

(i) Is the Scottish Premier League less competitive than its English counterpart?

1. Introduction

In the brief '*Measuring the competitiveness of sport: are the top teams getting too strong?*' it was noted that sporting competition needs some degree of unpredictability in order to sustain consumer interest. As a result, the governing bodies of some sports intervene openly in market processes to prevent strong teams from getting too strong and weaker teams from getting too weak. The main aim of the aforementioned brief was to show how *concentration ratios* could be used to analyse changes in the degree of competitiveness within a sports league, with particular reference to the English Premier League.

In this paper we will look more closely at a complementary measure of league competitiveness: the *Hirschman-Herfindahl Index*. Unlike the concentration ratio, which focuses on the dominance of a fixed number of teams relative to the rest of the league in terms of points won, this measure is based on the *relative distribution* of points earned by all the teams over an individual season. Using a 25 year time frame, we will illustrate how this measure can be used to stimulate an analysis of competitiveness within the top tier of English and Scottish football.

2. Competitiveness in the top tier of Scottish and English Football

In Scottish football, Glasgow Celtic and Glasgow Rangers have been dominant. Over the last 25 years, there have only been three seasons when one of them has not been crowned as league champion: 1982/83 (Dundee United), 1983/84 (Aberdeen) and 1985/86 (Aberdeen). This pattern of dominance by the two Glasgow teams has characterised Scottish football all the way back to the 1890/91 season, when the league was first contested.

In contrast, English football has been less prone to the pattern of two-team dominance that has characterised Scottish football. Although Manchester United and Liverpool have enjoyed significant periods of success since the end of the Second World War, with 14 championships apiece, teams such as Arsenal (8 championships), Everton (4), Chelsea, Leeds United and Wolverhampton Wanderers (3 apiece) have also enjoyed notable seasons. A total of 16 different teams have achieved top place at least once since 1946/47, a figure which grows to 23 if we extend the list back to the inaugural 1888/89 season.

3. The Hirschman-Herfindahl Index

The Hirschman-Herfindahl Index (HHI) owes its name to the work of two American researchers who independently developed the approach to measure inequality within industry, based on market share. The basic formula for an n firm industry is:

$$HHI = \sum_{i=1}^n S_i^2$$

where S_i denotes firm i 's share of market output. The effect of squaring S_i is to emphasise the existence of larger firms in a market. For example, if two firms operating in a duopolistic industry shares of output are 0.7 and 0.3 respectively, the HHI will produce a larger figure than if the same two firms had equal shares of 0.5 (you may wish to confirm this proposition by comparing $[0.7^2 + 0.3^2]$ and $[0.5^2 + 0.5^2]$). Underlying this approach is the view that the greater the level of market power a firm has, the more likely that it will exploit this power to its own advantage, potentially to the detriment of society as a whole.

Theoretically, the HHI for an industry can lie between one (a pure monopoly) and zero (perfect competition). Where percentage shares of outputs are used, the corresponding outliers become 10,000 (100 percent squared) and zero. In the US, an industry characterized by an HHI estimate exceeding 0.18 (or 1800 if percentage output shares are used) is deemed to be 'highly concentrated' from an antitrust point of view.¹

Applying the same basic approach to a sports league means that S_i denotes each team's share of available points. However, the potential range for the HHI will be smaller, reflecting the fact that even a team that wins every match cannot be a pure monopoly since fixtures (and hence points) will be contested by teams lower down in the league.

Like the concentration ratio, the HHI is sensitive to league size. This is significant because the numerical composition of both countries' top divisions has varied over time. Over the last 25 years, the size of Scotland's top tier has fluctuated 6 times between 10 and 12 teams, the latter being the norm since the 2000/01. Similarly, the same period has seen England's top division contested by 22 teams (9 seasons), 21 teams (one season) and 20 teams (15 seasons). There is an on-going debate whether the English Premier League should be reduced in size from 20 teams to 18 or even 16 in order to counteract the problems of fixture congestion.

Variations in league size can be corrected for by dividing the actual HHI by the HHI value that would be attained in a perfectly balanced league. We shall refer to this re-formulation as the Herfindahl Index of Competitive Balance (or HICB), as shown below:

$$HICB = \left(\frac{HHI}{1/n} \right) \times 100$$

¹ The impact of a proposed merger between firms within such an industry would be scrutinized in great detail by the authorities.

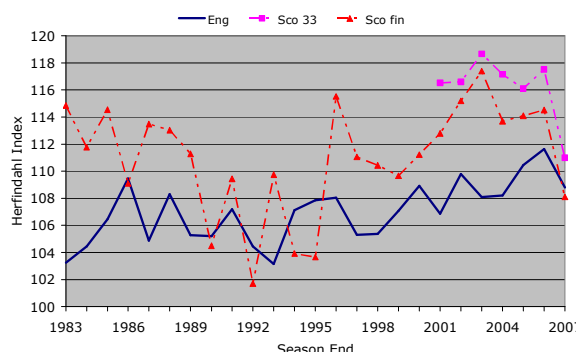
The denominator, $(1/n)$, is equivalent to $\sum P_i^2$, (where P_i equals the share of points attained by each club in a perfectly balanced league).

A perfectly balanced league of any size will now produce a HICB value of 100, with a decline in competitive balance reflected by an increase in the index estimate.

4. Measuring competitiveness in the top tiers of English and Scottish football

The graph below plots out the annual HICB for the top tiers of English and Scottish football over the 25 year period 1982/83 to 2006/07. The bold line depicts the trend for England and, for reasons to be explained shortly, two dashed lines, are used to depict Scotland's experience.

Chart 1: Competitive Balance in Top Tier English and Scottish Football,



At the outset, two specific observations can be made. First, with 100 representing the score for a perfectly balanced league, it can be seen that both leagues experience fluctuations in competitive imbalance. However, taking the twenty-five year period as a whole, Scottish football is significantly less competitive than its English counterpart.

Second, following the emergence of the breakaway 'Premier' divisions in 1992/93 (England) and 1998/99 (Scotland), there seems to be an overriding decline in divisional competitiveness in addition to the observed year on year fluctuations. This outcome is predictable since both

breakaways were prompted by the desire of the larger clubs to receive a greater proportion of the growing revenue streams that football was attracting. Let us now consider these trends in more detail, focusing initially on why a second set of estimates was derived for 2000/01 onwards.

In its inaugural season, the ten Scottish Premier League (SPL) teams played each other four times (36 games per side). Following the SPL's expansion to twelve teams in 2000/01, the fixture schedule ceased to be symmetrical in an attempt to avoid fixture congestion. Initially teams play each other three times, generating 33 games each. The league is then divided equally into two on merit, with the top six teams playing a further five fixtures against each other and the bottom six likewise playing five more fixtures against each other. In total each team plays a total of 38 games instead of the 44 matches that would emerge from a symmetrical schedule. The dashed line which emerges at the 2000/01 season represents the HICB estimate after the initial 33 games. The main 25-year dashed line is derived from the final league table.

One would expect that the dashed line emerging from the initial 33 games to lie above its counterpart. This is because for the last few games, all teams are meeting opposition closer to their own level of ability (for example the bottom sides do not have to play either of the two Glasgow sides). This proves to be the case.

Taking the trend as a whole, it can be seen that the emergence of the SPL prompted a rapid decrease in competitiveness between the top-tier (the underlying trend can be seen to rise). This suggests that with additional resources at their disposal, the bigger clubs were able to build stronger teams with an eye to competing more successfully in European competition as well as in domestic competition.

A similar pattern occurs following the emergence of the English Premier

League in 1992/93. Underlying the oscillations in the estimated HICB, there is also a discernable upward trend. When we used the three team concentration ratio in the previous brief, we witnessed a similar pattern. However, whereas the concentration ratio showed that the top teams were breaking away from the rest of the league, the HICB estimates introduced here also imply that the league as a whole is becoming less equal.

One of the reasons for this may also reflect the potentially destabilizing effect of European competition for domestic clubs. As well as the Champions League, there are also opportunities for teams to qualify for the UEFA Cup, itself a lucrative competition. The competition for these places extends down into mid-table. Although these rewards should be the catalyst for increases in competitive balance, it simply creates another sub-league which has its own 'entry barriers'. Teams that fail to invest large sums of money to add strength and depth to their playing squad become inevitable candidates for relegation.

Finally, let us turn to the question posed in the title of this brief: 'is the Scottish Premier League less competitive than its English counterpart?' Taking the 25 year period as a whole, the answer seems to be yes. This reflects the long-term dominance of Glasgow's 'old firm' (Rangers and Celtic). Although English football has produced its own dominant teams, there has been a higher *degree* of competition from smaller clubs, thereby producing lower HICB estimates. For example during the 1980s, teams such as Watford, Southampton, Nottingham Forest, Derby County, Queens Park Rangers, West Ham United Norwich City and Sheffield Wednesday all enjoyed significant success, even if they did not actually win the league itself. In contrast, the dominance of one or both of Glasgow Celtic and Glasgow Rangers has been reflected in

a large differences in points won relative to the 'rest'.

It can be seen that there was a brief period when the top tier of Scottish football was actually more competitive than its English counterpart. This coincides with aforementioned emergence of the English Premiership. However after the 1995/96 season when second-placed Celtic finished 28 points ahead of third placed Aberdeen, the top tier of Scottish football reverted to being significantly less competitive than its English counterpart.

For both countries, the emergence of the break-away English and Scottish Premier Leagues has been the catalyst for a reduction in competitiveness. If football supporters enjoy the wider benefits of English and Scottish teams being successful in European club competition, whoever the team is, then this decline in competitiveness may not be viewed as problematic. If not, some Premier League teams are in danger of losing their marginal supporters to smaller clubs or even to other sports which offer a more traditional product.

5. Following up on this brief

One of the advantages of undertaking economic analyses of professional team sports is that data bases are compiled rapidly and can be accessed easily.

In terms of this brief, you could analyse competitiveness within the second tier of the English and Scottish football leagues and gain an insight into the whether non-Premiership football offers a more competitive product for potential consumers, albeit contested between clubs using less skilled squads. Similarly, your analysis could be extended to enable comparisons to be made between the football leagues of other countries.²

It should be noted that quantitative analysis, such as that depicted in this brief, cannot give an

insight into every dimension of a policy debate directly. An example is the growing tension that exists between the two Glasgow clubs and the other Scottish teams.

The failure of teams from other major population centres, such as Aberdeen, Dundee and Edinburgh, to make any sort of sustained impression on Scotland's top tier is itself a source of instability. Despite the fleeting emergence of Heart of Midlothian as serious contenders for the Scottish Premier League title in 2005/06, Glasgow Celtic and Glasgow Rangers have not hidden their interest in joining the English Premier League. Such a move would not only benefit both teams financially (for example, access to monies from the English Premiership's television deal with BSkyB and Setanta), but also enhance their capacity to compete more successfully in European club competition (which itself could unlock even more lucrative revenue streams). However, the knock-on effect of such a change would be immense for both English and Scottish domestic football, both economic and constitutional. You may wish to consider who would gain/lose from such an initiative and to identify the impediments that would exist to such a change taking place.

To help structure your thoughts, you may wish to consider how such a move will affect: (a) competitiveness within the English Premier League; (b) competitiveness within the Scottish Premier League; (c) the finances and opportunities of teams such as Tottenham Hotspur, Blackburn Rovers, Heart of Midlothian and Aberdeen; (d) teams such as Wolverhampton Wanderers who reside currently in the second tier of English football but have aspirations towards becoming part of the 'elite'; and (e) the Scottish economy as a whole.

² A useful source of archived data on all international and domestic football is located at: <http://www.rssf.com/>.