

RISKS TO THE INTEGRITY OF SPORT FROM BETTING CORRUPTION

A Report for the Central Council for Physical Recreation
by the Centre for the Study of Gambling, University of Salford

Research Team:

David Forrest	Professor of Economics
Ian McHale	Senior Lecturer in Statistics
Kevin McAuley	Research Officer

February, 2008

RISKS TO THE INTEGRITY OF SPORT FROM BETTING CORRUPTION

1. Introduction

The histories of sport and gambling have been closely entwined ever since modern games first developed. For example, the laws of both cricket and golf were codified for the first time in 1744 and, in each case, it was with betting interests that the initiative originated. They needed to have contests settled with consistent rules and a governing body that could adjudicate on disputes on which the settlement of bets might depend (Munting, 1996). Thus began the modern history of two of our most popular sports.

Concern that opportunities for corruption associated with betting markets threaten the integrity of sport has been a recurring theme in the relationship between the two sectors. In the eighteenth and nineteenth centuries, cricket was particularly notorious for manipulation linked to wagering. Munting cites a newspaper editorial of 1774 as lamenting that the game had been perverted from “innocent pastime” by “excessive gaming”; and in 1832 Mary Russell Mitford, while writing evocatively of village cricket, dismissed matches at Lords as “affairs of bettings, and hedgings, and cheatings” (Mitford, 1832).

Periodic scandals regarding the manipulation of sports events on behalf of bookmakers or bettors, or for the direct gain of players or officials themselves, have continued to emerge in the twentieth and twenty-first centuries. At Appendix A, we supply a list of the more prominent cases of the last hundred years in which accusations have been made and sometimes proven. The two that related to the very top events and levels of play of the respective sports were the World Series of Baseball scandal of 1919 (when eight players from the Chicago White Sox were banned for life for ‘throwing’ games against Cincinnati) and the Hansie Cronje affair of 2000 (where the captain of the South African cricket team was found to have manipulated the result of a test match against England and to have induced individual players to adjust their performances in other games in line with directions from a bookmaker).

As with other financial crime, such scandals as emerge provoke speculation that they are the tip of a much bigger iceberg and that many other cases of 'fixing' remain undetected. Such loss of confidence is a major threat to a sport since it is likely that attendance and television demand will be undermined and that sponsorship possibilities will diminish because corporations hesitate to be linked with an activity with an unsavoury reputation. Less tangibly, but probably of more fundamental significance, there is a cultural loss to society itself when a sport is perceived as no longer being conducted according to its ideals but rather as a subject for manipulation for the financial gain of players, officials or third parties.

2. Risks in the twenty-first century

We have noted that fears that sports events will be 'fixed' for betting gain are nothing new. But it would be fair to say that concern is growing and in this section we suggest that this is understandable given changes in the betting market since the Millennium. These appear likely to have increased the potential for corruption in the absence of appropriate action by sports governing bodies, regulators and government to address new threats. Many of the developments that have increased risk are related to the rapid growth of remote betting and especially wagering through the internet. The availability of e-betting has increased the liquidity of sports wagering markets, made them more competitive, promoted the growth of new modes of betting (exchanges and index (spread) betting) and facilitated the offering of new types of bet and of in-play betting. All of these changes have potential to affect incentives for athletes and officials to participate in 'fixing' (by fixing we mean not just manipulation of the final outcome of the event but also of any aspect of the play that makes up the game).

(a) Liquidity

Betting on sport has been increasing in volume throughout the present decade. Within Britain, recent evidence from the British Gambling Prevalence Survey (National Centre for Social Research, 2007) indicates that fully 10% of adult males bet with a bookmaker on events other than horse and dog racing; and 7% of adult males responded positively to a question on whether they had bet on the last football World Cup. Of course, the market for betting on British events extends far beyond this country. In the case of football, the growth of international television coverage of the

Premier League has fuelled interest and industry sources suggest that Far Eastern betting turnover on this competition alone amounts to over US\$500m per weekend.

Cricket is another sport that attracts remarkable betting interest from across the world. Here the focus is on international games. According to Lord Condon, head of the ICC Corruption Unit, the amount wagered on an important one day international cricket match can approach US\$1b.

The rising volumes of betting in themselves make the incentive to fix greater. In a market with low liquidity, the amount of money that a syndicate could stake without driving the odds against itself is limited, reducing the payoff from an initial investment in bribery. Potentially the greatest absolute rewards to a successful fix will be found in the most liquid markets and here the risks of detection will also be lower since high bets will be commonplace. Of the sports on which this Report focuses, liquidity is typically highest for football, cricket and tennis.

(b) Increased competition

That bettors now have access to bookmaker websites located around the world has considerably intensified competition in the industry. A dramatic manifestation of this was that the UK government was induced to reform betting taxation in October, 2001, scrapping altogether the duty imposed on bettors themselves. This was a direct response to growing leakage of betting turnover to offshore bookmakers (Paton, Siegel and Vaughan Williams, 2002).

The greater competition has not only compromised the ability of governments to claim tax revenue from the betting sector but also it has put downward pressure on bookmaker margins (for evidence in the case of football, see Deschamps and Gergaud, 2007). These falls in betting transactions costs makes it more lucrative for those with inside information to exploit their knowledge that quoted odds are in fact inaccurate. Note that a fix can be considered as an extreme form of inside information to the extent that some participants in the market know that there is to be an attempt to manipulate the fixture.

Competition has also induced bookmakers to lower their defences against inside traders and fixers. Pressure to maintain market share lead UK bookmakers gradually to abandon their traditional prohibition of singles bets on football matches. At the start of this decade, a singles bet could not be placed on football (except on televised matches). It was necessary instead to make a combination bet, either across three games or on the half- and full-time scores in one. This was a useful deterrent against fixing. Suppose one could arrange for a match to be ‘thrown’. To be sure of a successful fix being profitable, one would have to make, effectively, multiple bets, with bookmaker commission charged on each (for example combining a bet on the anticipated outcome of the subject game with a variety of bets to cover different possible outcomes in two other fixtures). The additional costs made investment in a fix a financially less attractive proposition (Forrest, forthcoming). However, the restrictions have now eroded to the point where singles bets are available across all professional and semi-professional leagues in England and Scotland.

(c) Modes of betting

The internet has famously facilitated person-to-person trading, as in e-Bay, and one of the most successful areas of application is betting. Betfair.com began operations in 2000 and is the largest of eight betting exchanges available in Britain (European Commission, 2006). Its business model is to earn income from commission charged for bringing together, through electronic matching, bettors who want to wager on either side of a proposition. One party who wishes to ‘back’ the proposition (such as Manchester United will win the game) is matched with another who offers to ‘lay’. A layer is in effect acting as a bookmaker. Exchanges therefore provide a way for small time traders to act as bookmakers without the requirement to obtain premises, a licence, etc.. This represents erosion of entry barriers that has again added to the competitive pressures in the UK industry.

Unsurprisingly, traditional bookmakers have been very critical of betting exchanges. Amongst their charges is that the introduction of this new mode of betting raises the likely incidence of fixing in horse racing and other sports.

The first relevant point is that an exchange offers new opportunities to cheat. For example, in racing it has always been possible for a trainer or jockey to ensure that a

horse would under-perform; but the fix would not necessarily allow a profitable bet because it could not be known for sure which other runner would win instead. With an exchange, however, the errant trainer or jockey can 'lay' the horse and a profit is guaranteed if it loses. The Chief Executive Officer of Ladbrokes (cited in Griffiths, 2005) speculated that this led to one race per day being subject to a fix. The claim attracted some credibility when an owner, Miles Rodgers, was warned off by the Jockey Club after making money from laying his own horses. However, the argument does not apply to individual or team sports where an event has only two participants: 'laying' in this case is simply equivalent to placing a traditional bet on one's opponent (but see below for a demonstration that exchange betting does offer new opportunities to cheat in its in-play sports markets).

The second way in which the availability of exchanges has been claimed to have increased risks of cheating is that exchanges appear to have lower incentive to guard against fraud than bookmakers. This is because exchanges claim income from a commission when they enable a transaction: they have no financial interest in whether the seller (layer) or the buyer (backer) wins the bet. By contrast, in traditional betting, every wager is between the bookmaker and a client and if the client wins from a fix, he wins directly at the bookmaker's expense.

In defence of the exchanges, while they have no immediate financial interest in detecting fraud, they may be incentivised by the likelihood that clients will be deterred from using exchanges in the future if they attract a reputation for being dominated by inside traders and cheats. The dominance of one operator in the UK market makes it more likely that attention will be paid to this issue since the reputation of the firm and the industry are close to being the same thing (the bookmaking industry is more fragmented so that individual firms have less reason to spend resources on measures that bring benefit to the sector as a whole). The dominant exchange provider, Betfair, argues that in fact its environment is hostile to cheats because transactions leave an audit trail and its technology facilitates detection of unusual betting behaviour. It was evidence from Betfair that allowed the Jockey Club to proceed in the Miles Rodgers case and it was Betfair voiding bets that led to the investigation of the as yet unresolved Davydenko case in tennis.

It is in fact difficult *a priori* to judge whether bookmaker or exchange betting is riskier for sport. Bookmakers have an obvious incentive to be alert to fraud. But it is unlikely that it will be profit maximising for them to show the zero tolerance that sports governing bodies would prefer. For example, in a given betting market, there may be an inflow of funds that could be suspected to be from fixers. The bookmaker may be prepared to live with this if there is sufficient (uninformed) money to the other side of the proposition to finance the pay-outs and still leave him with a net win from the event. In effect, the fixers win at the expense of innocent bettors (rather than the bookmaker). This was exactly the model of Dowie (1976) who examined cases in British horse racing where odds moved sharply during the betting period. He showed that informed insider traders could have made very substantial positive returns from bets placed early and this was at the expense of uninformed bettors who continued to wager later. He termed betting as 'inequitable' because of the suspected redistribution of wealth from uninformed to insider traders. His analysis could be applied exactly to the special case of insider trading which we term the fix.

In addition to bookmakers and betting exchanges, bettors may also wager via the index, known in Britain as the spread, betting market. This is a high risk mode for participants since losses, as well as wins, may be many times stake and this requires players to hold large deposits at the firms offering the service. Participation in this market is very low (1% of adults, according to the British Gambling Prevalence Survey); but volumes can be high and innovation in subjects available for betting has induced bookmakers similarly to widen their product offering. Since its inception, index betting has been regulated by the Financial Services Authority. Paton, Vaughan Williams and Fraser (1999) argued that strict FSA rules concerning the registration of bettors make it harder than in the case of bookmakers to engineer a fix without risk of detection.

(d) In-play betting

While in the past there have been some limited bookmaker markets during sports events, in-play betting has been popularised only with the emergence of exchanges whose technology routinely permits participants to continue to trade throughout a fixture. This offers new opportunities for athletes to manipulate an event for betting gain. Specifically dangerous is that a player may be able to generate a profit in the

betting market by under-performing for part of a match while still retaining the chance of winning the match in the end. Since the pain of defeat offers some deterrent against 'throwing a game', the emergence of opportunities to win in both the betting market and the match appears likely to make corruption more widespread.

An example may be drawn from tennis. Suppose a favourite is confident he can win the match even if he loses the first set. He may then decide in fact to lose the first set since this sets up the opportunity for a guaranteed betting gain by a combination of 'laying' himself before the event and then 'backing' himself (through a co-conspirator) after the first set. The arithmetic of this manoeuvre is set out in detail in Appendix B. The possibility for betting gain irrespective of match outcome arises because advantage can be taken of the predictable lengthening of the odds against the player winning the match if he goes behind. While the absolute amount to be won is constrained by the extent of the movement in odds and by the liquidity of the market, the proposition may be attractive to professional athletes amongst whom over-confidence is likely to be a common character trait and who may even be attracted by the challenge of 'coming from behind'.

The grey area between fixing and exploiting other forms of inside information can be illustrated by this example from tennis. As noted, a guaranteed betting gain can be shown to be possible if the favourite underperforms such that he loses the first set. In some cases, this may actually be the decisive factor that persuades the player to play within himself early in the match. However, in other cases, he may have planned to do so anyway because it may not suit him to exert maximum effort if his focus is on the following tournament. This practice of underperformance, known in the sport as 'tanking', existed before the new betting opportunities were available. But now, in the contemporary gambling environment, the player, or connections familiar with his plans, can use their knowledge for betting gain. In this case, the availability of in-play betting cannot be said to have caused the underperformance. But if the betting transactions by the player or those associated with him come to light, the reputation of the sport will still suffer. First, there is observational equivalence between a fix and use of other insider information, since both will be characterised by underperformance by the athlete and betting against him by associates, hence suspicion of cheating will be high. Second, if players or others take advantage of inside knowledge to win

money, at the expense of fans who enjoy betting on their sport, this may itself be regarded as a form of cheating, or at least as distasteful. Thus the new opportunities presented by in-play betting may lead to a questioning of the integrity of the sport even if they do not cause significant change of behaviour on the court itself.

Similar risks apply in the snooker and darts markets but they are unlikely to be of the same degree. Liquidity is lower, so that potential profit from betting manoeuvres is more constrained. And the nature of the sports has not generated the same phenomenon of players reserving effort for strategic reasons.

(e) Proposition bets

Greater competition for market share has induced the gambling industry to offer an increasing range of subjects beyond the traditional one of which player or team will win the match. These betting products are attractive partly because they make following an event more interesting and partly because they enable the bookmaker to cater for a variety of risk preferences. For example, football matches are typically played between fairly well matched teams, selected by past achievement to play in the same division. Win odds therefore seldom depart very far from evens. The event will not appeal to bettors with high risk preference who, for example, like to back horses at longer odds. Such bettors may however be attracted by betting on which footballer will score the first goal in a match since this market will feature a wide range of odds, similar to the pattern of odds in a typical horse race.

The large variety of aspects of a match on which it is now possible to bet, whatever the sport, is testimony to the creativity of the betting industry. But many of the new types of bet available raise concerns for sport because they appear to offer more scope for fixing than bets on final outcome. For example, they may relate to aspects of the game under the control of a small sub-set of players or officials (making it easier to arrange a fix) or they may relate to components of an event that are fairly marginal to final outcome (tempting athletes because winning the bet need not involve losing the game).

For this Report, we have conducted an exhaustive survey of what subjects are regularly available for betting in each of eight sports (association football, cricket,

darts, golf, rugby league, rugby union, snooker and tennis) in the betting exchange, bookmaker and spread betting sectors. The bets offered in association football, cricket, darts, golf, rugby league, rugby union, snooker and tennis are listed as Appendix C. For each type of bet, we reviewed how dangerous the particular betting market was likely to be in terms of scope and incentive for fixing. Judgements were informed by a theoretical model that captures incentive to fix and by a review of historical and statistical evidence of occurrences of betting corruption in sport.

It should be noted that we do not cover all types of bet that have ever been available on the seven sports. We record only those offered in British markets, currently and on a regular basis. Thus our list does not feature markets that have been withdrawn, perhaps because of a perception of widespread manipulation (for example spread betting on the time of the first throw-in in a football game). Nor does it feature novelty bets, typically invented by a marketing department of a betting firm to promote wagering on a particular event, that have appeared on only a one-off or occasional basis. Some of these, such as bets on the number of England players wearing sun glasses in the field on the morning of a cricket test match, appear to be open to fixing by players without any damage to team prospects. But we are not especially concerned by incentives to fix in these cases because the markets on such novelty bets are typically highly illiquid given that bookmakers impose low limits, in the tens of pounds, on the stake they are prepared to accept.

3. An economic model of fixing

The neoclassical economics paradigm has proved a powerful tool with which to inform understanding of, and debate on, a number of areas of social policy. The starting point in modelling is invariably an individual agent whose actions are posited to be determined by a consideration of the benefits and costs, in terms of ‘utility’ (an evaluation of satisfaction that covers both financial and non-financial considerations), of each alternative decision. In this spirit, Erlich (1996) models the incidence of crime by focusing on the potential offender’s decision as to whether to commit the criminal act. This potential criminal will weigh expected benefit against expected cost. Adapting this general theory of crime, Forrest and Simmons (2003) focused on the decision of the individual athlete as to whether to attempt a fix and represented the decision as being driven by whether expected benefit exceeded expected cost.

Implicit in the model is an assumption of risk neutrality. If an athlete is in fact risk loving (and it is possible that the occupation includes a disproportionate number of those with a taste for risk), the crime of fixing would occur more often than the model suggests; but the responsiveness of the propensity to fix to each explanatory variable would always remain in the same direction.

In the exposition that follows, we refer to athletes. But the framework should be understood as similarly accounting for the behaviour of referees and officials; and in due course we will consider referees as well as athletes when commenting on circumstances conducive to a fix.

In the model, an athlete seeks to maximise utility. In considering a particular opportunity for fixing, he will evaluate its expected impact on his utility. He will attempt a fix if the expected change in utility from deciding to fix is positive. This expected change in utility from fixing is given by the expression

$$E\{U_{FIX}\} = (1-p)[qU(Y+G)] + (1-p)[(1-q)U(Y)] + p[U(Y-F-R)] - U(Y) + U(C)$$

where

p = probability of detection

q = probability of fix being successful (an attempt may fail because of play by opponents or team mates uninvolved in the plan to fix)

Y = current wealth

G = gain in wealth from an undetected and successful fix

F = financial penalty incurred if the fix is detected (fines, loss of salary or prize money while suspended)

R = value of loss of reputation if found guilty of fixing

$U(C)$ = utility linked to the act of cheating itself (i.e. whether or not detected)- this may be positive (from thrill) or negative (from feeling of guilt).

Many of the components that make up $E\{U_{FIX}\}$ will be the same for any athlete offered a gain G to fix a match. But players will be heterogeneous in respect of F (because, for example, younger players have more to lose in future salary than veterans) and $U(C)$ (because they differ in their tastes and in their ethical values). This implies that there will be an upward sloping supply curve of fixes, with different players requiring different values of G to accept a proposal that they should fix.

The model is useful because focusing on each component in turn is a systematic way of thinking about what sports governing bodies, betting companies, regulators and legislators might be able to do to reduce the volume of fixing. That they will be able to do something is implicit in the fact that the supply curve of fixes is upward sloping.

The following are amongst the predictions that emerge from the model.

(i) The greater the probability of detection (p), the fewer players will attempt to fix.

This prediction underlines that sports governing bodies have the capability to reduce fixing by greater investment in the monitoring of the performance and behaviour of athletes. They are likely to require the assistance of regulators and the betting industry in reporting of unusual betting patterns that suggest a need for particular incidents to be reviewed or particular players to be monitored. A limitation of such cooperation is that strong monitoring of betting activity may induce conspirators in a fix to place their wagers through other jurisdictions.

(ii) The lower the probability of a fix being successful (q), the fewer players will attempt to fix

This prediction highlights the need to consider the nature of the sport and the subject of the bet when assessing the risk of corrupt behaviour. A one-on-one sport such as tennis or darts is easier to fix than a complex interactive sport such as football because in the former only one player has to deliver underperformance whereas in the latter even a significant subset of players may find it hard to arrange the score. In team games, it may therefore be the case that bets on aspects of the game to a large extent under the control of an individual are more likely to generate fixes (for example, the number of penalty conversions in a rugby match, the number of yellow cards handed

out by the referee in a football match, the number of runs for a named player in a cricket match).

(iii) The smaller is the gain from a successful, undetected fix (G), the fewer players will attempt to fix

Amongst the lessons here is that dangers of corruption are greatest in more liquid markets since, not only is detection risk lower, but also the amount of money that can be won is higher and this provides more capital with which betting rings can offer players inducements to fix. When G is higher, more players will agree (we note that there may be cases where threats, as well as or instead of inducements, are offered to players- but of course betting rings with this approach will still increase their activity when the gains to betting are increased and so the effect on the number of fixes is the same).

The liberalisation of betting markets, for example the end of restrictions on singles betting in football, has increased the profit to be had from fixing one game and therefore the potential for offering high values of G to players. Betting rules are therefore relevant in controlling the amount of corruption though the globalisation of the market makes policies to control rules in any one jurisdiction less effective.

(iv) The greater the financial penalties associated with detection (F), the fewer players will attempt to fix

The very high pay in some professional sports offers some insurance against fixing to the extent that implausibly high values of G would be necessary to induce, for example, most Premier League soccer players to risk their future earnings. In broad terms, the pay gap between the sports was proposed by Preston and Szymanski (2000) to offer a partial explanation for cricket evidently being more corrupt than football. And the long running attempt by US legislators to make betting on college sport by Nevada sports books illegal reflects a feeling that athletes who are not paid at all ($F = 0$) might be especially susceptible to inducements, just as the model suggests.

Even in the highest paid sports, there are weak links however. Referees and umpires are typically paid much less than players and have great capability, in some settings,

to influence outcomes. In the case of football, career length is also short, another factor in making F low for referees detected as fixers. That is why the criminal justice system has to provide additional penalties to deter corruption and why we will suggest that sports governing bodies might initiate proactive policies to make bribing an official harder. Veteran players are in a similar category because they too have little financial loss from bans from the game if they are about to leave the sport anyway. Such considerations should inform sports' monitoring practices. It is realistic, for example, to suppose that a veteran goalkeeper (low future earnings from the sport, high influence on match outcome) is more likely to be targeted by a betting ring than a mid-career midfielder.

(v) Players with lower values of $U(C)$ are less likely to agree to a fix

Part of the loss of utility from taking part in a fix is the loss of sporting glory when the athlete has to make an error or when he or his team loses the match. Risk to the integrity of a contest therefore increases when a contest doesn't matter much to players and their supporters. Routine one day cricket internationals, of which so many are played, are therefore more likely to provoke a fix than World Cup matches; and contests within a 'dead rubber' may be a more plausible setting for malpractice than a series decider. Of course, there is often low liquidity in a betting market on a meaningless game but, nevertheless, there is still high volume in markets on, for example, end-of-season fixtures between mid-table Premier League football teams.

In general, it is in the nature of sportsmen that they like to win even if the importance of winning is less on some occasions than on others. We therefore perceive styles of betting that permit a successful fix to be undertaken without the necessity of losing the match to carry high corruption risk. In such cases, $U(C)$ is liable to be low and this will often radically increase the number of players who would accept a given G . This appears to be at the root of several scandals in American sports where players of the stronger team arrange to win the match by fewer points than a quoted spread. The match is won but a bet against them is still a winning bet. This makes handicap betting inherently more risky for the sport than odds based betting systems. Again, to give another example, we have noted above that in-play betting allows athletes to flirt with defeat for betting gain while retaining the chance of winning the sporting contest

in the end. It is then likely that there will be less resistance to an inducement than if the player had to commit actually to lose the match.

The model generates a set of predictions that accord with intuition. But the formal approach yields a taxonomy of considerations that can be useful in structuring thought on policy. We shall employ the predictions of the model in our assessment of the relative risks to sport from different styles and subjects of bet. Before then, we review some important cases where corruption has come to light and what can be learned from a consideration of the circumstances in each case.

4. Some well known betting scandals

(a) Baseball: the 1919 World Series

The World Series was then, as now, the showpiece of baseball. Though there was a ‘not guilty’ verdict at the criminal trial, sufficient evidence emerged that eight members of the Chicago White Sox team had ‘thrown’ games in the series that they were banned from the sport for life, along with a ninth player who was aware of the fix but did not report it.

The case demonstrates that corruption can affect the highest level of sport and this is of course because the biggest gains from a fix can be made in the thickest markets. One of the players involved, Joe Jackson, confessed subsequently and claimed that he had been promised \$20,000 to take part in the conspiracy. Thus it is possible that the betting ring was willing to bribe the eight players to the extent of some \$160,000, an enormous sum ninety years ago and probably only a feasible amount in the World Series when betting interest is most frenetic and when the market can therefore absorb very high wagers. Even so, the odds for the other team, Cincinnati, shortened sharply before the Series, indicating either that a very large sum was put into the market by the fixers or that news of the fix leaked to other bettors. Such movements in odds are likely to occur when a fix is planned (but can of course occur for other reasons).

The World Series conspiracy appears to have been organised by one of the Chicago players, Arnold Gandil, who was a friend of the instigator, a professional gambler. Gandil recruited the other players. The use of an insider to enlist others for fixing was

similar to the South African cricket case eighty years later when the then Captain used his position to induce others to cheat. This mode of organisation lowers chances of detection since an insider can better judge who on a team can safely be approached; another factor is that if a player not involved finds out about a fix, he is less likely to report it if it is one of his team mates who seems to be the organiser. Betting rings will place great value on having insiders on high level teams and are likely to be reluctant to let them retire from the role (for example, they will use past cooperation with them as the subject for blackmailing the player to continue to fix).

It is apparent from contemporary accounts that the players who were banned blamed the affair on the club owner: they were tempted because Chicago, in an era well before free agency, famously paid players very little for their talent. Again there is some echo in the South African cricket affair. Preston and Szymanski (2000) link this to the relatively very low share of the sport's revenue claimed by players which, in terms of our model, lowers F and, less tangibly, breeds player resentment against the system. In one sense, cricket is the only sport still without free agency. The economics of the sport are that the only substantial income is generated in competition between national teams and players are usually qualified to represent only one national team. They are unable to benefit from competition for their services in the same way as, for example, footballers.

(b) Cricket: the Cronje scandal, 2000

Following the emergence of evidence from the police in India, the King Commission was convened in June, 2000. Its purpose was to inquire into accusations that Hansie Cronje, the Captain of South Africa, had accepted money from bookmakers in India and elsewhere and had in fact engineered the result of a test match against England. He was also alleged to have encouraged his batsmen to lose wickets in another game and to have offered money to members of his team to underperform (in a one day international) relative to scores specified by a bookmaker. The inquiry resulted in a lifetime ban for Cronje and suspensions for two other South African players.

In the hearings, Cronje admitted that he first took money to encourage his team to lose wickets on the final day of a match in which South Africa was already in a highly adverse position. He said he was therefore 'taking money for nothing'. Of course,

while the result was perhaps not affected by his behaviour, it could still have been of interest to a bookmaker to influence the size of the team's defeat if this was the subject of betting. Another plausible interpretation is, however, that this was a case of entrapment. A bribe is more likely to be accepted if the player does not perceive that it matters for match outcome. But once he takes part in corruption at all, he is more likely to do so subsequently, and in ways that have a more substantive impact, because he fears exposure if he does not continue to comply with the demands of those from whom he had accepted money earlier.

The focus in this affair was on the captain of a team and this is to be expected. Betting on cricket is high volume and substantial gains are available if a successful fix can be arranged. Success is much more likely if the corrupt agent is one who can influence the outcome on his own without the need to fund others and in cricket the captain is in this powerful position: he decides on declarations and he dictates strategy by, for example, instructing his batsmen how they should play on a scale between carefulness and recklessness.

In Cronje's case, as well as influencing the course of matches, he was also alleged to have offered sums of \$15,000 to individual members of his team to either score fewer runs than a certain number or concede more as bowler than a certain number. These bribes were plainly useful to betting interests because of the development of betting markets on individual performance. In the case of a batsman, scoring few runs is relatively easy to engineer and this raises risks to the level previously associated with one-on-one sports. In the case of bowlers, the captain is perhaps required as a co-conspirator since he may otherwise take off a bowler who is underperforming.

The highest status match included in the affair was the final test between South Africa and England in the 1999-2000 series. It was a 'dead rubber', South Africa having already won the series. Cronje's decision to forfeit an innings gave England a chance of winning which they took. Had the scandal not broken, Cronje's reputation may not have suffered from defeat because the prize of the series was already his and he gave the crowd an entertainment through a 'sporting' gesture in a game that had seemed certain to be drawn. We see here a combination of circumstances in which manipulation is attractive: there would be money to be made for someone (in this case

for a South African bookmaker who bribed Cronje) if the result were unexpected; but the result would not be too damaging to the perpetrator.

Another lesson from the affair is that manipulation of sports events involving English teams can result from corruption in betting markets in a variety of countries. Those searching for evidence of fixing cannot restrict their attention to the way in which the UK industry is conducted.

(c) Association football: the Bundesliga scandal, 2005

The involvement of referees in match fixing in the German League came to light because of the extreme behaviour of Robert Hoyzer who engineered the result of a Cup match in August, 2005, by awarding the team he was to favour two highly dubious penalties and its opponents a damaging red card. Desperate measures were called for since the team whose victory he was to facilitate already trailed by two goals. His intervention was successful (the team came from behind to win 4-2) but involved such blatantly biased decisions that investigations were instigated by both the governing body and the judicial authority. In January, 2005, Hoyzer confessed and cooperated with prosecutors, which led to investigation of four other referees and the trial of one. Hoyzer nevertheless received a 29 months prison sentence.

A number of points of interest emerge from the affair. First is that corruption appeared to be widespread in German football, primarily in lower divisions. Prosecutors claimed that 23 matches had been fixed between April and December, 2004 (and, since successful crime remains undocumented, the true figure may have been higher). Second, football is so prominent a sport that even markets on lower league games are liquid enough to generate high betting gains to those who fix matches: the prosecution claimed that the criminal who bribed Hoyzer had made nearly €1m from that one Cup result that triggered the investigation. Third, this enables inducements to be offered to referees that are very high relative to their salaries: Hoyzer received over €60,000 for fixing this particular game. Fourth, the problem of corruption has an international dimension: Hoyzer's payments came from the leader of a betting ring located in Croatia. Strict regulation of one country's betting sector does not guarantee to protect its domestic competitions from corruption since betting interest is international.

(d) Basketball: the NBA referee scandal, 2007

Following information passing somewhat fortuitously into the hands of the FBI (which was investigating organised crime and not specifically sport), the NBA referee Tim Donaghy admitted to influencing games during seasons 2005-06 and 2006-07. Amongst the ways in which he had done this was to call games so as to give more points to each team. This is relevant to betting interests involved in the 'over-under' market and is less likely to come to light than fixing match outcomes since it does not require the referee to display bias towards one side. Donaghy benefited from fixes both by betting himself and by passing on tips (at \$5,000 per correct selection) to an illegal bookmaker. He was found guilty but cooperated with prosecutors in the hope of a reduction in sentence. This involved naming other referees he claimed were doing the same thing. These latter accusations remain to be resolved. The outcome will be important in revealing whether professional basketball has a serious problem. Donaghy claimed to suffer from a pathological gambling disorder and his participation in crime could, if only an isolated case of referee corruption, be characterised as a one-off and unexpected failure of the NBA system of protecting the integrity of the sport. Certainly NBA officials are well rewarded financially (\$85,000-\$300,000 per year, depending on experience) with salaries very high relative to what Donaghy was paid for his tips (though it was not revealed how much he had won from his own bets).

It remains to be seen how extensive a problem exists in the NBA. At the very least, the case suggests that even highly paid officials should be audited and screened for gambling habits. A dysfunctional gambler who referees may be more tempted to fix because of an urgent need to make good his gambling losses and, if he comes into regular contact with illegal bookmakers, is more liable to be approached with inducements.

Corruption in sport comes to light too infrequently to identify trends in any statistical sense. Nevertheless, it is striking that referee corruption has been proven not only in the NBA but also in the Czech, Chinese, German and Italian football leagues (in the last case for motives unconnected with betting) in this decade. Further, the cases tended to come to light only by chance or, in the German case, because one referee

went too far in how much influence he attempted to exert on a match. We are persuaded that the events documented above signal that sports governing bodies should have very proactive programmes to guard against corruption involving officials, especially in sports such as football or cricket, where judgements on individual incidents routinely determine the outcome of the contest and where the decisions are difficult and subjective so that apparent errors do not stand out as suspicious. Certainly our model suggests that referees are an obvious focus for betting rings to consider. They are low paid compared with players; they have high influence on both final outcome and aspects of play so that a bribe does not have to be spread thinly across a group of players; the chances of detection are low since they are not part of a team unit and any errors can be readily explained away. It should also be noted that a corrupt referee need not succeed in the fix in every game (sometimes he may have limited opportunity to do so without truly extreme decisions) but can still deliver betting gains across a series of matches so long as he nudges the score in the required direction when he is in a position to do so. Retaining the services of a corrupt referee will therefore be an attractive option for criminals.

(e) Tennis: the Davydenko case, 2007

Tennis meets many of the criteria for a sport at risk of betting related corruption. Contests are one-on-one, so events are easier to fix and the amount available for bribes can be spent on just one individual; payoffs to fixes can be high because large wagers can be accommodated in a highly liquid market; and betting exchanges provide novel ways of manipulating a match for gain even without necessarily losing it.

The issue of the integrity of tennis has come to public attention as a result of a match in a tournament in Poland in August, 2007. A very senior player, the then world number four Nikolay Davydenko, lost a match against a player 83 places below him in the rankings by virtue of retiring in the third set. Although its rules stipulated that the result stands even if a win is via such a route, Betfair in fact voided all wagers on the match. It had been suspicious given strong lengthening of the odds for Davydenko before the match and exceptional turnover for a match without high profile (£3.5m). The Tour authority is conducting an inquiry that has involved interview of the player and his wife and review of telephone records. On the face of it, the movement in odds

taken on its own is consistent with leaking of inside information that Davydenko was likely to have to retire through injury; but fears have been expressed, for example by the Chief Executive of the Women's Tennis Association, that organised crime was involved in the affair. Another revelation, that a Belgian player was offered \$141,600 to lose a first-round match at Wimbledon, 2005, has highlighted that serious amounts of money are available for criminals to intervene in the sport. Organisers of the French Open were sufficiently concerned to seek orders from courts in Paris and Liège that would bar Betfair, Bwin and Ladbrokes from accepting wagers on the event (*The Guardian*, February 2, 2008).

Information is still insufficient for us to comment further on the Davydenko case. But tennis would be an appropriate testing ground for forensic statistics to model the relationship between betting patterns and match results. Betfair has revealed a potential problem but it can justify voiding bets only in exceptional circumstances. Forensic statistics would aim to gauge the scale of the problem by uncovering relationships that might be evident from consideration of thousands of contests and their betting markets even though no individual incident was so exceptional as to justify cancelling all transactions.

5. Statistical evidence on the extent of fixing

We have sought to draw lessons from some major incidents in professional sport. But for a whole series of scandals in the modern era, one must look to college (American) football and basketball in the United States. *Sports Illustrated* (March 27, 1998) provided a long list of cases going back to the 1940s though the majority were uncovered in the 1990s, sometimes as a result of evidence provided by the legal bookmaker market in Nevada (bookmaking in other states is illegal but its volume is estimated as more than thirty times that of the legal sector, see Strumpf, 2003). Major college teams such as those at Arizona, Boston College and Northwestern have been implicated. A current case before the criminal courts centres on alleged manipulation of the results of four University of Toledo football matches.

That college football and basketball should generate so many cases of athletes accepting inducements from betting interests is entirely consistent with our model. College sport attracts a huge following. NCAA Division 1 basketball and football

records higher annual attendance than the combined total for the NBA, the NFL and the NHL (Sandy and Sloane, 2004). The value of the NCAA television contract is second largest in the world, exceeded only by that for the NFL. Consequently, betting interest is high and this makes the market sufficiently liquid that substantial inducements are available from betting rings to players who agree to fix. In contrast to their coaches, thirty of whom earned salaries of at least \$1m according to Staudohar and Zepler (2004), players are low paid. Indeed they are not paid at all. They therefore have less to fear financially from detection, compared to professionals. Just as importantly, betting is organised on a handicap basis such that a bet on the underdog team is successful even if the favourite wins, so long as the margin is less than the spread. This further reduces resistance to a fix because a fix requires the stronger team to underperform but it does not require it to lose the game. So, in terms of the model, G is high, F is low, $U(C)$ is low.

The fundamental problem with handicap betting is that the scoreline at which athletes stand to make a gain from betting against themselves is different from the scoreline at which they would lose sporting glory. This makes for less stigma within a team for members who suggest a fix. It is a vivid illustration that the style of betting can have a substantial impact on integrity risks to sport. In this case, betting on margin of victory emerges as substantially more risky for integrity than betting on which team will win. That betting is on margin of victory creates incentives to engage in ‘point shaving’ whereby the members of the favourite team agree amongst themselves to ease up and win by less than the spread (the coach can similarly manipulate the outcome by taking strong players off court). Matches where point shaving is most likely to occur are those with strong favourites. If the favourite is only marginally so, it is likely to be difficult to arrange for the size of victory to be less than the spread without running the risk of losing the match.

Wolfers (2005) provides interesting analysis of just how extensive point shaving might be in college basketball. He sampled over 44,000 matches over 16 seasons and found that in general bookmaker spreads were a good predictor of actual scoreline. However, in matches where the spread was twelve points or more (i.e. there was a strong favourite), there was an irregularly large number of cases where the favourite

won but failed to beat the spread. On the basis of the number of such cases, Wolfers estimates that 500 games over the sixteen years had been fixed. Of course, the evidence is in a sense circumstantial because there might be other explanations for the phenomenon that strong favourites fail to beat the spread disproportionately often. For example, the betting market may fail to reflect any tendency for teams with a decisive lead to ease up. On the other hand, several cases of conspiracy have come to light and this makes it more plausible that corruption is widespread as Wolfers suggests. Members of the US Congress respond by seeking to outlaw betting on college games but this is likely to be ineffective since the illegal sector is so readily available to bettors throughout the country. It may be more effective, as Wolfers advocates, to legalise bookmaking in all states and require it through regulation to offer odds based rather than handicap betting. Similarly, other jurisdictions may consider some types of bet worth discouraging compared with others.

The problems in college sport in the US also draw attention to the high risks associated with permitting betting on amateur events. It is rare in any of the sports with which this Report is concerned for betting markets on amateur events to offer sufficient volume for concern to be high. However, we note that once volume reaches only a few tens of thousands of pounds, there may be potential for sportsmen with no financial rewards to winning to be swayed by the prospect of betting gain on their own account. Such situations arise occasionally in team match play golf competitions, such as the Seve Trophy.

Another strand of the academic literature examines and demonstrates that movements in odds are significant, independent predictors of sports outcomes: see, for example, Crafts (1985) and Smith (2003) on British horse racing, Forrest and Simmons (2001) on football in Singapore and Gandar et al. (1998) on NBA basketball. There are a number of possible explanations, such as new and relevant public information becoming available during the betting period and driving odds from levels that are no longer realistic. However, Sauer (1998) notes that, given the well proven expertise of professional odds setters, it is more plausible that movements in odds which anticipate events typically result from weight of money not from the public generally but from agents with highly specialised, private information, in other words from insider traders. As in other financial markets, movements in prices can be valuable signals to

regulators that insiders are active in the market and the works cited above demonstrate that insider trading in sports markets is probably very extensive. Of course, it is not possible to determine the proportion of such trading that relates to fixes but monitoring of trading patterns and price movements will clearly be one important element in any programme to screen for cases where the possibility of corruption should be reviewed.

6. Risk assessment across betting markets

Fixing in sport, in common with many other forms of financial crime, cannot readily be measured because it is observed only where it is detected. Thus any assessment of the risks to the integrity of sport from different betting markets is not straightforward. We have used *a priori* reasoning on the basis of a formal economic model (that has had good predictive power in the analysis of variation in crime rates generally) to inform our judgment and have also taken into account both the historical record of instances of corruption that have come to light and the findings from statistical modelling that have been at least suggestive of where fixing is a problem.

Amongst our conclusions from this process, the following are clear.

- More liquid markets generate more risk
- One-on-one sports generate more risk
- Certain proposition bets make team sports more akin to one-on-one situations
- In team sports, the relatively low pay of referees and their capacity to influence the result raises the possibility that even final match outcomes will be subject to manipulation
- Betting environments where there can be a payoff from underperformance, yet the contest can still be won, are risky
- This has long been true of handicap betting, but this sort of situation has now arisen in in-play markets
- Matches that have no significance for a competition (the dead rubber) are more risky for any given degree of liquidity in the market

Taking account of these general conclusions, we reviewed all the betting types listed in Appendix C, applying questions as follows.

Step One: feasibility. Is it feasible to fix the subject of the bet? Answering this question requires consideration of the likelihood of the fix being successful and the probability that the action required would be detected.

(this rules out many bets as being plausibly subject to a fix, for example the winner of a season-long league would be hard to arrange without influencing a large number of matches)

Step Two: the sportsman or official. If it is feasible for sportsmen or officials to fix, what is the cost to them in terms of both potential financial loss and loss of sporting glory?

(for example, a batsman scoring poorly in a single one day cricket international will incur low cost since the match may be unimportant whereas a group of players in a game between the top two teams in the FA Premier League might miss out on the financial and psychic rewards of a championship if they underperform)

Step Three: the gain. Is the gain sufficient to overcome this cost?

(this requires consideration of the liquidity of the market because that determines how much a betting syndicate would be able to allocate to purchase the fix; it also requires consideration of the number of people who would have to be involved in the fix, since, if this is high, the payoff to each may be too small to offset the individual's cost; where it can be focussed on one individual, such as a referee or goalkeeper, the proposal to fix will be more attractive).

A large number of bet categories where it is *both* feasible to fix *and* the cost to the athlete is low nevertheless fail to be ranked as high risk because application of Step Three reveals that market liquidity is low so that payoffs to a fix will be poor. Especially in sports with high pay, it is then not credible that systematic corruption will occur as a result of the existence of that betting market. Many proposition bets

therefore appear low risk despite their being easy to fix at low cost to the sportsman. There will be exceptions to this, however. For example one day cricket internationals can generate very active markets on the performance of an individual celebrity player and in this case he or an umpire may be approached with a substantial offer to ensure his score is low (of course, fixing is always likely to involve such underperformance since few athletes are guilty of regularly playing so within themselves that they can reliably commit to overperform; and officials can sabotage but not improve performance). Assessment of risk therefore depends on situation and could be carried out more thoroughly if data were available from the industry on turnover in particular betting markets at different events. Some bet types imply higher risk than others but the degree of risk varies with context.

The low liquidity in many markets where risk of fixing would otherwise be rated as high is not coincidental. Not only may the industry itself impose low stake limits, bettors in aggregate are also likely to find it less interesting to bet on aspects of a match than its outcome; further, they are indeed likely to be able to identify situations where there may be fixers at work and avoid them because they will be disadvantaged.

Given that volume of stakes is typically highest by far in the market on the final outcome of a match, it is probably here rather than in proposition betting that corruption will most frequently occur. The Bundesliga case demonstrated that this old style betting, on which team will win, can still be the source of fixing and it is striking that referees were the vehicle by which betting interests sought to manipulate the sport. We regard football matches in lower divisions as being a likely target for criminals. In England and Scotland, as in Germany and Spain, betting volumes for matches below Premier level are still high enough that large payments would be feasible to players and officials (who are not only less well paid than those at the top but also whose actions are subject to much less scrutiny). Tennis similarly generates high betting volumes at modest levels of competition and individual players may therefore be subject to *substantial* offers to lose matches even in tournaments well below Grand Slam level; and in such tournaments, prize money may offer insufficient incentive to exert maximum effort. In all sports, the ‘dead rubber’ situation is risky if

it occurs at a level of competition where there is still a high volume betting market. Premier League darts possibly offers some such situations.

Handicap betting is a style of betting which is legitimately a source of concern because it appears to generate significant corruption in US sport. But the problem is likely to be less in the UK because sports which attract betting interest are more often low scoring. It is possible to bet on the supremacy (win margin) of one team in a soccer game (indeed the international Asian Handicap market probably dominates the straight win market) but there would typically be little margin for error if the players or coach sought to win though by fewer goals than the market spread. Rugby is more problematic to the extent that competitive imbalance generates a number of matches where a team is quoted to win by a substantial number of points. Matches at the end of the season where there is a strong favourite but little at stake would have to be considered high risk.

Taking into account all these factors, we identify the bet types and situations shown in the following table as posing the highest risk to integrity.

<i>sport</i>	<i>betting market</i>	<i>Situation</i>
cricket	match odds	Highest risk in one day international and dead rubber situations
cricket	batsman to score 50/ 100 runs	Risk present when the subject is a strong player with high profile
darts	match odds	dead rubber, liquid market (Premier League)
darts	match index	Dead rubber, liquid market (Premier League)
football	match odds	End of season matches of low significance in the Championship and Divisions 1 and 2 (player corruption); threat from referee corruption applies to <i>all matches</i>
football	match index	End of season matches of low significance in the Championship and Divisions 1 and 2 (player corruption); threat from referee corruption applies to <i>all matches</i>
rugby league	match handicap	matches between teams with large quality difference, especially where match significance is low (end of season)
rugby union	match handicap	matches between teams with large quality difference, especially where match significance is low (end of season)
tennis	match odds	all matches but especially those at low prize money events and those with in-play betting
tennis	match index	all matches but especially those at low prize money events and those with in-play betting

While we do not identify any specific types of bet on snooker as high risk, we are nevertheless concerned over the risks in this sport. Absolute levels of liquidity, at least in the British market, tend to be low, which limits the amount of potential betting gain. However, the size of this gain has to be set against the low level of prize money compared with other individual sports covered by this Report. Depending on situation, we would therefore classify snooker, on occasions, as high risk. Particularly dangerous are those tournaments which are not entirely elimination based. Where there are round-robins, with 'dead rubber' situations, we would caution regulators to be alert to risk.

7. Recommendations

Policy formulation in the area is difficult because the extent of the corruption problem is not known and it would not be possible to estimate how much fixing had been prevented by any precautionary measures introduced. Nevertheless we do know that the volume of trading in certain betting markets is so large that there is a potential for substantial sums to be earned by athletes prepared to cheat on their own account or for side payments from betting interests. Given that a number of corruption cases have in fact been proven, and others alleged, it is therefore right that sport should be concerned by a threat to its integrity. Addressing the threat is likely to require action, and the incurring of cost, by all the main stakeholders: regulators, the betting industry and sport itself.

Regulation of the betting industry in Britain falls within the jurisdiction of the Gambling Commission (in the case of bookmaker and exchange betting) and the Financial Services Authority (for index/ spread betting). In the face of threats to the integrity of sport, it is within the remit of the regulatory bodies to intervene to moderate the behaviour of the betting sector. It could be considered a classic case of regulation to correct for externalities. One industry is imposing costs on another industry and has insufficient incentive to take these fully into account in its decisions. The regulator or the government must seek out ways in which the situation may be corrected after appraisal of the extent of the divergence of interest between the sectors.

Intervention by the regulator could however be argued to be unlikely to achieve its objectives. The obstacle is that the betting industry in the internet age is, like sport itself, truly globalised. Wagers associated with a fix may originate in any region and be placed in any region. Strong regulation of what is permitted, or of how the market is monitored, in one jurisdiction is likely to induce fixers to route their funds elsewhere. Cooperation and sharing of information between regulators, and between the betting industries, in different jurisdictions is therefore desirable to counter the advantage fixers derive from mobility of funds. However, the world is a long way from the ideal situation of all markets being effectively monitored. For the foreseeable future, the regulator will be unable to eliminate fixing, no matter how severe a regime is introduced. This is of course no different from the situation for many financial services in addition to betting.

This is not to say that the regulator should take no action. First, it is desirable from the viewpoint of the reputation of the UK gambling industry as a whole, and its competitive position in the world market, that it be free of corruption. Second, just because the wagering market is globalised, fixers' money, even when placed elsewhere, will move odds in Britain and the domestic industry will still be worth monitoring for signals that a particular result should be investigated further.

The terms under which bookmakers are permitted to operate already include provisions designed to make them act responsibly in monitoring activity in the sports markets they offer. For example, it is a condition of licence that a bookmaker notifies the relevant governing body if it is aware that the sport's rules have been violated (this should include betting by players and officials and bets that may be associated with bribes to underperform). We would go further and require betting firms, as a condition of licence, to be subject to independent audit of the internal procedures they employ to identify and prevent instances of fixing and other insider trading in sports markets. The betting industry claims that bookmakers have adequate incentive to guard against fixing; but the sports sector would be reassured if the claim that suspicious betting patterns were being successfully identified and notified were subject to external verification. We would expect audit to focus especially on procedures applied in riskier markets. For example, football and tennis are sports with significant liquidity in betting markets even for tiers of competition below the highest

level. These sports therefore have a pressing need for extensive monitoring of betting activity.

Because fixing cannot be eliminated through regulation of the betting market in a single jurisdiction, much of the burden of guarding against it will necessarily fall on sport itself. As with doping, some sports will require greater investment than others because they are more likely to generate betting corruption. Football and tennis face the greatest burden because opportunities for fixing to be lucrative exist across a wide range of competitions. Cricket also has a potentially serious corruption problem but it is probably restricted to international matches as betting volumes elsewhere are low.

Some sports already have in place player education programmes similar to those implemented to counter doping. It would be appropriate for all sports to adopt policies for making players aware of the rules against their being involved in betting, the consequences for those who cooperate with betting interests and the high risk of blackmail faced by players who have fixed even once.

Because it is difficult, in terms of betting patterns, to distinguish between fixing and the use of other inside information, sports should adopt rules that deter athletes or their connections from benefiting from *any* privileged knowledge. This will require prohibition of players, coaches and officials from betting on their own sport, even to back themselves. It will also require restrictions on the passing on of information though these will need to be carefully drafted. If sports wish to permit betting on other activities than their own sport, players, coaches and officials should be required to register any betting accounts they hold.

The standard of proof required to convict a player of underperformance for betting gain is high. Evidence from observing events both in the betting market and on the field/court is needed. This is of course why it is valuable when betting firms and sports governing bodies share information. Nevertheless it is even then not always possible to establish that the unusual betting patterns in the market are linked to the below par performance by a player in the match. Reducing any propensity to fix may therefore require sports to frame and enforce policies against 'not trying', just as in horse racing. They should also refine the structure of prizes in tournaments to

maximise incentives to effort in matches in different rounds of the competition (for a review of principles underlying the design of prize structures, see Szymanski (2003)).

In certain sports, the greatest risk from criminal groups lies in their recruitment of referees. High pay for officials is essential to the minimisation of risk not only because it makes individuals think more carefully about what they stand to lose if found fixing but also because poor rewards, especially compared with players, breeds resentment and a willingness to hit back at the system.

Both the NBA and the Bundesliga responded to corruption amongst referees by adopting explicit measures to make them less vulnerable to bribes and threats. For example, assignment of officials is now made only shortly before each round of matches. This makes it hard for syndicates to make approaches. Where a syndicate has a referee as retainer, it reduces the time available for corrupt money on his match to be dripped into the market, raising the probability that the fix will be detected. This innovation should be considered in all sports where officials have a strong potential to influence outcomes.

In return for high pay, referees should consider agreeing to greater scrutiny. For example, it would be a credible anti-corruption measure if referees were subject to random financial audit to establish that there was no income that could not be attributed to legitimate sources. On the field decisions should also be scrutinised regularly, for example, as in German football, by an expert panel reviewing film replays of goals and penalty calls. Since the motive for an error can be hard to demonstrate, it may be that demotion of all poorly performing referees should follow even though the majority will be innocent of fixing.

We have given some indications of policies sports could adopt. What is feasible and desirable will vary not only according to degree of risk but also with the nature of the sport. What is certain is that the growing size of the sports betting market raises the threat to integrity and sports governing bodies need to put into place formal ways of addressing the issue in the same way as they have confronted another form of cheating, the use of drugs. Naturally, their ability to police and monitor successfully will be enhanced if they have cooperation and information from betting providers.

References

- Crafts, N. (1985), 'Some evidence of insider knowledge in horse race betting in Britain', *Economica*, 59:278-298.
- Deschamps, B. and Gergaud, O. (2007), 'Efficiency in betting markets: evidence from English football', *Journal of Prediction Markets*, 1:61-73.
- Dowie, J. (1976), 'On the efficiency and equity of betting markets', *Economica*, 43:139-150.
- Erlich, I. (1996), 'Crime, punishment and the market for offences', *Journal of Economic Perspectives*, 10:43-67.
- European Commission (2006), *Study of Gambling Services in the Internal Market of the European Union*, Swiss Institute of Comparative Law.
- Forrest, D. (forthcoming), 'Soccer betting in Britain' in D B Hausch and W T Ziemba (eds.), *Handbook of Investments: Efficiency of Sports and Lottery Markets*, Elsevier.
- Forrest, D. and Simmons, R. (2001), 'Efficiency in an Asian sports betting market', discussion paper, University of Salford.
- Forrest, D. and Simmons, R. (2003), 'Sport and gambling', *Oxford Review of Economic Policy*, 19:598-611.
- Gandar, J., Dare, W., Brown, C. and Zuber, R. (1998), 'Informed traders and price variations in the betting market for professional basketball games', *Journal of Finance*, 53:385-401.
- Griffiths, M. (2005), 'Online betting exchanges: a brief overview', *Youth Gambling International*, 1-2.
- Mitford, M. (1832), 'The country cricket match', reprinted in A. Ross (ed.), *The Penguin Cricketers' Companion*, Penguin Books.

- Munting, R. (1996), *An Economic and Social History of Gambling*, Manchester University Press.
- Paton, D., Siegel, D.S. and Vaughan Williams, L. (2002), 'A policy response to the e-revolution: the case of betting taxation in the UK', *Economic Journal*, 112:F296-F314.
- Paton, D., Vaughan Williams, L. and Fraser, S. (1999), 'Regulating insider trading in betting markets', *Bulletin of Economic Research*, 51:237-241.
- Preston, I. and Szymanski, S. (2000), 'A blueprint for cricket', working paper, Imperial College, London.
- Sandy, R. and Sloane, P. (2004), 'Why do US colleges have sports programs?' in J. Fizel and R. Fort (eds.), *Economics of College Sports*, Praeger Publishers.
- Sauer, R. (1998), 'The economics of wagering markets', *Journal of Economic Literature*, 36:2021-2064.
- Smith, M. A. (2003), 'The impact of tipster information on bookmakers' prices in UK horse-race markets' in L. Vaughan Williams (ed.), *The Economics of Gambling*, Routledge.
- Staudohar, P.D. and Zepel, B. (2004), 'The impact on higher education of corruption' in J. Fizel and R. Fort (eds.), *Economics of College Sports*, Praeger Publishers.
- Strumpf, K. (2003), 'Illegal sports bookmakers', working paper, University of North Carolina at Chapel Hill.
- Szymanski, S., 2003. 'The economic design of sporting contests', *Journal of Economic Literature*, 41:1137-87.

Wolfers, J. (2005), 'Point shaving: corruption in NCAA basketball', *American Economic Review*, 96:279-283.

APPENDIX A. Some betting scandals (proven or alleged) of the last hundred years

1913	Football	Pascoe Bioletti
1915	Football	British Football Betting Scandal
1919	Baseball	Black Sox Scandal
1930	Boxing	Primo Carnera Fight Fixing
1949	Boxing	International Boxing Club Fight Fixes
1951	Basketball	CCNY Point Shaving
1959	Basketball	Jack Molinas NBA Scandal
1961	Boxing	Paul John 'Frankie' Carbo
1963	American Football	Paul Hornung NFL Betting Scandal
1963	American Football	Alex Karras NFL Betting Scandal
1964	Football	British Football Betting Scandal
1974	Horse Racing	Fraud involving substitution of Gay Future
1978	Basketball	Boston College Point Shaving Scandal
1982	Football	West Germany v Austria
1982	Horse Racing	Flockton Grey Substitution Scam
1984	Horse Racing	Fine Cotton Substitution Scandal
1989	Baseball	Dowd Report/Pete Rose Scandal
1994	Football	Bruce Grobbelaar
1995	Snooker	Peter Francisco banned for five years
1998	Basketball	Benny Silman Points Shaving/Match Fixing
1999	Football	Malaysian Floodlight Scandal
2000	Cricket	Hansie Cronje and other South African cricketers
2000	Cricket	Saleem Malik and Ata-ur-Rehman
2000	Cricket	Azharuddin, Sharma and other Indian cricketers
2001	Boxing	Robert Lee Rankings Scandal
2001	Football	Chinese First Division Match Fixing
2004	Cricket	Maurice Odumbe
2004	Football	South African Match Fixing
2004	Football	Czech Rep Match Fixing
2004	Rugby League	St Helens Scandal
2005	Football	Bundesliga/Robert Hoyzer
2005	Football	Brazilian Match Fixing
2006	Horse Racing	Dean Williams and Brian Reilly
2006	Horse Racing	Gary Carter Warned Off For 5 Years
2006	Snooker	Quinten Hann banned for 8 years and £10,000 fine
2006	Ice Hockey	Operation Slapshot, NHL
2007	Basketball	Tim Donaghy NBA Umpire Scandal
2007	Football	UEFA Investigation into Match Fixing
2007	Horse Racing	Kieren Fallon et al
2007	Horse Racing	Tony Culhane and Dean Mernagh suspended
2007	Horse Racing	Francis Ferris and others
2007	Tennis	Davydenko Betting Scandal

APPENDIX B. An illustration of how a player could manipulate an in-play betting market in tennis

This appendix offers an illustration of how a risk-free betting gain could be obtained in a betting exchange market by someone who knew that a favourite would lose the first set of a match. We use real data from Betfair for a match between Andy Murray and Dmitry Tursunov. It took place at St. Petersburg in October, 2007. There is absolutely no suggestion that there was anything irregular in either the conduct of the particular game or the pattern of trade it generated on the exchange. The example merely illustrates what would be possible with advance knowledge that the favourite (in this case, Murray) would lose the first set.

Volume on this match on Betfair was £84,334 before it started, with a further £1,230,981 matched during play. Naturally, volumes would be much higher in a major tournament.

Odds available at which to lay Murray before play started were 1.27.

With one set lost by Murray (in a three set match), odds lengthened. It was then possible to back him at odds of 2.00.

Suppose one layed Murray for £10,000 before the match. This implied losing £2,700 if he won the match, winning £10,000 if he lost the match.

Step 2 in the manoeuvre required backing Murray with a stake of £6,350 (at odds of 2.00) at the conclusion of the first set. This implied winning £6,350 if he won the match in the end and losing £6,350 if he lost the match in the end.

Combining the two wagers, a profit of £3,650 was guaranteed whatever the final result of the match.

The size of the stake at step 2 that ensures a risk free gain for given stake at step 1 is given by the formula $s_2 = o_1 s_1 / o_2$ where s and o refer to stake and odds respectively and subscripts refer to steps 1 and 2.

Proof-

Let, r , the result of the match, equal 1 if Murray wins the match and 0 if he loses the match. Then total profit, π , is given by

$$\pi = -r(o_1 - 1)s_1 + (1 - r)s_1 + r(o_2 - 1)s_2 - (1 - r)s_2$$

To ensure profit is invariant with respect to result, set $d\pi/dr = -s_1 o_1 + s_2 o_2 = 0$,

then $s_2 = o_1 s_1 / o_2$.

The amounts staked here for profit of £3,650 were feasible in the market- i.e. the amounts were available to lay/ back at the odds noted. Of course, in a more liquid market, the financial gain, conditional on knowing that the first set would be lost, could be much higher.

The amounts won on the bets should however be compared with the £20,000 extra prize money for progressing to the next round. Losing the first set places progression and this prize money at risk.

APPENDIX C. List of styles of bets available on seven sports

Cricket

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Match Odds	*	*		*	Who will win the match?
Tied Match	*	*		*	Separate tie market for ODIs and Twenty/Twenty matches
Completed Match	*	*		*	Will the match be completed or abandoned?
Series Winner	*	*		*	Who will win the series (e.g. test or ODI)?
Top Team Batsman	*	*			Which batsman will score most runs for team A/B in a match?
Top Team Bowler	*	*			Which bowler will take most wickets for team A/B in a match?
Top Series Batsman	*	*			Which batsman will score most runs for team A/B in a series?
Top Series Bowler	*	*			Which bowler will take most wickets for team A/B in a series?
Next Man Out	*			*	Which of the two batsmen currently at the crease will be next out?
Wicket Method	*	*		*	How will the next wicket fall (e.g. caught/bowled/lbw)?
Team Run Supremacy	*	*		*	How many more runs will Team A score than Team B?
Team A/B Total Runs	*	*		*	How many runs will team A or B score in a given match/innings/session?
Batsman A/B Total Runs	*	*		*	How many runs will batsman A or B score?
Team A/B Runs 1st 10/20/30 etc overs	*	*		*	How many runs will team A or B score in the match's first 'so many' overs?
Batsman to get a Half Century/Century	*	*			Odds on a batsman to score a half century or century in a given match/innings
Player Performance			*		Points are awarded for each run scored/wicket taken etc and a total given at the end of a match
Bowler Match Bets	*	*	*		Bowler A versus bowler B: who will take most wickets?
Batsman Match Bets	*	*	*		Batsman A versus batsman B: who will score most runs?
Team Total Fours Scored	*	*	*		Total number of fours scored by team A or B during given match/innings/session
Team Total Sixes Scored	*	*	*		Total number of sixes scored by team A or B during given match/innings/session
Team Total Fours Conceded	*	*	*		Total number of fours conceded by team A or B during given match/innings/session
Team Total Sixes Conceded	*	*	*		Total number of sixes conceded by team A or B during given match/innings/session

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Player Total Fours Scored	*	*	*		Total fours scored by specific player in a given match/innings/session
Player Total Sixes Scored	*	*	*		Total sixes scored by specific player in a given match/innings/session
Bowler Total Fours Conceded	*	*	*		Total fours conceded by specific bowler in a given match/innings/session
Bowler Total Sixes Conceded	*	*	*		Total sixes conceded by specific bowler in a given match/innings/session
Tournament Outright	*	*			Who will win the tournament (e.g. World Cup, County Championship)?
Tournament Index			*		Spread Firm version of tournament outright market. Winner is said to score 100, 2 nd =75 etc)
Total Tournament Fours	*	*	*		Total number of fours scored in a given tournament by all teams
Total Tournament Sixes	*	*	*		Total number of sixes scored in a given tournament by all teams
Total Tournament Wides	*	*	*		Total number of wides awarded in a given tournament to all teams
Total Tournament Runs	*	*	*		Total number of runs scored in a given tournament by all teams

Darts

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Match Odds	*	*		*	Who will win the match?
Match Index			*		Spread firm's version of 'Match Odds'
Correct Score	*	*	*	*	What will the final score of the match be?
Leg Betting	*	*	*	*	Who will win the first/next leg?
Set Betting	*	*	*	*	Who will win the first/next set?
Tournament Winner	*	*			Who will win the tournament?
Tournament Index			*		Spread firm's version of 'Tournament Winner'
Highest Checkout by Plyaer A OR B	*		*	*	What will each individual player's highest check out be?
Highest Checkout in Match	*		*	*	Who will have the highest checkout of the match OR what will the highest checkout be?
Player A OR B Total 180s	*		*	*	How many 180s will player A or player B make during the match?
Player A AND B Total 180s	*		*	*	Total number of 180s by both players in the match
Player A vs Player B 180s	*		*	*	Which player will make the most 180s in a match bet (i.e. player A, player B or tie)?
Multi 180s			*	*	Number of 180s Player A makes in the match multiplied by number of 180s player B makes
Total Missed Doubles			*	*	How many leg winning doubles will be missed during the match?

Football

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Match Odds	*	*		*	Who will win the match?
Match Index			*	*	Spread firm's version of Match Odds
Match Handicap	*	*		*	What will the result be after the favourite has an x goal disadvantage?
Draw No Bet	*	*			Who will win the match? All bets refunded if result is a draw.
Asian Handicap	*	*			Similar to match handicap but stakes can be halved onto two different handicaps
Half Time Result	*	*		*	Who will win the first half?
HT/FT Double Result	*	*			Which team will be winning at half time and at full time?
Next Goal	*	*		*	Which team will score the next goal?
Over/Under x Goals	*	*		*	Usually 1.5/2.5/3.5 etc. Will the total goals in the game be under or over the total?
Correct Score	*	*		*	What will the full time score be (90 minutes only)?
Half Time Score	*	*			What will the score be at half time?
Total Goals	*	*	*	*	How many goals will be scored in the match?
First Team to Score	*				Which team will score first?
Team to Score Anytime	*	*			Will team A or B score at any point in the match?
First/Last/Anytime Goal scorer	*	*			Named scorer. Will they score first/last or anytime?
Team A or B to Keep Clean Sheet	*	*			Will Team A or B keep a clean sheet?
Corners Handicap	*	*	*	*	Prediction of the number of corners won by Team A over Team B, minus a given handicap
Corners Match Bet	*				Which team will win the most corners?
Total Corners	*	*	*	*	How many corners will there be in the match?
Substitutes Used	*	*			How many substitutions will there be in total in the match?
Hat Trick Scored	*	*			Will there be a hat trick scored?
First Half Goals	*	*	*		How many goals will be scored in the first half?

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Second Half Goals	*	*	*		How many goals will be scored in the second half?
Odd or Even	*	*			Will the total number of goals in the match be an odd or even number?
Home Team To Score	*				Will the home team score?
Away Team To Score	*				Will the away team score?
Time 1st Booking	*		*	*	How many minutes into the match will the first card be shown?
Time 1st Corner	*		*	*	How many minutes into the match will the first corner be awarded?
Time 1st Goal	*		*	*	How many minutes into the match will the first goal be scored
First Carded Team	*				Which team will receive the first card?
First Corner Team	*				Which team will receive the first corner?
Goals x Corners	*		*	*	Number of goals multiplied by the number of corners
Half With Most Goals	*				Which half will have the most goals?
Team to Kick Off	*				Which team will kick off the match?
Number of Times Woodwork Hit	*		*		How many times will the ball hit the post or crossbar?
Penalty Awarded	*	*			Will there be a penalty in the match?
Red Card Awarded	*	*		*	Will there be a red card in the match?
Total Shirt Numbers	*		*	*	What will the total shirt numbers of the goal scorers be?
Shirt Numbers Handicap/Supremacy	*		*	*	The difference between team A's goal scorer's shirt numbers and Team B's goal scorer's shirt numbers
To Win To Nil	*	*			Will Team A or Team B win the match AND keep a clean sheet?
Total Cards	*	*	*	*	Total points make up of any cards given. Yellow=10 Red=25
Total Cards Under/Over	*			*	Will the total cards make up in the match be under or over a given total. Yellow=10 Red=25
Total Goal Minutes	*		*	*	Aggregate time of all the goals scored in a game
Goal Minute Handicap/Supremacy			*	*	Difference between aggregate times of all the goals scored in a game by team A and team B
Team First Half Goals	*	*	*		How many goals will team A or B score in the first half?
Team Second Half Goals	*	*	*		How many goals will team A or B score in the second half?

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Hotshots/Player Performances	*		*		Players are awarded points for things they do in a match e.g. Goal=25 Yellow=-5
Team Performance	*		*		Total points awarded to players from one team. Players are awarded points for things they do in a match, e.g. Goal=25 Yellow=-5
Multi Corners			*	*	Number of first half corners multiplied by the number of second half corners
Specials	*	*	*		Various gimmicky markets usually thought up by a marketing department for big matches
Outright	*	*			Who will win a particular league/trophy/tournament etc?
Outright Index			*		Spread firm's version of Outright
Handicap League Outright	*	*			Who will finish top of a league when each team is deducted a given number of points?
To Be Promoted/Relegated	*	*			Will a team gain promotion or relegation?
To Finish Top 2/3/4 etc	*	*			Will a team finish in the top 2/3/4 etc in the league?
Month End Top/Bottom	*	*			Who will be top/bottom of a league at the end of a particular month?
Finishing Position	*	*	*		What position will a particular team finish in the league at the end of the season?
Total Points	*	*	*		How many points will a particular team score in the league over the course of a season?
Season Match Bet	*	*	*		Who will score the most points in the league over a season between just two teams?
Group Betting	*	*	*		Who will finish higher in the league out of a small group of teams?
Top Goal Scorer	*	*	*		Who will be a tournament/league's top goal scorer?
To Reach Final	*	*			Odds on a team reaching the final of a knock out competition (e.g. Champions League, FA Cup)?
Stage of Elimination	*	*	*		At what stage will a team be knocked out of a competition?
Best of British/Italian/Spanish etc	*	*	*		Which British/Italian/Spanish side will do best in a given competition (e.g. in the Champions League)?
Trophies Won by Team x	*	*	*		How many trophies will be won by a particular team in a particular season?

Golf

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Tournament Winner	*	*		*	Who will win the tournament?
Tournament Match Bets	*	*	*		Who will card the lowest tournament score between two selected players?
Tournament Group Betting	*	*	*		Who will card the lowest score between a group of selected players (usually 6)?
Tournament Top 5 Finish	*	*	*	*	Will a nominated player finish in the top 5?
Tournament Top 10 Finish	*	*	*	*	Will a nominated player finish in the top 10?
Make The Cut	*	*	*	*	Will a nominated player make the cut?
Play Off	*	*		*	Will the tournament be settled in a play off?
Round Match Bet	*	*	*		Who will card the lowest score in an individual round between two selected players?
Round Group Bet	*	*	*		Who will card the lowest score in an individual round between a group of selected players (usually 6)?
Three Balls	*	*	*		Who will card the lowest 1st/2nd round score in each group of 3 playing together? (i.e. similar to round group bet)
Two Balls	*	*	*		Who will card the lowest 3rd/4th round score in each group of 2 playing together? (i.e. similar to round match bet)
Top UK/EUROPE/US/ROW Player	*	*	*	*	Which UK/European/US/Australian/Rest of World etc player will card the lowest tournament score?
Tournament Index			*	*	Spread firm's version of 'Tournament Winner'
Finishing Position Index			*	*	In what position will a nominated player finish?
Order of Merit Winner	*	*	*		Who will win the season's European Order of Merit i.e. win most money on the European tour?
Top Money Winner	*	*	*		Which player will win the most prize money on (e.g. the US PGA Tour)?
Specials	*	*	*		Novelty bets usually for the bigger tournaments (e.g. 'How many players will make a hole-in-one at a particular hole?')

Rugby League

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Match Odds	*	*		*	Who will win the match?
Match Index			*	*	Spread firm's version of Match Odds
Match Handicap	*	*	*	*	What will the result be after the favourite has an x point disadvantage
Half Time Result	*	*		*	Who will be winning at half time?
Half Time Handicap	*	*	*	*	What will the half time result be after the favourite has an x point disadvantage
HT/FT Double Result	*	*			Who will be winning at half time and full time?
First/Last Anytime Try Scorer	*				Named try scorer. Will he score a try first/last or anytime?
First/Next Team to Score a Try	*	*		*	Which team will score the first/next try in the game?
Time of First/Next Try	*	*	*	*	How many minutes into the match will the first try be scored
Total Points	*	*	*	*	Total number of points scored in a game by Team A and B
Team Points	*	*	*	*	Total number of points scored in a game by Team A or B
Total Tries	*	*	*	*	Total number of tries score in a game by Team A and B
Team Tries	*	*	*	*	Total number of tries score in a game by Team A or B
First Scoring Play	*	*			How will the first points be scored (e.g. Try, Penalty)?
Point Supremacy	*		*	*	How many more points will Team A score than Team B?
Try Supremacy	*		*	*	How many more tries will Team A score than Team B?
Shirt Numbers	*	*	*	*	What will the total shirt numbers of the try scorers be?
Shirt Number Supremacy	*		*	*	The difference between team A's try scorer's shirt numbers and Team B's try scorer's shirt numbers
Hotshots/Player Performance	*		*		Players are awarded points for things they do in a match, e.g. Try=25 Yellow=-5
Team Performance	*		*		Total points awarded to players from one team. Players are awarded points for things they do in a match, e.g. Goal=25 Yellow=-5
Outright	*	*			Who will win a particular league/trophy/tournament etc?
Outright Index			*		Spread firm's version of Outright

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Total Season Points	*	*	*		How many points will a particular team score in the league over the course of a season?
Season Match Bets	*	*	*		Which of two named teams will score the most points in the league over a season?
Total Cards	*	*	*	*	Total points make up of any cards given. Yellow=10 Red=25
Total Cards Under/Over	*			*	Will the total cards make up in the match be under or over a given total. Yellow=10 Red=25
Substitutes Used	*	*			How many substitutions will there be in total in the match?
Multi Points			*	*	Total first half points multiplied by total second half points
TeamMulti Points			*	*	Total first half points scored by team A or B multiplied by total second half points scored by team A or B
Time of First Score	*	*	*		Time of first scoring play in the match by either team
Time of First Team Score	*	*	*		Time of first scoring play in the match by particular team
Time of First Penalty Awarded	*	*	*		Time of first penalty awarded in the match to either team
Time of First Team Penalty Awarded	*	*	*		Time of first penalty awarded in the match to particular team
Specials	*	*	*		Various gimmicky markets for big events e.g. Super League Grand Final

Rugby Union

Market Name	Bookmaker	Exchange	Spread	In Play	Description
Match Odds	*	*		*	Who will win the match?
Match Index			*	*	Spread firm's version of Match Odds
Match Handicap	*	*	*	*	What will the result be after the favourite has an x point disadvantage
Half Time Result	*	*		*	Who will be winning at half time?
Half Time Handicap	*	*	*	*	What will the half time result be after the favourite has an x point disadvantage
HT/FT Double Result	*	*			Who will be winning at half time and full time?
First/Last Anytime Try Scorer	*				Named try scorer. Will he score a try first/last or anytime?
First/Next Team to Score a Try	*	*		*	Which team will score the first/next try in the game?
Time of First/Next Try	*	*	*	*	How many minutes into the match will the first try be scored
Total Points	*	*	*	*	Total number of points scored in a game by Team A and B
Team Points	*	*	*	*	Total number of points scored in a game by Team A or B
Total Tries	*	*	*	*	Total number of tries score in a game by Team A and B
Team Tries	*	*	*	*	Total number of tries score in a game by Team A or B
First Scoring Play	*	*			How will the first points be scored (e.g. Try, Penalty)?
Point Supremacy	*		*	*	How many more points will Team A score than Team B?
Try Supremacy	*		*	*	How many more tries will Team A score than Team B?
Shirt Numbers	*	*	*	*	What will the total shirt numbers of the try scorers be?
Shirt Number Supremacy	*		*	*	The difference between team A's try scorers' shirt numbers and Team B's try scorers' shirt numbers
Hotshots/Player Performance	*		*		Players are awarded points for things they do in a match e.g. Goal=25 Yellow=-5
Team Performance	*		*		Total points awarded to players from one team. Players are awarded points for things they do in a match, e.g. Goal=25 Yellow=-5
Outright	*	*			Who will win a particular league/trophy/tournament etc?
Outright Index			*		Spread firm's version of Outright

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Total Season Points	*	*	*		How many points will a particular team score in the league over the course of a season?
Season Match Bets	*	*	*		Which of two named teams will score the most points in the league over a season?
Total Cards	*	*	*	*	Total points make up of any cards given. Yellow=10 Red=25
Total Cards Under/Over	*			*	Will the total cards make up in the match be under or over a given total. Yellow=10 Red=25
Substitutes Used	*	*			How many substitutions will there be in total in the match?
Multi Points			*	*	Total first half points multiplied by total second half points
TeamMulti Points			*	*	Total first half points scored by team A or B multiplied by total second half points scored by team A or B
Time of First Score	*	*	*		Time of first scoring play in the match by either team
Time of First Team Score	*	*	*		Time of first scoring play in the match by particular team
Time of First Lineout	*	*	*		Time of first lineout in the match for either team
Time of First Team Lineout	*	*	*		Time of first lineout in the match for particular team
Time of First Penalty Awarded	*	*	*		Time of first penalty awarded in the match to either team
Time of First Team Penalty Awarded	*	*	*		Time of first penalty awarded in the match to particular team
Time of First Scrum	*	*	*		Time of first scrum awarded in the match to either team
Time of First Team Scrum	*	*	*		Time of first scrum awarded in the match to particular team
Specials	*	*	*		Various gimmicky markets for big events, e.g. World Cup Final

Snooker

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Match Odds	*	*		*	Who will win the match?
Match Index			*	*	Spread firm's version of 'Match Odds'
Match Handicap	*	*	*		For example, Player A -4.5 frames against Player B. Both priced around 10/11
Frame Winner	*	*		*	Who will win the first/next frame?
Frame Supremacy			*	*	How many more frames will player A win than player B?
Correct Score	*	*		*	What will the final score of the match be?
Total Match Points	*		*	*	How many points will be scored by both players in the match?
Player A or Player B Highest Break	*	*	*	*	What will the highest break of player A or B be during the match?
Player A v Player B Highest Break	*	*	*	*	Which of the two players will score the highest break in the game?
Highest Match Break	*	*	*	*	What will the highest break score be?
Player A v Player B Match Points			*	*	Who will score most points in the match?
Player A or Player B 50s	*	*	*	*	How many half-centuries will be scored by player A or B?
Player A or Player B 100s	*	*	*	*	How many centuries will be scored by player A or B?
Player A and Player B 50s	*	*	*	*	How many half-centuries will be scored by player A and B?
Player A and Player B 100s	*	*	*	*	How many centuries will be scored by player A and B?
Player A v Player B 50s	*	*	*	*	Which player will make the most half-centuries?
Player A v Player B 100s	*	*	*	*	Which player will make the most centuries?
Tournament Winner	*	*			Who will win the tournament?
Tournament Index			*		Spread firm's version of 'Tournament Winner'

Tennis

<i>Market Name</i>	<i>Bookmaker</i>	<i>Exchange</i>	<i>Spread</i>	<i>In Play</i>	<i>Description</i>
Match Odds	*	*		*	Who will win the match?
Match Index			*	*	Spread firm's version of Match odds, e.g. winner said to have finished with a quote of 25, the loser a quote of 0
Set Betting	*	*		*	What will the final score be (i.e. 2-0 or 2-1)
Game Betting	*	*		*	Who will win the next game?
To Win 1st/2nd Set etc	*	*		*	Who will win the current/next set?
Handicap Betting	*	*		*	For example, Player A -4.5 games against Player B. Both priced around 10/11
Total Aces by Player A and B	*		*		Total number of aces served in a match
Total Aces by Player A or B	*		*		Total number of aces served in a match by a particular player
Game Supremacy			*	*	How many more games will player A win than player B?
Total Games			*	*	Total number of games in the match
X-Courts			*	*	Aggregate set multiples for a match
Total Points Won by Player A or B			*	*	Total points won by an individual player
Total Points Won by Player A and B			*	*	Total points in the match
Tournament Outright	*	*			Who will win the tournament?
Ante Post Outright (e.g. Grand Slams)	*	*			Who will win e.g. Wimbledon?
Ante Post ATP Championship Race	*	*			Who will be crowned ATP Champion at the end of the season?
Ante Post WTA No 1 End of Season	*	*			Who will be Women's number one at the end of the season?
Tournament Index			*		Spread firm's version of Tournament Outright
Specials	*	*	*		For example, how many Grand Slams will Roger Federer win in 2007?