

## INTRODUCTION

Economy is the art of making the most of life.

—GEORGE BERNARD SHAW

Politics and high-profile sport, like religion,  
are about the whole of life.

—REVEREND MICHAEL SADGROVE (LETTER TO PAOLO DI CANIO)

TOWARD THE END OF THE 2001–2 SOCCER SEASON, A GROUP OF YOUNG MEMBERS of the Brigade of Martyrs of Al Aqsa met with a reporter from the *Sunday Times* of London in the depths of a basement in the Palestinian territory of Gaza. The candidates to martyrdom were talking to the journalist about the pain of their people, their wish to die rather than live like slaves, and their dreams of hearing Israeli mothers mourn their sons' deaths, when another member of the group stormed into the basement. "Manchester United, 5," he announced, "West Ham United, 3. Beckham scored two goals!" The terrorists exploded in joy, shouting "Allah Akbar!" [God is great!].<sup>1</sup>

We hardly need to be reminded of the unique place that soccer occupies in the world today. Things, however, were very different one century ago. As González (2008) notes, the accelerated industrialization of the 19th century bequeathed to the 20th century two mass phenomena that were oddly intertwined: Marxism and soccer. Both were born out of migration from rural areas to the cities and the alienation of the new proletariat. Marxism proposed the socialization of the means of production and the hegemony of the working class as a solution. Soccer proposed a ball, 11 players, and a flag. One century later, there is no doubt about which proposal was more attractive.

Of the three ingredients that soccer offers, the most essential to its success is neither the ball nor the players but the flag. I shall clarify this point. Before the masses were dispossessed, sporting ideals were based on the hero. The great athlete, model of virtue, embodied collective aspirations. In continental Europe, this model was the case until well into the 20th century. It is remarkable that the two oldest sports dailies in Europe, *La Gazzetta dello Sport* (1896) and *El Mundo Deportivo* (1906), were born to report on cycling, not on soccer. The bicycle was *the* dream for the

1 See John Carlin (2009).

poor. The hero was a skinny man, stooped on the handlebars, heaving his lungs on unpaved roads. But cycling, so rich in individual metaphor, lacked the social metaphor. The time was not about the individual but about the masses, for the flag. And cycling failed to express and capture the clan, the temple, the war, and eternity. All these phenomena, however, were in soccer: the clan (football club), the temple (the stadium), the war (the enemy is the other club or another city or another country), and eternity (a shirt and a flag whose—supposedly glorious—tradition is inherited by successive generations). In soccer, you never walk alone.

And so, more than a century after soccer was officially born, we find that 5% of all the people who *ever* lived on this planet watched the final of the last World Cup between Holland and Spain. Equivalently, if the idea of counting people not alive seems strange, sources report that about 50% of humans who were alive on July 11, 2010, watched the final of the last World Cup.

This book is an economics book, and soccer is the common thread of all the chapters. But the nature of the relationship between economics and soccer studied here is not entirely obvious. Over recent decades, economics has extended across many fields and conquered areas previously considered to belong to sociology, law, political science, history, biology, and other sciences. Economics can also conquer the analysis of sports, including the beautiful game, and, indeed, research has shown that economics can say many things about soccer and other sports.<sup>2</sup> But this is not the motivating idea behind this book. This is not a book about what economics can do for soccer. The idea is precisely the opposite: It is about what soccer can do for economics.

In the 16th and 17th centuries, stones falling from towers in Pisa and Florence sparked fundamental insights for Galileo Galilei (1564–1642) in his tests of the theory of gravity. Sir Isaac Newton (1642–1727) followed the same concept in the 17th and 18th centuries but worked with data from apples falling from trees. Apples or stones contributed to providing the empirical evidence necessary to evaluate a number of theories of physics for the first time. Just as data involving stones and apples were useful in physics, data from soccer are useful for economics. Soccer replaces apples and stones, and economics replaces physics. Using data from soccer, this book attempts to obtain and present novel insights into human behavior. This difference is what distinguishes this book from other economics books and from other books on the study of sports.

2 For instance, there is much published research on the economics of baseball and basketball, as well as much research on the sports business and the sports labor market (e.g., profitability of clubs, attendance demand, unionization, competitive balance, and so on) in several sports.

Talking about distinctions, “what most distinguishes economics as a discipline from other disciplines is not its subject matter but its approach. . . . The economic approach is applicable to all human behavior” (Becker 1976). In other words, because it is an approach applicable to all forms of human behavior, any type of data about human activity is potentially useful to evaluate economic theories. In fact, sports are in many ways the perfect laboratory for testing economic theories for a number of reasons. There is an abundance of readily available data, the goals of the participants are often uncomplicated (score, win, enforce the rules), and the outcomes are extremely clear. The stakes are typically high, and the subjects are professionals with experience. And so, “if one of the attractions of spectator sports is to see occasionally universal aspects of the human struggle in stark and dramatic forms, their attraction to economists is to illustrate universal economic principles in interesting and tractable ways” (Rosen and Sanderson 2001).

Soccer is, of course, not the only sport that could do this. It just so happens that there are sufficient situations, cases, and settings suitable for research in or around soccer to make it worth studying and presenting in a book on what sports can do for economics. To the best of my knowledge, to date no other sport has been shown to provide the same wealth of research opportunities as soccer to do just this. But I predict that other sports will do so in the near future.

There was no straightforward way to organize the various chapters in this book, and I struggled with this challenge. In the end, I decided to first present five chapters about various aspects of game theory, then to include a middle chapter tackling a finance question, and then to finish with five chapters about broader economic issues. This organization is just a vague categorization because the line that divides game theory, economics, and finance is not always clear. Some chapters could also belong to different sections, and even the sections could have been defined differently and the chapters grouped in a different way.

Chapter 1 is perhaps the clearest example of what motivates this book and what it sets out to accomplish. Recall the movie *A Beautiful Mind*, Oscar recipient for Best Picture in 2001. It portrays the life and work of John F. Nash Jr., who received the Nobel Prize in Economics in 1994. Perhaps you would think that after a movie and a Nobel Prize, the theories of Mr. Nash must have been solidly established and empirically validated on countless occasions. Right? Well, not quite. A class of his theories deals with how people should behave in strategic situations that involve what are known as “mixed strategies,” that is, choosing among various possible strategies when no single one is always the best when you face a rational opponent. This first chapter uses data from a specific play in soccer (a penalty kick) with professional players to provide the

first complete test of a fundamental theorem in game theory: the minimax theorem.

Whereas the first chapter studies mixed strategies in the field (specifically, on the field that is the soccer pitch), the second chapter studies the same strategies with the same professional subjects playing the same game not in real life with a soccer ball but in a laboratory setting with cards. The idea is to evaluate the extent to which experimental lab data generalize to central empirical features of field data when the lab features are deliberately closely matched to the field features.

The third chapter studies the determinants of the behavior observed in the field and in the lab in the previous two chapters, and the lessons we can learn for the design of field experiments.

The fourth chapter presents a neuroeconomic study whose purpose is to map or locate mixed strategies in the brain. Although recent research in the area of neuroeconomics has made substantial progress mapping neural activity in the brain for different decision-making processes in humans, this is the first time that neural activity involving minimax decision-making is documented.

The fifth and last chapter in this first half of the book could have easily belonged to the second half. The only reason it is here is that it takes advantage of the same type of situation (a penalty kick) that is studied in previous chapters. This chapter describes a novel behavioral bias not previously documented in a competitive situation: psychological pressure in a dynamic competitive environment arising from the state of the competition. The data come from penalty shoot-outs, which are a sequence of penalty kicks, and again involve professional subjects.

The halftime chapter, chapter 6, concerns a fundamental finance question: Is the efficient-markets hypothesis correct? Do prices adjust to publicly available new information rapidly and in an unbiased fashion, such that no excess returns can be earned by trading on that information? How can this hypothesis be tested when time flows continuously and it is not possible to ascertain that no news occurs while people are trading?

Finally, the last five chapters are each mainly concerned with different specific questions in economics. Chapter 7 studies the effect of social forces as determinants of behavior, in particular the role of social pressure as a determinant of corruption. There is of course a wide-ranging theoretical literature on the mechanisms of corruption, especially monetary ones like bribes or promotions. Likewise, there is an important literature on the influences of social factors and environments on individual behavior. And yet little is known empirically about social forces as determinants of corruption. This chapter presents the first empirical evidence linking these two areas.

Chapter 8 is concerned with the implications of incentives. The idea is that strong incentives may often have dysfunctional consequences, which may occur not only in cases of individual incentive contracts but also in settings where individuals compete with each other and are rewarded on a relative performance basis. These incentives may be particularly damaging if agents can devote resources not only to productive activities but also to depressing each other's output. Unfortunately, although anecdotal accounts of "back-stabbing," bad-mouthing, and similar activities are easy to find, there does not exist any systematic work documenting such responses. This chapter fills this gap.

Chapters 9 and 10 are concerned with the rationality of fear and with the role of incentives in overcoming emotions, respectively. They present two simple empirical studies testing a specific model of emotions with data from an extreme form of social pressure and violence (hooliganism) and from a unique experiment in Argentina, respectively. Finally, chapter 11 provides the first market-based test of taste-based discrimination in a setting where none of the classical difficulties of the conventional approach to test for discrimination are present.

The questions studied in this book are not just "cute" questions of interest to people who like sports.<sup>3</sup> Neither are they concerned with the idea of illuminating the world of sports through economics. Instead, the objective is to make progress in the world of economics through sports, specifically through soccer. The economic questions studied are tested with sports data the same way that physicists study apples falling from trees, not because they are interested in fruits but because they are interested in theories that are important in physics.

I am not entirely sure what the right audience is for this book. The book is a combination of novel and existing research findings, together with popular science and some stories and anecdotes. Most chapters have a number of ingredients that may appeal to different audiences, and no chapter has all the ingredients that would appeal exclusively to a single audience. It should be of interest to general readers, undergraduate students at all levels (but especially upper level), faculty and doctoral and postdoctoral researchers, practitioners, and certainly to

3 General audiences that like soccer and sports may enjoy the novel insights and approaches in *The Numbers Game* (2013) by Chris Anderson and David Sally, *Soccernomics* (2012) by Simon Kuper and Stefan Szymanski, and *Scorecasting* (2011) by Tobias J. Moskowitz and L. Jon Wertheim. These are excellent books and do not require a reader to have any type of technical sophistication. An introduction to the economics of sports with a wealth of references is *Playbooks and Checkbooks* by Stefan Szymanski (2009). *The Economics of Football* (2011) by Stephen Dobson and John Goddard, provides much more than an introduction to many aspects of the economics of soccer.

sports people and sports economists. And I hope it pays dividends for lay readers, other scholars, and even public policy decision makers.

From a teaching perspective, I believe that the book can be used as both an undergraduate and a graduate text to teach economics through sports. Complemented with readings about theory and evidence from other sports, it is possible to teach economics and the applications of economics in a number of important areas and topics in microeconomics (e.g., discrimination, incentives, and human preferences), finance, game theory, experimental economics, behavioral economics, and even certain topics in statistics and econometrics.

Although most chapters have a research orientation and are structured like research articles, I have attempted to write them in an accessible, and I hope eminently readable manner. Most readers of this book do not need a lecture about the importance of soccer in the world, the importance of economics, or the importance of measuring human behavior. Likewise, I felt that they would not need an exhaustive list of references and a complete biography in every chapter. Some might have welcomed additional readings, and perhaps more theoretical, statistical, and econometric details, but these days it is relatively easy to identify good survey articles on pretty much any topic or to get acquainted with the mathematical or econometric knowledge needed to grasp even the tiniest details of a specific methodology behind some results. With this notion in mind, I have purposely minimized the number of references in most chapters, hoping that by interrupting the reading as little as possible, readers may keep up their momentum and get more juices flowing.

The reader who is not a scholar, who will not become one, and who is interested in catching up or expanding his or her knowledge may begin with the references that are provided in the text. These references include some surveys and introductory books written in a variety of styles and levels of mathematical sophistication and directed at lay people as well as scholars of economics, game theory, finance, and other areas.

My main hope, besides presenting a few novel research findings, is to inspire some laypeople, students, scholars, and even policy makers to think about economics from a different and new perspective. I understand that my hope is ambitious.

A caveat for the true soccer and sports fan: I am not hoping that this book will change the way you watch the beautiful game or the way you think about your favorite team or players, or a number of situations on and off the pitch. Nevertheless, I warn you that this may happen. Be aware that this is a risk that you are taking with this book and that the effects on the role that soccer and other sports may play in your life after reading it may not be positive.