Performance Enhancement & Health 2 (2013) 210–215

Contents lists available at ScienceDirect

Performance Enhancement & Health

journal homepage: www.elsevier.com/locate/peh

How to produce the belief in clean sports which sells

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ARTICLE INFO

Article history:
Received 1 November 2013
Received in revised form 29 August 2014
Accepted 18 September 2014
Available online 22 October 2014

Keywords:
Doping
Professional sports
Consumers perspective
Faked honesty
Numerical simulation

ABSTRACT

Organisers of sport competitions sell a product, consisting of athletes' performance and integrity of competition. These components are consumed simultaneously. Consumer demand for elite sport is at its highest when athletes perform at a high level and when consumers can believe in the athletes' compliance with the rules. Anti-doping tests are needed because doping cannot be observed directly by consumers but only through the results of doping tests. However, if tests catch too many guilty deviators, consumer belief in the athletes' compliance diminishes. Organisers of sporting events must decide on the intensity of testing in order to stabilise consumer demand. Intensive testing has the potential to deter athletes from using illicit substances or methods, thus leading to a low rate of detected athletes. A low rate of tests will deter fewer athletes from doping, but will also lead to a low number of detected athletes. Both strategies support consumer belief in compliance with the rules but have differing impact on athletes' performance. Using a formal model and conducting a numerical simulation, we show that the present rate of about 2% adverse analytical findings is optimal for maximising the economic value of the competition for consumers, organisers, and athletes. Additionally, we show that the maximum utility of a low test rate can be changed if some specific but implausible criteria are met.

1. Introduction

International sports organisations "produce" athletic competitions and "sell" a product that consists of high performance by athletes and integrity of competition. These organisations typically present themselves as part of the fight against doping. The belief of sports-consumers (e.g. spectators) in the integrity of competition mainly depends on the athletes' compliance with the rules and especially with the World Anti-Doping Code (WADC). Due to its special structure, the product "sport" can be characterised as a coupled product and a complement. The product is "coupled" because performance and integrity can only be produced within the same action. It is additionally a complement because athletes' compliance with the rules is a necessary precondition to produce valid performance and both are consumed at the same time. The consumer cannot know whether the performance complies with anti-doping rules or not, but can only trust in the athletes' compliance with the rules at the time of performance. Whether or not the athlete was doped will be revealed later, after the results of the doping test are known. According to Durkheim (1999), violating norms (like, e.g. doping) is functional if it is detected and sanctioned. Detection and sanctioning of deviant behaviour stabilises the norm as long as the frequency of perceived norm violations remains on a manageable scale. If too many dopers are detected the anti-doping norm will be gradually weakened.

There is some empirical evidence that the integrity of competitions is important for consumers of sport products. For example, Haut, Prohl, and Emrich (2014) studied the importance of Olympic medals won by German athletes for the German population. Medals are perceived as "rather" or "very important" by 51.3% of the respondents, especially those with lower education levels. Using multivariate analyses they show that the desire for medals, and their importance, is highly dependant on the belief in the integrity of Olympic competitions as well as the perception that this integrity is in fact given. The perceived importance of medals won by athletes depends on the discrepancies between expected and observed fairness and doping of athletes. The more the spectators' expectations are disappointed, the less important they consider medals.

These findings support the results presented by Messing and Müller (1996) of a survey among spectators at the 1992 Olympic Games in Barcelona. They showed that spectators consider peak performance the most interesting moment in Olympic sports (90.2%). Olympic Games spectators also think that commercialisation and doping threaten Olympic sports (75.5%/58.3%) but only 21.8% think that doping and manipulation really determine

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http://dx.doi.org/10.1016/j.peh.2014.09.001
2211-2669/

Olympic performance (cf. Messing, Müller, & Schormann, 2004, 2008).

2. Theoretical background

A measurable physical athletic performance (P) exists at the level of sports action. The physical performance becomes a sporting performance if the athletes are acting according to the rules of the sport. The performance is not valid when the rules are not observed. Consumers cannot directly determine if athletes have used illicit substances, but they can see, for example, if a long jump in athletics is valid. Compliance can exist ($C = 1$) when a performance produces a valid result. Non-compliance ($C = 0$) corresponds to a physical performance that is not achieved in accordance with the rules, e.g. an offside goal in football, which is not awarded.[1] During the competition non-compliance is detected by referees, the goal is not awarded, and sporting performance becomes zero. When non-compliance is not immediately detected, such as in the case of doping, the analysis becomes more complex.

As an undetected deviation from the norm, doping enhances sporting peak performance; as a detected deviation from the norm it is detrimental to the integrity of competition. Given the ideal of sport doping is fundamentally unacceptable, but it only threatens the integrity of sport if it is discovered. As an undetected deviation, it increases the performance, followed by demand for sport in the sports market. Detected doping, however, helps to stabilise the faith that the performance of athletes who do not test positive conforms to the rules (Durkheim, 1999, p. 181), but only if the number of detected dopers is not too high. In the case of undetected non-compliance of athletes, the perceived performance (pP) as well as the belief in compliance (BC) with the rules is crucial for the consumers. Thereby each individual consumer can assume a higher or lower probability they are watching "clean" performances. At the collective level we find a distribution in intensity of belief in compliance.

The two complementary components, performance and compliance, each have a different significance with respect to the value of the competition at different levels (Emrich & Pitsch, 2011). As mentioned before, compliance with the rules is a necessary prerequisite for the performance to be valid. At the consumer level, compliance does not increase the value of the sports product, which – assuming that consumers expect compliance by the athletes – depends solely on the quality of the sporting performance. At the level of organisers of sporting events, the perceived compliance affects the percentage of consumers who will be willing to buy the product. If too many dopers are detected and the belief in trustworthiness of athletes is weakened, the percentage of people consuming sports products decreases. Thus, increased consumer belief in compliance will increase the economic value of the competition for the organisers.

3. State of research

Emrich and Pitsch (2011) analysed the relationship between different actors (e.g. IOC, doping control agencies, consumers, athletes) using an institutional economic approach. The starting point of this analysis was the economic assumption that if faked honesty is rewarded more than honesty itself, then individuals will invest in faked honesty. The analysis was theoretically based on a principal–agent relationship between athletes and IOC (including its member associations, respectively), where incomplete contracts and asymmetric information are the main problems. In addition, athlete honesty becomes uncertain for consumers because of asymmetric information (for coordination problems between WADA and NADOs, see Emrich & Pierdzioch, 2013).

These considerations aim to identify the extent to which the presence of doping and doping tests is functional for athletes and sport organisers. Doping allows for the highest possible performance and increases performance density, thereby raising the probability of exciting competitions. The tests aim to detect dopers and stabilise the anti-doping norms on the one hand, and show that many competitors who were tested negatively are trustworthy athletes on the other hand. Emrich and Pitsch (2011) presented an analytic view of an institutional-economic approach that builds on consumers – whose belief in honest athletes is "produced" by investments into this belief – and the asymmetric knowledge about the de facto doping behaviour of individual actors.

Above this approach we find three main classes (cf. Büchel, Emrich, & Pohlkamp, 2014) of game theoretical analyses in the literature: game theoretical analyses of interactions between athletes (e.g. Berentsen, 2002; Breivik, 1992; Eber & Thépot, 1999; Haugen, 2004); analyses of strategic interactions between athletes and control institutions (e.g. Berentsen, Bruegger, & Loertscher, 2008; Kirstein, 2012; Kräkel, 2007; Maennig, 2002; Pitsch, Frenger, & Emrich, 2011; Preston & Szymanski, 2003); and the analysis of the strategic interaction between athletes, control organisation, and customers. In this third analysis by Büchel et al. (2014) they expanded the inspection game by introducing the customer as an additional player. They start with the athletes who can decide to dope or to be clean. They then consider the organisers. The organisers decide on the test rate that affects the probability of athletes to be tested. Finally, they consider the customers who decide to take part in or abstain from watching future competitions.

As Büchel et al. (2014) showed, consumer behaviour after a doping scandal (doping scandal means that the test results have been published and the deviator is known) may change the doping rate, but customers trigger doping only if a high number of doping tests are conducted by the organisers and many dopers have been detected. The results further show that by changing the information structure about the conducted number of doping tests for each athlete taking part in a competition, a doping-free equilibrium can be reached.

In the model presented here, the inspection game is combined with the institutional approach used by Emrich and Pitsch (2011) by linking the supply side of the organiser and the demand side of the consumer. The game theoretical analysis of Büchel et al. (2014) implied this idea, but it was used to model consumer decisions after a doping scandal to watch the following competition or to abstain from buying a ticket (see Büchel, 2014, for sophisticated customers and more critical customers). In this case, the authors assumed doping rule violations were definitely known by potential consumers. Conversely, we will assume consumers are uncertain if the athletes will use illicit substances or if their performance will conform to the rules when they make the decision to watch a competition.

Organisers must produce consumer belief in trustworthy athletes with doping controls. If too many dopers are detected, the belief in honest athletes and winners diminishes; if no dopers are detected, the belief in the doping control system diminishes. Consumer belief in athletes' trustworthiness is disappointed when organisers conduct many tests that lead to detecting and identifying doping athletes. Consumers will then decide whether they will consume the product again in the future or not – in economic terms, whether or not they will buy a ticket to an event.

Further enlarging the model of Büchel et al. (2014), we assume that consumer decisions regarding whether or not to partake of

[1] Another example in long jump may be a jump amplitude, where the board is not ecountered. Here exists definitively a physical performance which is far from zero. But this physical performance is not measured in the sporting competition because it is not achieved within the rules (that means $C = 0$). Because of that, the high physical performance cannot become a high sporting performance.