Abstract

Universities are under increasing pressure to increase funding from non government sources. Swinburne University is no exception, and has as one of its strategic themes to be an entrepreneurial university and to encourage innovation and commercialisation of research results. As part of the then School of Mathematical Sciences, Swinburne Sports Statistics was an early entrant into the world of consulting. Computer predictions for AFL football were sold to the media as early as 1980. The expansion of sports betting from the traditional horse, harness and dog racing into a wide range of sporting events has created a market for sports prediction expertise. This paper discusses the development of Sportsbet 21, a Swinburne startup company which provides to bookmakers computer generated odds driven by a statistical model for ‘betting in running’ - betting on events which occur within a sporting contest. Models have been developed for both cricket and tennis, and the product has been operated successfully by Ladbrokes in the UK for some time. The product has achieved profit targets on growing turnover, and demonstrated the robustness of the mathematical models

Key words: Statistical modelling, Gaming, football, cricket.

1 Introduction

As part of the then School of Mathematical Sciences, one of Swinburne Sports Statistics areas of research was in the prediction of sporting events. This paper details some of our efforts at commercialisation of this activity, in particular the creation of a startup company Sportsbet 21.

2 AFL Football

Swinburne’s forays into sport prediction began in 1980, when I wrote a computer program to predict Australian Rules football. A Melbourne daily newspaper, The Sun, agreed to publish the weekly predictions in competition with their chief writer. A consultancy agreement was signed, one of the first outside consultancies undertaken by the Mathematics department, which at that time was mainly a teaching school. Since then, the tips have been published in various media outlets. Print outlets include The Sun from 1981 to 86, The Age from 1990 to 95, The Herald Sun in 1986 and The Australian Financial review in 1987 to 99. The tips made their television debut in 1995, and were broadcast each Thursday on Today/Tonight Adelaide from 1995 to 2002. All these contracts were for a fixed weekly fee for the provision of the tips. From 1997 the
tips have also been published late in the week on our web site www.swin.edu.au/sport, and some other media outlets have picked the predictions up unofficially. The program has spawned many imitations and has led to increased interest in automatic prediction and sport ratings. Clarke (1988, 1993) contains some details of the program and experiences in publishing in the daily press.

Although in the main newspapers only published predicted winners, the program predicts not only the winner of an upcoming match, but also the expected margin in points, the chance of each team winning, and via a simulation of the remainder of the year, the chance of each team finishing the home and away series in any position. With the growth in sports betting this information has become of interest to punters. Right from the beginning, I had envisaged the possibility of marketing the predictions direct to interested parties via a mail subscription, but lacked the marketing skills to implement. With the financial policies in place at the time, the main motivation for marketing the tips was the publicity the school and the University received.

The program was ahead of its time in publishing margins and chances of winning long before sports betting on these outcomes were legal. Betting is now allowed on Australian rules football. In addition to head to head betting on the winner, various bets can be made on the margin of victory and of course on teams making the finals or winning the premiership. In 2002, following an approach from Ozmium Ltd the program was marketed to punters. Ozmium were already marketing horse racing tips through their web site www.smartgambler.com.au and were keen to diversify. The tips are emailed to the list of subscribers each week, along with a spreadsheet showing bookmakers prices, overlays, recommended bets and bet sizes according to the Kelly formula. The punters placed their own bets, based on the programs recommendations, their own information and betting strategies. A discussion list was set up, and subscribers discussed the tips, their own systems, the pros and cons of various bookmakers, good deals etc. In line with my suggestions, it was quite clear that most subscribers were not using the computer’s predictions as a black box, but as a starting point to which they added their own opinions. It was also clear that they all had their own betting systems. While some bet on all predictions which showed some set percentage overlay, others required a certain probability of winning etc. Clarke & Clarke (2006) contains an analysis of the computer’s performance over several years. As the detailed predictions are now marketed to punters, media outlets are provided with winners only for publication in return for citing Swinburne. In 2006 outlets included ABC Adelaide radio, several local papers and Campus Review.

In addition to AFL football, over the years Swinburne has predicted many sports and placed predictions on their web site. Sports have included cricket, tennis, Grand Prix motor and cycle racing, horse racing, netball, rugby, rugby league, baseball, basketball, beach volleyball, Olympic games and soccer. With Governments now allowing betting on a range of sports, it became clear our expertise in prediction might be put to profitable use in the gaming industry

3 Sportsbet 21 and Cricket

Early in 1998 Mark Solonsch of Synaval Pty Ltd approached me with an idea of developing an automated betting system to allow real time bets on events that occur during a sporting event. The initial idea was to bet on the number of runs in an over of cricket. The system would be driven by computer-generated odds that would take into account the state of the game and the past betting pattern of the punters.
There are several problems with sports betting. Consider one-day cricket. With approximately 100 international matches per year, betting opportunities are limited. This contrasts with horse and harness racing where there might be that many races in one day in Australia. A bet takes a day (or 5 days in test cricket) to decide, and this reduces churn, the opportunity for punters to ‘reinvest’ their winnings, reducing turnover for the bookmaker. Furthermore, with head to head betting there are only two outcomes, and this restricts the bookmaker to a margin of about 5%. A small number of bets and a small margin both decreases profit and increases the risk for the bookmaker. On the other hand, betting on the number of runs in an over of cricket provides 100 bet opportunities in one match, and with over 10 outcomes allows higher betting margins than head to head. Difficulties to be overcome included the small betting time between overs to set odds and take and validate bets. This necessitated the development and testing of a suitable statistical model that would set the odds virtually instantly, and suitable computer protocols to allow a large number of bets in a small time interval. Statistical modelling was undertaken by Michael Bailey and myself, with Myles Harding and Geoff Lewis developing the computer implementation. Most of this computer and statistical development work was made possible by appointments and grants through the Chancellor’s strategic funds.

The statistical model was developed by analyzing data from all one day matches played up to that time. Logistic and linear regression methods were used to estimate the probability of each of 11 outcomes, being the number of runs from 1 to 10 and more than 10 runs. Variables used included scores, run rates and wickets fallen over various periods, over number and target score. Obviously separate models had to be developed for first and second innings. Bailey & Clarke (2004, 2006) give examples of the sort of statistical modeling undertaken, in these cases to predict the scores of individual batsmen and the chances of each team ultimately winning the game. Once true probabilities were predicted, these were converted to bookmakers odds, allowing for any given percentage profit. As soon as the operator entered the score for the over, the model virtually instantly calculated the prices for each of the 11 outcomes for the next over. This allowed punters approximately 30 seconds to place bets before betting was closed at the start of the next over.

In early 2000 a trial was run with volunteer punters given a certain amount of play money to bet on a one-day match. The results were positive in that they achieved a return to the operators and positive feedback from players. The startup company Sportsbet 21 Pty Ltd was set up with Swinburne and staff holding 50%, and Synaval Pty. Ltd. 50%. The system underwent several further trials, and a License agreement was finally struck with Ladbrokes, which allows for Sportsbet 21 to receive a proportion of net profits generated when Ladbrokes offered the system to their punters. The system was run live with Ladbrokes under the name ‘between overs’ during the 2003 World Cup. The product achieved profit targets on small turnover, and demonstrated the robustness of the mathematical models. Subsequently Tasmania Tote bought 25% of the company, which provided funds for further development work. The product has continued to operate under the name ‘betting in running’. Figure 1 shows a screen dump. Turnover has grown, although the limited time allowed for betting had been a restricting factor.

Subsequent developments have allowed for setting prices an over in advance, so prices on over 51 (say) will be set and betting commence as soon as over 50 starts. Models have also been developed for test cricket, betting on partnership length and

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20/20 cricket is on the drawing boards. Some work has also been done on making the models less generic and more player and situation specific.

Figure 1. Early screen dump of betting in running on cricket

4 Tennis

With the success of the cricket model, it was decided in 2003 to extend into other sports, and tennis was chosen. We decided to allow betting on each game score. Thus the server could win to love, 15, 30, or deuce, or lose to love, 15, 30, or deuce, giving 8 outcomes and approximately 10 bets in each set of a tennis match. The approach taken differed significantly from that taken in cricket. Firstly, the model was player specific, and the past player statistics of the two participants was taken as input data. Barnett & Clarke (2005) discuss the player statistics available, and Tristan Barnett has provided regular updates of player statistics to the system. Secondly, once the relevant parameters were determined, a probability model was used to calculate the chances of all possible outcomes. The input parameters were updated as the match progressed. Since the prices for a server’s next service game were determined as soon as they finished serving their current game, the system always allowed for betting a game ahead. This has allowed for betting to be virtually continually open. Figure 2 shows an early screen for tennis betting. Recently the ability to bet on the winner of the game has been added to the product.

5 Conclusion

Acceptance by the public of betting in running continues to grow, with the models generally standing up to punters’ skills. The company recently gained a new licensee in Vanuatu, which should see turnover increase further. Clearly there is a need to develop further products, but funding development of new applications is a continuing difficulty
Figure 2. Early screen dump of betting in running on tennis

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6 References


