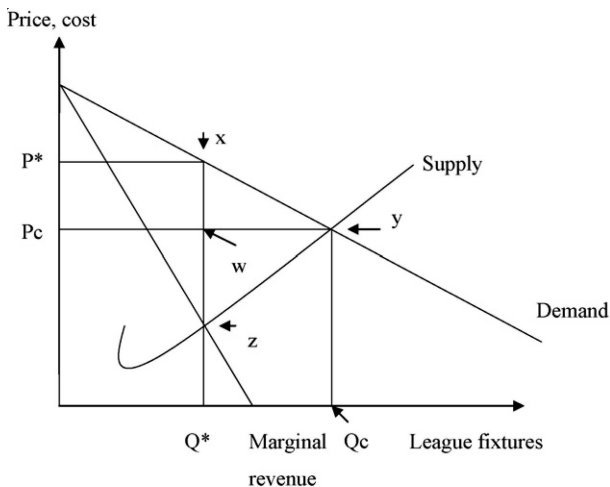
**FIGURE 1.3** Monopoly supply of sports fixtures.

Moreover, this suggests that the number of tickets sold will always be less than would have been the case under a perfectly competitive league. This produces an allocative inefficiency, which represents a deadweight loss of economic welfare. This can be illustrated with reference to Figure 1.4. Here, the profit maximizing ticket price and number of fixtures of the monopoly league, given by  $Q^*$  and  $P^*$ , are reproduced. However, these are compared to the profit maximizing ticket price and number of fixtures of a perfectly competitive organized league, given by  $P_c$  and  $Q_c$ , respectively.

**Reflection Question 1.6**

What will be the profit maximizing price and output of a perfectly competitive sports league? Hint: Remember that the sports league represents the market as a whole for perfectly competitive sports clubs.

Recall from Figure 1.1 that, in a price-taking market, demand and supply set the market level ticket price and number of fixtures, and this is consistent with the profit maximizing behaviour of individual clubs. If it is assumed that



**FIGURE 1.4** Monopoly versus perfectly competitive leagues.

the monopoly and perfectly competitive leagues face the same demand curve, and that the production functions are the same in the aggregate, then from the monopoly diagram the perfectly competitive equilibrium would be where demand equals supply (the MC curve).

Figure 1.4 illustrates that the monopoly price of tickets,  $P^*$ , is higher than the perfectly competitive price of tickets,  $P_c$ , and the number of fixtures supplied on the monopoly league,  $Q^*$ , is less than would be supplied in a perfectly competitive league,  $Q_c$ . The welfare cost that results from having a monopoly league is indicated by the triangular area  $xyz$ . What is this welfare cost?

The total area  $xyz$  comprises two rectangles,  $wxy$  and  $wyz$ . The first of these refers to the lost

consumer surplus resulting from monopoly organization of the league. The second triangle shows the lost producer surplus. Conceptually speaking, the first of these is defined as the amount that consumers are willing to pay for a ticket above what they have to pay in a competitive market. Remembering that the demand curve represents what consumers are planning to purchase, any point on the demand curve represents willingness to pay. In a competitive market, consumers would actually pay  $P_c$  for tickets. Consequently, triangle  $wxy$  represents how much value is lost to consumers as a result of *not* having up to  $Q_c$  number of tickets to purchase at a price of  $P_c$ , and which are valued more highly than  $P_c$ .

Likewise, producer surplus represents the difference between the price of tickets per fixture received by clubs under a competitive market, and the cost that clubs would incur but be willing to supply fixtures at. The supply curve represents the cost of producing each fixture. Consequently, by restricting the number of fixtures that could have been sold for ticket price  $P_c$ , a monopoly league loses the economic value of  $wyz$ , a series of fixtures for which  $P_c$  is greater than the cost of producing them.

It is important to indicate that these losses are viewed in terms of aggregate economic welfare. This is implied in comparing the alternative league outcomes of different economic organizations, or market structures. By construction, the perfectly competitive model represents the sum of values received by individual consumers and individual clubs. Yet each club's share of, say, the forgone producer surplus, is by assumption miniscule. In contrast, the specific monopolist can make substantial extra profits by restricting output. A commercial organization may have objectives that do not correspond to those of maximizing the welfare of the broader economy more generally. This implies that there is always an economic incentive for organizations to look to establish monopoly power. It is for this reason that economic regulatory agencies often intervene in markets to reduce the monopoly power of specific organizations.

For example, they might look to tax away the supernormal profits in a lump sum form of the value  $(P^* - AC^*) \times Q^*$  in Figure 1.3. Such a policy would not affect the costs of production or productivity, and would thus be efficient. This policy would not, however, eradicate the deadweight loss. Alternatively, they might seek to force a change in the organization of the market, to encourage competition, or to enforce a greater supply of output, which will force price to fall. There are also other arguments for intervention in markets. However, these do not, of themselves, provide a rationale for trying to move towards a market allocation of resource, but in contrast, to rectify the problems of market allocation.

### 1.5.2 Equity

While the model of perfect competition offers an efficient use of resources, which can be identified with maximum social welfare, an implicit assumption in the model is access to the income required by consumers to express a demand for sports league tickets through purchases. The logic of the model is that economic agents can only be consumers because they have supplied their labour on the labour market to earn the requisite income to spend. The income earned, moreover, reflects their productivity. Likewise, those who own capital or land will only invest it in particular economic activities if the productivity of the investment is sufficiently high. Consequently, economic efficiency does not recognize the need to explore issues of the inequitable distribution of resources and the fact that those with higher incomes can demand more goods and services than others. A moment's reflection suggests examples where these issues may matter as indicated in the questions raised in Box 1.3.

Essentially answers to these questions hinge on the view that is taken of an unequal distribution of income, and if this biases outcomes in the market allocation of resources in favour of particular groups. In general, equity can be both understood, and addressed in policy, through vertical means, i.e., the “unequal treatment of unequals,” or horizontally, through the “equal treatment of equals.”

In the former case a sports club or league might have lower ticket prices for the unemployed, elderly or student fans, but charge a premium price for

#### BOX 1.3 DOES EQUITY MATTER IN SPORT?

##### Participation sport

1. Should local authorities subsidize/provide access to sports and leisure facilities?
2. Should students pay the same gym fees as university professors?
3. Should local authorities invest in a youth development funds?
4. Should the national government invest in sport facilities and participation programs in the short-term to reduce social security costs in the long-term?

##### Professional team sports

5. Are professional soccer players paid too much relative to nurses?

6. Are ticket prices too high for premiership soccer matches?
7. Should clubs share their gate revenues with smaller clubs?
8. Should local authorities subsidize professional team sports?
9. Should the government subsidize facilities for professional team sports?

##### Mega events

10. Should all tax payers contribute towards the costs of hosting the Olympic Games?
11. Should lottery funds only be directed towards athlete's development for those with a chance of winning gold medals?

executive boxes. This is an example of a policy of addressing vertical equity. One can argue that all are given opportunities to watch fixtures and are not discriminated against by income in this policy. Moreover, this (more) equal treatment of fans of a similar nature is an example of policy seeking horizontal equity. Consequently all students would pay the same ticket price according to the policy, as would all unemployed or elderly fans.

These policies may make economic sense for a profit oriented sports club, as discussed in [Chapter 5](#), if these sets of fans represent distinct market segments. A policy dilemma only arises if all seats in a stadium could be sold at the executive price, then clearly equity and efficiency come into conflict as policies if one holds the value judgement that professional sport should be accessible to all fans. Rationing the allocation of tickets by price only would necessarily favour wealthy fans.

### 1.5.3 Externalities

A key assumption of the perfectly competitive model is that consumers and producers have property rights over the purchases and sales that they make. Clearly defined property rights, which are the legal rules that describe what people can do with their property, are essential for markets to be allocatively efficient as a form of voluntary exchange that takes place in the interests of both consumers and suppliers.

However, when property rights are not clearly defined, then markets can fail to produce an efficient allocation of resources. Externalities arise and can mean that the private benefits and costs received by or paid to a consumer or a supplier does not correspond to those of society. There will be spillover effects to third parties not formally engaged in the transaction. Positive externalities arise when the social benefits of consumption exceed those of the private individual, or the social costs of production are less than the private costs of production. Negative externalities occur in the opposite case. Here, the private benefits of consumption exceed the social benefits, or the social costs of production are greater than the private benefits. [Box 1.4](#) gives some examples of externalities in sport.

What are the consequences of externalities? Positive externalities imply that the market undersupplies the amount of sport. Consequently, as with a monopoly, society experiences a welfare loss in the form of an opportunity cost. In contrast, negative externalities imply that the market oversupplies sport. Again, there is a welfare loss.

These two cases are illustrated below in [Figure 1.5](#) for demand-based externalities associated with a sports league. Here, a competitive allocation of tickets is given by price  $P_c$ , and number of tickets,  $Q_c$ , determined by the

**BOX 1.4 EXTERNALITIES ASSOCIATED WITH SPORT**

**Positive externalities:**

- Demand: fans that pay to watch professional sports fixtures are subsequently enticed to volunteer to provide sports opportunities for others.
- Supply: successful sports teams or events raise morale and encourage productivity in work efforts elsewhere.

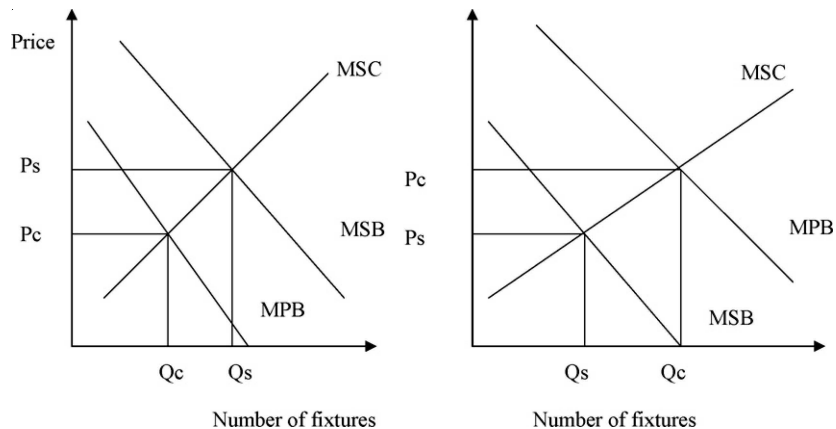
**Negative externalities:**

- Demand: fans that pay to watch professional sports fixtures act as hooligans and vandalize localities.
- Supply: the growth of televised sport encourages “armchair” spectating, and reduces participation and health benefits.

intersection of the marginal private benefit (MPB) of fans and the marginal social cost (MSC) of their production. The presence of a demand externality means there is a true marginal social benefit (MSB), i.e., value, of the tickets that differs from the value associated with the actual purchases of tickets. This is because of the spillover effects of demand that are not actually accounted for in the market price. With supply-based externalities marginal social costs (MSC) would differ from marginal private costs (MPC).

In the case of positive demand externalities, the diagram on the left illustrates that the market under-provides tickets, as  $Q_c < Q_s$ , the competitive allocation of tickets is less than the socially optimal allocation of tickets. This is reflected in the market expressing a lower value than should be the case, as indicated by  $P_c < P_s$ , i.e., the actual price of tickets is lower than the socially optimal price. In the case of negative externalities, the opposite is true and the market over-provides tickets, as  $Q_c > Q_s$  and consequently  $P_c > P_s$ .

The presence of externalities provides a further direct rationale for active policy in the allocation of resources in sport. In the examples above this



**FIGURE 1.5** Positive and negative externalities.