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Wladimir Andreff (Ed.), *Disequilibrium Sports Economics: Competitive Imbalance and Budget Constraints,* Edward Elgar, 2015, 268 pp. $125 Hardcover.

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Abstract. The economics of professional team sport leagues has been built on three main pillars in the US literature: economic equilibrium for the product market and labour market for talent; profit maximisation; and competitive balance between teams (sporting equilibrium). The European literature has brought a fourth pillar: win maximisation with a hard budget constraint (break-even accounting rule). These four pillars have remained little questioned until recently. This emerging literature is one of the motivations for launching a book dealing with disequilibrium. Another is the editor's conviction that the reality in team sport leagues does not fit with general equilibrium solutions. The first chapter introduces the previous elements and more generally the book while the seven following chapters develop a specific aspect related to disequilibrium: an attempt at modelling; a dynamic non-equilibrium simulation; the metrics of competitive imbalance; gender imbalance on the sports programme market; and the last three chapters on soft budget constraints with three different focuses (comparison between European and US leagues; governance and agency problem; regulation regarding the new UEFA club licensing and Financial Fair Play). As a whole, the book provides an original and realistic view that can and perhaps even must shape the future of sports economics.
Keywords. Disequilibrium Sports Economics; Competitive Imbalance; Budget Constraints.
JEL. Z20, L83, D50, L50, P20.

1. Introduction: A new research area: disequilibrium sports economics (WladimirAndreff, pp. 1-8)

The economics of professional team sport leagues has been built on three main pillars in the North American literature: economic equilibrium for the product market and labour market for talent; profit maximisation; and competitive balance between teams (sporting equilibrium). The European literature has brought a fourth pillar: win maximisation with a hard budget constraint (break-even accounting rule). This is in opposition with profit maximisation as supposed in the North American literature, suggesting a difference between the two models in North America (closed leagues) and Europe (open leagues with promotions and relegations). This difference has largely influenced the sports economics literature. However, its pillars have remained little questioned until recently. This emerging

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literature is one of the motivations for launching a book dealing with disequilibrium sports economics.

As written by the editor WladimirAndreff (Professor Emeritus in Economics, University Paris 1 Panthéon Sorbonne), there are three motivations for this book: this does not exist so far; the existence of an emerging literature as mentioned above (Gayant & Le Pape, 2012; 2015; Storm & Nielsen, 2012; Tuck & Whitten, 2013; Andreff, 2014; Franck, 2014; Van Reeth, 2014); and "*the conviction that in real life, more often than not, the situation of a team sport league does not coincide with general equilibrium solutions*" (p. 3).

A first strength of the book is that the authors who have contributed to its content are those listed for the second motivation, providing the reader with an appropriate view about current research on disequilibrium sports economics. The seven other chapters have all their own strengths. They are shared in two parts: economic disequilibrium and competitive imbalance (Chapters 2 to 5); teams and leagues with soft budget constraints (Chapters 6 to 8).

2. PART I. Economic disequilibrium and competitive imbalance (pp. 9-148)

2.1. An attempt at disequilibrium modelling a team sports league (WladimirAndreff, pp. 11-49)

Beginning with assumptions underlying equilibrium models of a team sports league (pp. 11-14), this chapter gradually relaxes these assumptions and provides some empirical evidence that they do not hold (pp. 14-23) before introducing a simple disequilibrium model of an open team sports league (pp. 23-36) and finishing with a programme for further research (pp. 36-42).

An equilibrium model of a North American closed team sports league model emerged in the sports economics literature in the early 1970s before becoming standard among sports economists and being adapted to European open leagues.The author presents this standard equilibrium of a closed league (pp. 12-14).This is based on a Walrasian equilibrium model representing a two-team closed league with profit-maximizing and wage-taker teams in the labour market for talent, and assuming a number of homogeneous talent embodied in each player. Andreffshows that economic equilibrium leads to competitive imbalance due to teams in markets with different sizes. If the sport contest is to be balanced, there is disequilibrium between marginal revenues of talent and market wage. Based on this incompatibility between economic equilibrium and competitive balance, a literature about closed league regulation has been nurtured, with the main results as follows: a reserve clause hindering perfect talent mobility is not an obstacle to economic equilibrium in the talent market if the invariance principle holds; revenue sharing does not improve competitive balance in the league except under very precise conditions of revenue redistribution; and a salary cap lowers overall league revenues.

Andreff then specifies that the standard equilibrium model has been adapted to open leagues (pp. 15-16). This has been done by altering three assumptions: (a) now teams are win-maximizers; (b) therefore they recruit as much talent as possible within their budget constraint; (c) free entry of players makes irrelevant the assumption a fixed supply of talent. Three main results follow: more competitive imbalance than in a closed league; loweroverall league revenue; and a positive impact of revenue sharing on competitive balance and wages.

The Walrasian model successfully passed econometric testing of its assumptions with regard to closed leagues though its fitness with the reality is somewhat blurred as illustrated by the author (pp. 16-17). Hementions that the assumption of a fixed

supply of talent is not only irrelevant in open leagues but also doubtful in closed leagues. As a consequence, the Walrasian model must be substituted by a Nash model. A number of results have been derived from the latter that jeopardize the convincing power of the standard model: invariance principle not valid and negative impact of revenue sharing on competitive balance with profit-maximizing teams but positive with win-maximizing teams. This leads to a controversial debate among sports economists as underlined by the author.

He lists some other assumptions that do not hold when assessed empirically (pp. 17-20).This list includes: an infinite flexibility in the variations of either quantity of talent or market wage or both in the market for a team's input and product market; all talent units are identical and can always be marginally added or substituted for by a team (infinitely divisible and homogeneous unit of talent); as a consequence, the terms of trade and wage determination are identical for all players; teams considered as wage-takers; and the existence of a single consumer demand function.

The most crucial assumption in the standard equilibrium model of a league with win-maximizing teams isa balanced (= 0) budget constraint (pp. 20-23). If this assumption is relaxed, the equilibrium solution can no longer be taken for granted because teams' expenditures in excess of teams' revenues would translate into an excess demand for talent. This is the case for many European football teams and leagues that enjoy a soft (< 0) budget constraint, specifically developed in Chapter 6, without going out of business. European professional football clubs have many characteristics in common with enterprises in former communist economies, in particular taking stock of their soft budget constraint to form an excess demand for inputs. The author lists five characteristics and illustrates them in European football open leagues.

Given this empirical evidence, the author explores the potential offered by disequilibrium economics. He begins with a brief reminder outside sport (pp. 23-26). A non-Walrasian economics approach starts from the evidence that a Walrasian central auctioneer required for a marker to converge towards equilibrium is usually absent in market economies. Therefore, convergence towards equilibrium may take a long time of may not show up at all. The author mentions that a major hindrance against the general equilibrium model emerged from within the mainstream equilibrium theory itself. From a Walrasian trial-and-error process, lasting excess demand and excess supply rather than equilibrium are likely to result. Excess demand and excess supply in the product and labour markets are the bases for the identification of four different economic disequilibrium regimes: repressed inflation, classical unemployment, Keynesian unemployment and "fourth" regime (Table 2.1 p. 25). Andreff stresses the fact that a disequilibrium model is more general than an equilibrium model, which is the solution reached when the budget constraint exactly equals zero. According to the author: "*Equilibrium belongs to the realm of theoretical pure and utopian economics whereas disequilibrium is the harsh reality of everyday economic life and actual markets*" (p. 25). He then underlines that none of the famous disequilibrium economists like Barro (except once as mentioned in endnote 10 p. 43), Grossman, Kornaï, Malinvaud and others was appealed to sports economics so that there is no application of disequilibrium economics to sports. Yet, a more realistic model of an open team sports league should be a disequilibrium model and no longer the Walrasian equilibrium model.

The author then applies a simple disequilibrium model to an open team sports league, introducing some characteristics (and their consequences) differing from the assumptions in the equilibrium model:

- A labour market in excess demand which is made possible by teams' soft budget constraints(pp. 26-28). This leads to recruited players providing a lower labour productivity than the salary they are paid and teams to recruit too many players.
- The relaxation of the assumption of a homogeneous unit of talent with a qualitative differentiation between the most talented superstars (in excess demand) and less talented journeymen (in excess supply) (pp. 29-30). In the superstar segment of the market, excess demand coincides with a wage higher than the marginal revenue productivity of labour; journeymen are paid less than their marginal productivity and suffer from unemployment.
- A fan's excess demand in the market for live games (pp. 31-33). As mentioned by the author, this means that "*Fans will go on being frustrated by waiting (queuing) for more games of their favourite team since their willingness to attend and pay is bigger than the number of their favourite team games fixed by the league*" (p. 33).
- Two markets for televised games, one supplied by free-to-air TV channels (pp. 33-34) and another by pay-per-view TV channels (pp. 34-35). On the former, high audience ratios are reached when high quality games are broadcast *versus* a low audience for boring games. On the latter, it is likely that oligopolistic commercial TV companies (that usually face a single league in a monopoly situation as mentioned in endnote 20 p. 44) *ex ante* fixe a subscription fee higher than the price that TV viewers are exactly willing to pay. As a consequence, a number of potential subscribers will not subscribe and the sport broadcast market will be in excess supply.

The author sketches some major implications beforementioning the existence of interactive variables between the labour and product markets, including competitive balance. This raises an interesting question: "*is a sport contest more – or less – balanced with a team sports league in economic equilibrium or disequilibrium?*" (p. 36).

Based on the previous elements, the author suggests a programme for further research that would include missing markets (pp. 37-39): the one for TV rights, the market for sport sponsorship, the market for sport wagering and gambling, and the market for match fixing. Beyond their inclusion, their interactions should be considered through spillover effects due to excess demand or excess supply (pp. 39-42). Andreffraises two sorts of interactions between disequilibrium markets: spillover effects triggered by those economic agents who are rationed on the short side of a market and switch their unsatisfied demand or supply to another market; spillover effects triggered by rationed economic agents in an upstream (input) market in disequilibrium who switch to a downstream (output) market or the other way round. The author identifies spillover effects in a team sports leaguethat would be worth investigating so as to go further on a more comprehensive disequilibrium model of a team sports league.

In conclusion (p. 42), the author recommendsits comparison (once achieved) with the standard equilibrium model with regard to mathematical properties, fitness to empirical evidence of European open leagues and policy recommendations. As highlighted by Andreff, this could bring a new view for assessing UEFA Financial Fair Play.

This chapter includes 40 mathematical formulas with clear literal explanations, meaning that a reader interested in the topic but struggling with mathematics will still be able to understand the content.A main strength is to provide the reader with an extended list of the markets implied in the economics of professional team sports. Another strength is to discuss the interactions across them. This chapter

opens the door for a new research programme that would be closer to the reality compared to the traditional equilibrium model, at least for open leagues. It could have an important impact on the future of sports economics. This would be beneficial for its appropriateness to reality.

2.2. Management reference points for sporting leagues: simulating league expansion and the effect of alternative player drafting regulations (Geoffrey N. Tuck, Robert D. Macdonald and Athol R. Whitten, pp. 50-103)

This chapter describes a simulation about how a league will evolve over time under specific characteristics and decisions. Based on the earlier modelling of labour markets and competitive balance by Tuck & Whitten (2012; 2013; 2014), the objective is "*to show how dynamic non-equilibrium simulation represents a viable tool to aid league managers in the design of labour market regulations.*" (pp. 50-51). The authors consider the expansion of a closed league, where a player draft is the primary player recruitment regulation, and assess the competitive balance implications of various allocations of player draft selections to the expansion club. They mention that their research is motivated by the expansion of the Australian Football League (AFL) from 16 to 18 clubs, with the entry of the Gold Coast Suns (in 2011) and Greater Western Sydney Giants (in 2012).

The authors provide a rationale for a simulation as a management tool (pp. 51-52) before reviewing simulations in sports research and practice (pp. 52-53). They then focus on the AFL by first describing its background (pp. 53-54) before going to elements of specific interest for the simulation. Thus, they explain the AFL labour market regulations (pp. 54-55). The AFL conducts three player drafts each season and these draft selections form the basis of the simulations analysed in the chapter. The authors introduce three general classes of league objectives (pp. 55-58). The first is about the broad philosophical objectives of the league that are related to competitiveness, evenness, incentives for clubs and financially viable clubs. The second class of league objectives is about the specific operational objectives of the league manager that are related to the absolute quality of the athletic performance, the competitive balance and uncertainty of outcome, the significance of the sporting contest and its integrity (Macdonald & Smith, 2015). The third class of league objectives is about on- and off-field performance of (expansion) clubs during the initial foundation period for an expansion club. League managers should find a balance between the assembly and development of competitive playing lists for the expansion clubs and the minimisation of the negative impact upon the existing clubs. For these three classes of league objectives, the challenge is to set appropriate reference points that will inform on the efficiency of the decisions taken by the league manager. The authors give eight performance criteria set by the AFL Commission for the granting of an AFL competition licence to the Gold Coast Suns Football Club as an illustration (see Table 3.2 p. 58).

If Tuck, Macdonald and Whitten were motivated by the expansion of the AFL for their research, their aim is to suggest a Sports Synthesis model that can be applied to any league. This is the reason why they develop global perspectives on labour market regulation, player drafts and league expansion (pp. 58-64).

They first review the closed leagues having utilized player drafts, at least 12 around the world. Then they discuss the Rottenberg invariance principle (Rottenberg, 1956; 2000) and the Coase theorem (Coase, 1960), based on the literature having considered whether these arguments are valid or not. Following Borland (2006), the authors regret the tendency to offer insufficient consideration of the specifics of the economic design of the player draft. They note some researches (including Tuck & Whitten, 2012, 2013) in support of the perverse

incentive effect of a player draft, i.e. the incentive to 'tank' in matches to secure earlier draft selections. Indeed, a 'basic' player draft is based on the reserve order of selection, meaning that the worst team in season t will have the first choice for season t+1, the second worst team the second choice, and so on. A league organizer needs to find a balance between strengthening the worst teams and creating an incentive for all teams to play their best during the whole season. If we deal more specifically with the economic design of a player draft, this must include (a) the eligibility of an individual to be selected in the draft, (b) the 'basic' order of club selection in the draft, (c) regulatory modification of the 'basic' order of club selection in the draft, (d) voluntary modification of the order of selection via trades (transactions) between clubs, and (e) the consequences of being drafted. These five elements are developed by the authors.

They then focus on league expansion, identifying "*49 expansion clubs across seven of the most prominent leagues to operate a player draft in the past 30 years*" (p. 60, see Table 3.3 p. 61). They compare "*the first decade of on-field performance of the seven recent AFL expansion clubs to those in the NBA and the NFL*" (pp. 60-62, see Table 3.4 pp. 62-63). This enables them to put in perspective the AFL expansion clubs before developing more specifically the five having taken place between 1987 and 1997 (pp. 62-64). For the last two, the authors summarize the player recruitment concessions that have been granted (see Table 3.5 pp. 65-67 for Gold Coast Suns and Table 3.6 pp. 68-72 for Greater Western Sydney Giants). They precise that "*Simulation of the impact of alternative packages of National Draft selections is modelled upon simplifications of these regulations*" (p. 64).

The previous sentence makes the transition with the Sports Synthesis league management simulation framework (p. 64 and pp. 73-77). The authors underline the need to translate the various league management objectives discussed above into elements of the simulation framework. This translation is based on the determination of indicators, reference points and performance measures. Indicators are used to measure or estimate the system state. A target reference point (TRP) defines a value of the indicator representing a desirable state of the system whereas a limit reference point (LRP) defines an unacceptable system state. Performance measures are the link between the indicator and the reference points. The authors illustrate how these elements can help decision-making, both with an imaginary example (see Figure 3.1 p. 73) and the AFL in 1993. An important point consists of the critical time-scales for a league manager that may range from one season to a decade of sporting competition, suggesting the relevance of applying a dynamic non-equilibrium simulation as this is the case here.

Based on the previous elements, a league manager can examine alternative options via Monte Carlo simulation, called Management Strategy Evaluation (MSE) in the fields of natural resource decision analysis. The key features of MSE are based on (a) the influence of uncertainty on management outcomes, (b) experimentation across multiple management strategies and system structures, (c) the identification of feasible options and (d) the promotion of learning of the system dynamics. The authors mention that "*As with simulation models of natural resources, trade-offs should become clear when framing the objectives, performance indicators, reference points and measures in a league simulation*" (p. 75). The first step in the MSE process requires a particular model parametrization of the system, followed by the choice of a management strategy based on (1) data collection, (2) data analysis and (3) regulatory choices (see Figure 3.2 p. 76). Multiple runs of the simulation are then conducted for the chosen management strategy, generating performance measures and evaluation statistics for each simulation. This will be reproduced for all other management strategies of interest, enabling the comparison of the different alternatives.

The authors provide then the elements related to simulating league expansion (pp. 77-83). They presentfirst a dynamic model of an AFL-like league (pp. 77-79). The conditions are a reverse-order player draft system to assign players to clubs at the end of each season and the establishment of a new club after 40 years so as to eliminate any effects of the initial conditions (well-established competition), with the simulation run for a total of 140 years. Secondly, the authors provide the simulation procedure (pp. 79-80) based on elements such as the number of players per team, their draft number, their age, their productivity, their retirement and delisting. Thirdly, management objectives and evaluation statistics are developed (pp. 80-81). The authors precise that 100 simulations are conductedfor a particular management strategy before calculating evaluation statistics related to the management objectives. Seven evaluation statistics are considered:

1. the average number of premierships won by the original clubs from the year the new club is established to the final simulation year;
2. the average number of premierships won by the new club from the year the new club is established to the final simulation year;
3. the annual average coefficient of variation of the team productivities across all teams for a particular year;
4. from establishment of the new club, the mean over the initial 20 years of the coefficient of variation of the club productivities across all teams;
5. the probability that the new club ranking is 8 or better by year 5;
6. the probability that the new club ranking is 4 or better by year 10;
7. the probability that the new club ranking is worse than the number of clubs in draft – 4 at year 5.

For the last three probabilities, management objectives are set, respectively more than 0.75, more than 0.5 and less than 0.1.

Lastly, management strategies for evaluation are tackled (pp. 81-83). The authors illustrate the simplified sets of player draft selections granted to the expansion club in various simulation runs through the National Draft selections afforded to five AFL expansion clubs and a hypothetical example (see Table 3.7 p. 83).

Results are then given (pp. 83-89 and Figures 3.3 to 3.11 with Figures 3.7 to 3.11 pp. 90-94). In a first time, they consist of six of the seven evaluation statistics above (the annual average coefficient of variation of the team productivities across all teams for a particular year is initially not provided) across each of the concessional draft selections (as defined in Table 3.7). Values of the evaluation statistics are shown in Tables 3.8 and 3.9 (p. 84), respectively for medium and high draft choice error (i.e. the relative confidence in choosing quality players in the draft). The authors comment the similarities and differences across the six alternative management scenarios. They stress on two scenarios with considerably different draft allocations and consequent dynamics.They reintroduce then the annual average coefficient of variation of the team productivities across all teams, more exactly from 20 years before to 20 years after the establishment of the new club (Figures 3.5 p. 88 and 3.8 p. 91).

The chapter ends with a discussion (pp. 89-95). The authors make clear that "*Sports Synthesis, like other simulation modelling tools, is not designed to make accurate predictions about the performance of a given club in a given year. Instead, it quantifies the range of possible outcomes of league dynamics, for any given club within that league, and for any given alternative management scenario*" (p. 92). They list then the strengths of this approach: possibility for managers to make quantifiable and unbiased management decisions; insights into the likely outcomes of choices among disparate management options; ability to explicitly deal with uncertainties in the system; ability to anticipate when management

strategies may not achieve the intended objective; formal modelling of the causal relationship between club performance, competitive balance and labour market regulation. The authors give some directions for future improvements before concluding on some recent examples where simulation may provide timely and relevant information to league managers and enable objective, defensible and robust decisions.

This chapter offers a very original perspective in the academic literature on sports economics and management. Sports Synthesis is a tool that managers of closed leagues could use as a decision-making help. A current limitation not highlighted by the authors is that it is built for closed leagues, not open leagues. This is much more complex but a simulation on open leagues already exists for a while with Football Manager, the series of football management simulation games developed by Sports Interactive and published by Sega. By applying some elements from the framework developed by Tuck, Macdonald and Whitten to Football Manager, managers of open leagues could anticipate the consequences of alternative scenarios. At a time when the possibility of a European Super League is again evoked in football, this could be very useful.

2.3. The metrics of competitive imbalance (Jean-Pascal Gayant and Nicolas Le Pape, pp. 104-130)

The starting point of this chapter is that the relationship between the attractiveness of a league and its level of competitive imbalance is not as straightforward as traditionally considered. A reason is that some teams draw on larger fan bases than others, meaning that their success will yield greater total utility than the success of teams with small fan bases. This explains why some recent models introduce a league welfare function and try to assess the degree of imbalance that maximizes welfare. As specified by the authors, "*The first measure of competitive imbalance in a league that emerged in the literature was the standard deviation of the number (or percentage) of wins*" (p. 104). Other measures were derived from this so as to take into account the size of the leagues and/or the schedules of championships. Where sports involve games that may end in ties, the measure of competitive imbalance becomes more complicated as the point award generates structural instability. This means that "*either the measure will be improper, but based on the real ex ante point allocation system or the measure may be adequate as an index, but based on a 'non-existing' point award system*" (p. 105). The authors choose the second perspective. As measuring competitive imbalance in a league is, in many respects, similar to measuring income inequality in a community, they examine whether using a Gini index will provide an adequate measure of competitive imbalance. Their focus is even more specific as they study "*the sensitivity of the Gini index to the substitution of one subset of consecutively ranked teams under perfect competitive imbalance by another subset of teams under perfect competitive balance*" (p. 106). They also study the case of the substitution of two blocks of teams under competitive balance. This is of particular interest in the case of an open league with promotion and relegation which has sporting stakes at the top and the bottom.

The first step consists of a formalization of the total number of points obtained by teams in a one home-one away championship (pp. 106-107). This formalization takes into account the total number of games, the total number of ties and the allocation of points for a win, a tie and a loss. The authors raise the problem of the instability of the distribution of relative points due to the variability in the number of ties. Indeed, "*an index of imbalance may not reach its minimum value for the most balanced distribution and its maximum value for the most imbalanced distribution*" (p. 107).Based on this issue, Gayant and Le Pape want to verify that

any index may violate the property that the measure will reach its maximal value for the most imbalanced distribution if the total number of points allocated for a game with a tie is different from the total number of points allocated for a game with a win and a loss.

The authors then focus on the design of the point award system and measurement of competitive imbalance (pp. 107-110). Starting from Perfect Competitive Balance (PCB), they go tothe idea of Perfect Competitive Imbalance (PCI). They demonstrate and illustrate the fact that the standard deviation of the distribution of relative points (or market share) is higher for a specific situation different from PCI than for the latter with a system wherein a win is allocated three points, a tie one point and a loss zero point. As a consequence, it is necessary to presume that the total number of points allocated for a game with a tie is equal to the total number of points allocated for a game with a win and a loss to measure competitive imbalance properly. This is the case for the remainder of the chapter.

Gayant and Le Pape stress a second point of concern: the need to take proper account of changes in the size of the league (pp. 110-116). To deal with these changes, corrected indices can be used: a corrected standard deviation or a corrected Hirschman-Herfindahl index as suggested in the literature, i.e. based on the comparison between the actual value and an idealized one (minimal). The authors establish the link between these two corrected indices before mentioning the need for extending them by considering the impact of changes in the size of the league on the maximal values of the indices. Gayant and Le Pape calculate the maximal value of the Hirschman-Herfindahl index. It is then possible to calculate a normalized Hirschman-Herfindahl index or Herfindahl Ratio of Competitive Balance (HRCB) as the ratio of the difference between the Hirschman-Herfindahl index and its minimal value, and the difference between the maximal value and the minimal value. Following the same reasoning, the authors assess the value of a normalized index based on the measurement of the standard deviation, called Competitive Balance Ratio (CBR). Gayant and Le Pape note that CBR = HRCB, strengthening the validity of the normalization process. They then illustrate the magnitude of the latter by constructing Iso Competitive (Im) Balance curves. As written by the authors: "*The normalized index described in this section is a suitable tool for assessing the level of dispersion/concentration of teams in a league, even in sports where ties can happen and/or even when the size of the league changes*" (p. 116).

They then investigate the ability of a Gini index to measure the level of competitive imbalance (pp. 117-128). They establish first the Gini index for a league with the characteristics described above before calculating its minimal and maximal value in the case of Competitive Imbalance measurement. Based on these calculations, they show that the Gini index satisfies some of the fundamental properties that a 'good' imbalance index should satisfy. To do so, they substitute one or more 'blocks' of consecutively ranked teams in the PCI distribution by the same number of 'blocks' of teams under PCB. From an axiomatic point of view, any imbalance/inequality index that fulfils the principles of transfer should be such as the Gini index of an intermediate distribution of points is higher than its minimal value but smaller than its maximal value. The authors recall the statement of this central axiom and infer two additional properties before considering the case of the substitution of two blocks of teams under PCI by two blocks of teams under PCB. They show that the level of competitive imbalance measured by the Gini index is smaller when the teams under PCB are gathered into one block than it is when they are divided into two blocks of equal size. This is not satisfactory in the case of an open league, that's why a generalized Gini index would be preferable. The authors suggest such a generalized Gini index.

They conclude on the imperfect analogy between measuring competitive imbalance in a league and measuring income inequality in a community, and the need for a specific axiomatic basis to the elaboration of any competitive imbalance index (p. 128).

The rationale for this chapter is the existence of a lot of different (and imperfect) competitive imbalance indicators but almost no research providing an axiomatic basis. This chapter fills the gap and opens the door to additional specific axioms to be stated with the key question of the attractiveness of the league in mind. The statement of such additional specific axioms is a promising research programme.

2.4. Disequilibrium on the sports programmes market: the gender imbalance in TV coverage and TV viewership of the 2012 Olympic Games (Daam Van Reeth, pp. 131-148)

The Olympic Games is characterized by the presence of parallel competitions for women and men. As such, they are suitable for the analysis of gender balance in media coverage of sport. Almost all previous studies "*focus exclusively on the supply side of the media market by measuring how much time TV channels or how much space newspapers dedicate to the coverage of competitions of both sexes*" (p. 131). The originality of this chapter lies in adding data on TV audiences, the demand side of the market. The aim is to analyse if the observed preference of TV channels for broadcasts of male Olympic competitions is properly reflected in the preferences of TV viewers.

In a first time, the author provides an overview about the relationship between sports and television (pp. 132-134). He explains that this relationship is organized around two markets: between sports events organizers and broadcasters (broadcasting rights market); between the latter and TV viewers (sports programmes market). Van Reeth highlights that "*A top sports event guarantees high TV ratings because sport is among the best television can offer*" (p. 133). As the Olympic Games is the biggest sports event in the world, the above applies strongly for broadcasts of Olympic events.

The author then considers gender balance at the Olympics (pp. 134-138). He begins this section as follows: "*Shortly after organizing the men only Games in 1896, founder of the modern Olympic Games baron Pierre de Coubertin declared that 'Olympics with women would be incorrect, unpractical, uninteresting and unaesthetic'*" (p. 134). Nevertheless, 22 women competed at the next Games (Paris, 1900). Van Reeth illustrates the slow process of female representation at the Summer Olympics over time (Figure 5.1 p. 134). The women's shares of total participation and total events became close to 50 per cent in 2012, with women competed in every sport on the Olympic programme. The author mentions the fact that in the past couple of decades a number of studies have analysed the gender balance in TV coverage of the Summer Olympics. He presents an overview and compares the women's TV share mentioned in each study with the women's event share for the corresponding Olympics (Table 5.1 p. 136). This includes 11 studies. The author admits that many more articles have been published on gender balance in media coverage of the Olympic Games but he has not included any papers related to specific sports as his focus is on the gender balance in global TV coverage.

The next step consists of describing the 2012 London Games on Dutch television (pp. 138-140). Van Reeth specifies that in the Netherlands, public channel NPO is the official Olympic media partner with one of its channel, NPO1, exclusively and entirely reserved for TV broadcasts of the London Games. He mentions that in total, the channel aired over 220 hours of Olympic programming.

The author explains that he created his own dataset of Dutch Olympic TV broadcasts by monitoring on a daily basis the Dutch website www.kijkcijferonderzoek.nl. He presents a detailed analysis of the gender balance with women's share in Olympic events, Dutch athletes, Dutch TV broadcasts and Dutch broadcast time (Table 5.2 p. 139). His main finding is as follows: "*For most sports, we observe that the actual women's share in broadcast time is some percentage points lower than the women's share in the number of broadcasts*" (p. 140).

Based on this, Van Reeth considers the disequilibrium on the sports programmes market for Olympic TV broadcasts (pp. 140-144). He evaluates the choices made by the Dutch official broadcaster, presented above, by comparing them with the actual Dutch TV audiences for Olympic broadcasts of male and female events. To make a proper comparison, the author uses the concept of the average minute audience (AMA) for a sport, with the sport-specific AMA measuring the number of TV viewers for all broadcasts of a sport, averaged per minute. He finds "*an important mismatch between the observed men's events-oriented supply of Dutch Olympic TV broadcasts and the demand revealed by the Dutch TV audience, which reflects a clear preference for women's events*" (p. 141). To further analyse this disequilibrium, Van Reeth computes gender-based AMA ratings per sport and compares these ratings with the total broadcast time for each of these sports (Figure 5.2 p. 142). This confirms that there are some important differences between the preferences of Dutch TV viewers and the choices of Dutch Olympic TV broadcaster NPO, with some sports for which an increased share of women's broadcasts would improve overall TV ratings.

The author then discusses the choice between 'pretty' and 'powerful' (pp. 144-145). 'Pretty' refers to 'feminine sports' whereas 'powerful' refers to 'masculine sports' as explained by Van Reeth. He observes how the choices of the Dutch TV broadcaster and the Dutch TV audiences fit into the picture. He finds that "*while for 'pretty sports' there is a significant difference between the choices made by the Dutch broadcaster and the preferences of Dutch TV audiences, this difference is almost non-existent with the 'powerful sports'* (p. 145). This means a kind a disequilibrium on the 'pretty sports' programmes market while the 'powerful sports' programmes market is much more in equilibrium.

The author concludes with a summary of his main findings and the need to explore other elements (pp. 146-147). Even with the latter in mind, he states that, at least for the Netherlands, his results are sufficient to "*safely reject the often heart market-driven argument of TV channels that 'since women sport is less interesting to TV viewers we favour male sports broadcasts'*" (p. 147). His last sentence is that: "*There thus no longer appears to be any excuse for Dutch media to prefer male competitions over female competitions*" (p. 147).

This chapter is very interesting as it deals not only with the supply side of the media market but also the demand side. This enables the comparison between the choices made by broadcasters and the preferences of TV viewers, opening the door to the optimization of the former. This study also contributes to the growing debate on gender equality in sport and more generally in society. It provides an argument that such gender equality can be not only socially desirable but also economically sensible. This double contribution is clearly a major strength of this chapter, making it worth a read.

3. PART II. Teams and leagues with soft budget constraints (pp. 149-249)

3.1. Soft budget constraints in European and US leagues: similarities and differences (Rasmus K. Storm and Klaus Nielsen, pp. 151-174)

In spite of the general opposition between European and American leagues, some authors stress the similarities between the two models, with an 'Americanized' European football (increasing focus on revenue streams and profit) and an increasing awareness of 'glory seeking' ('win maximizing') 'sportsmen' owners in American leagues. As noted by the authors, "*This chapter aims to advance a new perspective in the comparison of European and American sport leagues by deploying Kornaï's soft budget constraint (SBC) approach (Kornaï, 1986, 2001, 2004; Kornaï et al., 2003) in a comparison of the closed American and open European pro leagues*" (pp. 151-152).

In the first section, the authors present a brief theoretical overview of the SBC theory (pp. 152-154). They precise that "*The SBC idea was introduced by Kornaï at the late 1970s in order to describe a situation where public enterprises were rescued financially by public authorities (Maskin, 1999, p.421)*" (p. 152). Kornaï projected the budget constraint expression from microeconomic theory of the household that holds limited resources for spending onto the context of state-owned firms in socialist systems in Eastern European countries. He specified that two possible situations can occur: the firm is left to its own resources (hard budget constraint) and persistent losses will mean that it goes bankrupt after a while; the firm is helped by a superior organization, creditor or authority that provides it with financial aid or assists it in other ways (soft budget constraint). Based on Kornaï (1980a) and Kornaï et al. (2003), Storm and Nielsen distinguish five conditions for assessing whether firms face hardness or softness. They specify that "*such ideal type hardness are not found in reality (Kornaï, 1980b, pp.311–12)*" (p. 153).Using the framework of Kornaï and adding one condition, they differentiate six types of softness: soft administrative pricing (S1), soft taxation (S2), soft subsidies (S3), soft credit (S4), soft investment finance (S5) and soft accounting (S6). According to the authors, the problem is that SBC constitutes a syndrome because of its effects on expectations and behaviour as underlined by Kornaï (2014). Storm and Nielsen mention that the likelihood of softness is potentially high for major professional team sport leagues because of their key socio-economic position in the broader society.

In the second section, the authors illustrate how win maximization and softness seem to persist in European professionalfootball leagues (pp. 154-157). They stress that many clubs are facing soft environmental conditions that effectively result in a high survival rate despite continuous financial problems. They describe the context in European professional football with growing revenues and costs, poor management and operating losses in more than 50% of all top divisions. They provide an overview about the situation in the five main European leagues, namely the English Premier League, the Italian *Serie A*, the Spanish *PrimeraLiga*, the German *Bundesliga* and the French *Ligue 1*. The authors then apply their six types of softness to European football.

In the third section, the authors enhance their analysis by examining the American context within the same framework (pp. 157-166). They begin by a note of caution, stating that they do not claim that the SBC syndrome exists in American sport. Nevertheless, they "*believe that the perceptual filter of hard and soft budgets developed by Kornaï may shine new light on the way American pro leagues function and the differences and similarities of European and American sport*" (p. 157). The authors explain that institutional arrangements privileging team

franchises and league organizations leads to the creation of super profits among franchise owners and absence of innovation and creative destruction rather than shortages and widespread inefficiencies. Based on an economic model of professional team sports suggesting that a win-maximizing club will hire more talent if it faces a SBC (Figure 6.1 p. 159), Storm and Nielsen propose another situation where the club could use its privileged position to obtain an excess profit instead of striving for a higher winning percentage. Their argument is that the American major league franchises hold positions enabling them to subtract additional profits. They then examine what they call 'Inverse Softness' following softening of all six conditions of hardness: soft pricing (pp. 160-162), soft taxation (pp. 162-163), soft subsidies and soft investment finances (pp. 163-165), and soft credit and soft accounting (pp. 165-166).

In the fourth section, the authors expand the typical binary categorizations of professional team sports clubs (PTSCs) into a multiple set of ideal type categories (pp. 166-169). They sum up that "*The expectations of ex post support that characterize the SBC mentality in Europe are turned upside down in the US leagues. Support is institutionalized and provided ex ante, but the mechanisms prompting sponsors and creditors to support the PTSCs are similar in the two otherwise contrasting cases*" (p. 166). Based on their findings of similarities and differences, Storm and Nielsen suggest a new matrix outlining five ideal types of PTSCs/leagues – three in Europe and two in the USA or mainly there (Table 6.1 p. 168).

In conclusion, the authors discuss the origin of the differences between European and US pro leagues before briefly touching upon the future prospects (pp. 169-170).

This chapter applies and adapts a framework built in the context of state-owned firms in socialist systems in Eastern European countries to professional sports leagues. This is a main strength as such a framework is extremely suitable for the analysis of the latter, including the American professional leagues.The section focusing on them is a very original and insightful exercise that meets the objective stated above: to shine new light on American professional leagues and their differences and similarities with European sport. This opens the door to a newframework for further research on the comparison between American and European leagues.

3.2. Governance of professional team sports clubs: agency problem and soft budget constraint (WladimirAndreff, pp. 175-227)

The starting point of this chapter is that in mainstream economics, corporate governance is studied with the principal-agent model in a context where organizations operate in a competitive market and whose residual claimants maximize their revenues leading to profit maximization. Nevertheless, the author notes that "*Transferring such analysis to professional team sports leagues is not straightforward since a league actually does not operate in a genuine competitive market*" (p. 175). Besides, profit maximization is the best hindrance against lasting deficits and debts, and keeps clubs from running under a soft budget constraint. In fact, clubs that do not maximize profit operate in a universe alien to the principal-agent model and the analysis of their budget constraints must prevail. However, lasting club deficits would raise the issue of league financial stability, meaning that the question of hardening clubs' budget constraints would urgently call for appropriate solutions. Based on these elements, the author investigates the governance of professional team sports clubs with agency problem and soft budget constraint.

The first section presents an overview of how the standard principal-agent model specifies the preconditions for good and bad corporate governance when residual claimants aim at maximizing their profit (pp. 176-181). Andreff reminds the main aspects of this model: a profit-maximizing objective while finance and management (or ownership and control) are separated (pp. 177-178); three solutions for managerial disciplinethat can be measured through profit maximization, well-functioning capital market and bankruptcy discipline (p. 179); and how the degree to which these three sorts of discipline are applied enables to rank corporate governance structures on a scale at the lower end of which are found state-owned enterprises where shareholders are non-existent and all decisions are taken by bureaucrats (pp. 179-181).

The second section assesses how well the principal-agent approach can fit with profit-maximizing professional sports teams in North American leagues and with European football clubs whose shares are floated in stock markets (pp. 181-200).

First, the author focuses on ownership and governance in North American professional sports teams (pp. 181-195). More exactly, "*the aforementioned lessons drawn from the principal-agent model are geared towards assessing team profitability and governance*" (p. 181). Andreff notices that North American teams are not stockholding companies and not floated in the stock market. Most of them are both owned and managed by one single rich owner or in some cases two co-owners; the remaining teams are nearly all owned by a commercial company with the exception of Green Bay Packers (publicly traded non-profit company).Ownership in the four major North American team sports league is listed in the appendix (Table 7.A.1 pp. 224-226). So as to assess whether team governance is good or not, the author suggests checking profit maximizing, takeover and bankruptcy disciplines. Table 7.1 shows occurrences of operational losses in North American major team sports leagues over the period 2003-2014 (pp. 183-186) while Table 7.2 focuses on their team asset valuations in 2003 and 2014 (pp. 187-189).Andreff comments these two tables (p. 182 and pp. 190-194) before dealing with bankruptcy discipline (pp. 194-195).

The author then examines the impact of floating-shares of win-maximizing clubs on their governance through the case of European football clubs having experienced an initial public offering or IPO (pp. 195-200). These clubs are listed in the appendix (Table 7.A.2 p. 227). According to the principal-agent model, "*the listed clubs should be in the black nearly every year and be able to distribute dividends to shareholders*" (p. 195). Andreff indicates that this hypothesis is not confirmed in Table 7.3 (pp. 196-197) with most listed clubs having been continuously in the red over the period 2003-2012. He also highlights that the Dow Jones StoXX Europe Football Index covering all listed football clubs had nearly always underperformed in terms of stock returns compared to the Footsie 100 (English listed companies) and the CAC40 (French listed companies), with a 40 per cent loss from 2002 to 2014 and a decline continuing in December 2014 (Table 7.4 p. 199). These elements lead the author to the conclusion that another train of analysis is required for European football win-maximizing clubs.

Andreff switches to soft budget constraints (SBC) in win-maximizing clubs (pp. 200-213). First, he tackles governance in not-for-profit organizations with the distinction between hard and soft budget constraints (pp. 200-203). He demonstrates that SBC drives football not-for-profit organizations into bad governance and lack of financial discipline and confirms this with data for European football clubs in top division over the period 2008-2012 (pp. 203-207): deficits (Table 7.5 p. 204), structure of debts (Table 7.6 p. 205) and frequency of bail-outs that in fact substitute for absent bankruptcies. The author then focuses on French football (pp. 207-211). After having presented cash balance and transfer fee

balance in French professional football over the period 2003-2012 (Table 7.7 p. 208), he observes the occurrences of operational losses at club level in French Ligue 1 (Table 7.8 p. 209) before dealing with its aggregate balance sheet (Table 7.9 p. 210).Andreff ends this section with another element that softens European football clubs' budget constraint: TV rights' revenues (pp. 211-213). The author writes that: "*A sort of vicious circle, from a governance viewpoint (or 'virtuous' circle from a finance collection standpoint), has been witnessed between inflated TV rights' revenues and payroll inflation in French Ligue 1*" (p. 212). According to Andreff, this call for a reform of European football club and league together with a new incentivizing policy towards supporting organizations that surround football.

The next section tackles how to improve European football clubs' governance and management (pp. 213-217). The author provides eight recommendations for hardening clubs' budget constraints (pp. 213-215). He then assesses French DNCG (auditing body supervising French professional football clubs' management) and UEFA Financial Fair Play based on his eight recommendations (pp. 215-217).

In conclusion, Andreff briefly summarizes his chapter (pp. 217-218). His last sentence is as follows: "*The above analysis is a plea for a more comprehensive step further if one wants football clubs to actually reach good governance*" (p. 218).

This chapter gives an overview about governance of professional team sports clubs in North America and Europe with evidence based on data. Another strength consists of dealing with two different approaches, namely the principal-agent model and the soft-budget constraint, that allow the author to deal with clubs having different characteristics and objectives. The content calls for financial regulation to improve club governance, providing an argument for French DNCG and UEFA Financial Fair Play. The latter could rely on Andreff's recommendations so as to improve their efficiency.

3.3. Regulation in leagues with clubs' soft budget constraints: the effect of the new UEFA Club Licensing and Financial Fair Play Regulations on managerial incentives and suspense (Egon Franck, pp. 228-249)

The main pillar of the new UEFA Club Licensing and Financial Fair Play Regulations (FFP) is the 'break-even requirement', meaning that 'relevant expenses' should not exceed 'relevant income' (by more than the 'acceptable deviation' of €5 million that can currently go up to €45 million during the 'monitoring period'). As written by the author, "*A closer look at the notions of relevant income and relevant expenses makes clear that 'football investors' will be confronted with a cap on payroll injections in the future*" (p. 228). According to Franck, the 'break-even requirement' conveys two messages, one to club managers (hard budget constraint) and one to club benefactors (cap on payroll injections). This chapter investigates its effect on managerial incentives and suspense.

The second section (the author considers the introduction as the first) focuses on how the hardening of budget constraints through FFP affects managerial incentives and decision-making in football clubs (pp. 230-235). Franck begins with some elements related to the detrimental managerial incentives resulting from soft budget constraints (pp. 230-231). They generate what the author called a 'zombie race' situation of European football that creates some serious problems: runaway demand for talent leading to the emergence of a 'salary bubble' (p. 231); managerial moral hazard with too much risk and too little care, a consequence of the 'too big to fail' problem (pp. 231-232); managerial rent-seeking with weak incentives to innovate and develop the business (p. 232); crowding out incentives for good management as clubs operating with hard budget constraints that would want to maintain their old level of playing strength by keeping their share of star

players would require higher expenditure in the player market (pp. 232-233). In this context, the author provides some data related to the first results of FFP implementation (pp. 233-235). He focuses on the annual growth in wages and revenues for the 700+ top division clubs over the period 2008-2013 (Table 8.1 p. 234), and their aggregate operating results and aggregate results (Figure 8.1 p. 235). According to him, "*These numbers indicate that FFP seems to influence decision-making in football clubs in the intended direction*" (p. 234).

The third section tackles how the cap on payrolls injections for benefactors affects suspense in European football competitions (pp. 235-244). Franck notes that there are many adherents of an 'ossification of hierarchy' argument as a consequence of FFP. The assumption is that small clubs will not be able to challenge big clubs thanks to unlimited money injections into payrolls anymore. The author has an alternative view: 'money comes to money' (big clubs) rather than small clubs. He starts with a doping analogy which lets think that the favourites will be even more dominant under a regime of unlimited performance-enhancing medication (p. 236). So as to transfer this analogy to the competition between football clubs in an environment with potential money injectors, some terminological issues must be clarified. This is the reason why Franck looks at the relationship between the 'money injections of the past' and the 'new' fair market value transactions with related parties (pp. 236-238). He illustrates this relationship "*by referring to sponsoring as the presumably most important category of transactions, where the fair market value logic of FFP will have to be applied*" (p. 237). Based on this, he demonstrates why only pure success-seeking benefactors will be affected by the FFP cap (pp. 238-240).

It remains to know whether such success-seeking benefactors will inject money into small or big clubs. To do so, the author considers the incentive of football clubs to maximize wins (pp. 240-241). This allows him to establish that "*every club will strive to activate its market potential through good management as successfully as possible in order to increase its spending power and become more competitive on the pitch*", and "*welcome and invest in additional wins every other increase in spending power originating from external sources*" (p. 241). Franck then explains why 'money comes to money' and primarily big market clubs would profit from financial doping, giving some concrete examples with the cases of Paris Saint-Germain, Manchester City and Chelsea (pp. 242-243). Last, the author discusses the effects of the elements developed above on suspense in European football (pp. 243-244). He underlines that this a matter of perspective, with the former competitors of the previous clubs seeing the new owners as having destroyed suspense but seen from the top of European football hierarchy, they have increased competitive pressures for the incumbents. Nevertheless, Franck argues that these positive effects at the top of the hierarchy are presumably transitory and a failure of FFP would accelerate this transition, entrenching the dominance of the clubs from the biggest markets.

In conclusion, the author reminds that the main objective of FFP is the preservation of the long-term financial stability of European football and states that FFP revitalizes the importance of management quality in football (pp. 244-245).

This chapter provides an original view on FFP that contrasts with some other academic analyses suggesting that FFP will have a negative impact on suspense in European football competitions. It contributes to the debate about the effect of FFP and provides some arguments to UEFA so as to communicate on the positive consequences of its FFP.

4. Synthesis

The chapters in the first part are quite heterogeneous in terms of content but all contribute to the intended aim: extending knowledge on economic disequilibrium and competitive imbalance. The chapters in the second part are all focused on soft budget constraints but with different approaches that are complementary and provide the reader with an overview about how the issue can be tackled. As a whole, the book answers its main objective: developing some analyses that are closer to the reality than previous equilibrium models. Economists are sometimes criticized for their normative approaches that are too far from the reality. Disequilibrium sports economics can contribute to a better matching between theory and practice in sports economics. This could even expand beyond sport. As indicated by JánosKornaï himself on the back cover of the book: "*I felt great intellectual excitement after getting acquainted with this volume. The high quality papers by WladimirAndreff and his co-authors are more significant than the topic indicated modestly by the title; they may not only urge economists of sport to reconsider their earlier theories, but may also provide inspiration and a new momentum to the wide research program on disequilibrium and the soft budget constraint*".

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