Success in pro team sports requires maximising the quantity of playing talent that can be recruited and deployed effectively given the team's payroll budget. Teams that can recognise market inefficiencies in the valuation of playing talent, specifically, players whose production value (i.e. win contribution) exceeds their market value, can gain a competitive advantage with a lower cost per win. Moneyball (Lewis, 2003) tells the story of how Oakland in Major League Baseball has successfully exploited market inefficiencies in the valuation of hitters with high on-base percentage as well as college (versus high-school) recruits.

The problem of valuing human resources and, more generally, intangible assets is common throughout the business world. There is a tendency to use an anchor-and-adjustment method of valuation with the values observed in similar recent deals used as a benchmark (or anchor) and adjusted for the specifics of the current transaction. This type of benchmarking is common in the pro team sports industry e.g. the transfer valuation of football players (Dobson and Gerrard, 1999) and the valuation of stadium naming rights (Gerrard et al., 2007). However benchmark valuations do not necessarily reflect the fundamental valuation of players and assets based on the discounted cash flow (DCF) approach of projecting the incremental cash flows consequent on the player/asset's future performance. Thus competitive gains are possible for teams able to identify players with benchmark valuations significantly below their DCF valuations.

The application of DCF analysis to player valuation is well established for atomistic striking and fielding games such as baseball. Scully (1974) estimated the marginal revenue product of baseball players using a two-stage procedure to determine the win contribution of the individual player which was valued using the team's estimated win-revenue relationship. This paper considers the difficulties inherent in applying DCF methodology to complex invasion sports such as the various codes of football in which individual player win contributions are not easily separable. A hierarchical structural model of invasion sports is proposed as a framework for calculating win contributions. The model is applied to English Premiership football to develop a player ratings system that can be used as the basis for calculating the fundamental DCF valuations of football players.


Keywords: Player Tracking, Football, Economics