How exciting are the major European football leagues?

Key findings of a study of the competitive balance in football leagues

Roland Berger Strategy Consultants
University of Tübingen

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A Roland Berger and University of Tübingen study of the competitive balance of football leagues sees FRA and GER as most evenly matched.

This study analyzes the trends in competitive balance in Europe's top five football leagues (England, France, Germany, Italy and Spain). "Competitive balance" means the degree to which a league is evenly matched (e.g. where non-dominance by certain teams reflected in the relative uncertainty of results).

Analysis of the long-, medium- and short-term competitive balance reveals that France and Germany have the most competitively balanced and hence, by our definition, the most exciting and unpredictable leagues, and that the English league is the worst in this regard.

The race for the championship is most exciting in the German and French leagues and least unpredictable in the Spanish league, which is dominated by Real Madrid and Barcelona.

The Champions League race is more or less evenly balanced in all leagues. The same holds true for the battle against relegation.

However, the competitive balance has deteriorated across all leagues in the past decade. The introduction of UEFA Financial Fair Play could in future reverse or at least slow this trend to some degree by curbing the top teams' financial dominance.

Source: Roland Berger, University of Tübingen
France and Germany have the most competitively balanced and hence the most exciting leagues – England's is the worst

League rankings: Competitive balance in the long, medium and short term

<table>
<thead>
<tr>
<th>Country</th>
<th>Long term</th>
<th>Medium term</th>
<th>Short term</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOTAL CBR H index C5 index</td>
<td>TOTAL UCS UCL UREL</td>
<td>Theil index</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>1. 1. 1. 1.</td>
<td>1. 1. 1. 1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>Germany</td>
<td>2. 2. 2. 2.</td>
<td>3. 1. 4. 1.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>Italy</td>
<td>3. 4. 3. 3.</td>
<td>2. 3. 1. 1.</td>
<td>4.</td>
<td>3.</td>
</tr>
<tr>
<td>Spain</td>
<td>3. 2. 4. 4.</td>
<td>4. 5. 1. 1.</td>
<td>2.</td>
<td>3.</td>
</tr>
<tr>
<td>England</td>
<td>5. 5. 5. 5.</td>
<td>5. 3. 4. 1.</td>
<td>4.</td>
<td>5.</td>
</tr>
</tbody>
</table>

1) Rankings for the H index and C5 index based on relative positions in 2010/11; see detailed results in the individual sections

Source: Roland Berger, University of Tübingen
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<td>46</td>
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</tbody>
</table>
0. Introduction
The study was conducted jointly by Roland Berger Strategy Consultants and the University of Tübingen

**Professor Björn Bloching**
Roland Berger, Partner
Head of the global Marketing & Sales and Consumer Goods & Retail Competence Centers

**Profile**
- 15 years’ consulting experience in marketing, sales and sports
- Head of the Marketing & Sales and Consumer Goods & Retail Competence Centers
- Expert in sports business, sports branding, restructuring and strategy

**Contacts**
Phone +49 (0)40 37631-4446
Mobile +49 (0)160 744-4446
Bjoern_Bloching@de.rolandberger.com

**Professor Tim Pawlowski**
University of Tübingen
Chair of Tübingen

**Profile**
- Full Professor of Sport Economics, Sport Management and Sport Media Research at the University of Tübingen
- Research focus on the econometric analysis of sports demand and league competitions
- Scholar in the UEFA Research Grant Program 2011/12

**Contacts**
Phone +49 (0)7071 29 76544
tim.pawlowski@uni-tuebingen.de

Source: Roland Berger, University of Tübingen
The study analyzes trends in the competitive balance of Europe's top five football leagues

Relevance and scope of the study

RELEVANCE AND BACKGROUND

• **Competitive balance is important for fans:** Increasingly unevenly balanced sports competitions could have a negative impact on fans' interest and consequently affect both stadium attendance and TV viewing figures.  

• **For clubs:** Unbalanced sports competitions could also increase the risk of insolvency for struggling clubs.

• **Strong interest in maintaining competitive balance:** League organizations are clearly interested in maintaining a certain degree of competitive balance, as reflected in UEFA's research grant for a project on the perceived relevance of competitive balance for fans.

• **Impact of UEFA Financial Fair Play:** The new UEFA FFP regulations highlight the importance of competitive balance

SCOPE OF THE STUDY

• **Key question:** How exciting are Europe's football leagues?
  – In this context, "excitement" can be understood as a highly competitive balance that makes it difficult to predict results. It should be noted, however, that other factors also influence the perceived excitement of a match (e.g. clubs' history and reputation, local derbies, large fan bases, etc.)

• **Methodology:** Trend analysis of competitive balance
  – This study analyzes the long-, medium- and short-term trends in competitive balance in the top five leagues in European professional football (England, France, Germany, Italy and Spain)

It is important to assess several dimensions of competitive balance to obtain a fair picture of football leagues.

Measures of competitive balance:
1) Cairns, Jennett and Sloane (1986)

<table>
<thead>
<tr>
<th>A</th>
<th>Long-term</th>
<th>B</th>
<th>Medium-term</th>
<th>C</th>
<th>Short-term</th>
</tr>
</thead>
</table>

**Description and measurement**

- **Inter-seasonal**
  - Domination (or otherwise) of a league by a few teams over time
  - Comparison of positions in the final tables over several seasons

- **Intra-seasonal**
  - Excitement of sub-competitions
  - Matches in the race for different achievements (championship, Champions League qualification, relegation)

- **Individual matches**
  - Analysis of betting odds for individual matches to compare the uncertainty of match outcomes

**Indicators**

- Competitive balance ratio
- H index
- C5 index
- UCS measure
- UCL measure
- UREL measure
- Theíl index

Source: Roland Berger, University of Tübingen

For an exact definition of the measures/indices and the methodology used, see section E
A. Long-term competitive balance
The two main measures to determine long-term competitive balance in football leagues can be combined to derive the CBR

Measures of long-term competitive balance

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Indicators$^{1)}$</th>
<th>Questions answered</th>
</tr>
</thead>
</table>
| Intra-season competitive balance             | • **Static indicator**: Performance differences across teams in a league during a season  
• How large is the points difference between teams? | • H index  
• C5 index  
• Standard deviation of league points (SDLP) | • How evenly balanced is a league during a season?  
• How tight are championship races, etc.? |
| Intra-team competitive balance               | • **Dynamic indicator**: Performance of a given team over a period of time  
• How much do the final league positions of a team vary (e.g. long-term dominance)? | • Standard deviation of team points (SDTP) | • What degree of permeability does a league have?  
• Are different teams playing for trophies? |
| Combination of intra-season and intra-team competitive balance | • **Combined indicator**: Comprehensive measure that captures both competitive balance components (intra-season and intra-team) | • Competitive balance ratio (CBR) | • How evenly balanced is a league in the long term? |

1) For an exact definition of the measures/indices and the methodology used, see section E
French and German leagues have the strongest competitive balance – Balance has deteriorated across all leagues in the past decade

Changes in the long-term competitive balance

Competitive balance has declined across leagues

**Competitive balance ratio [91/92-00/01 vs. 01/02-10/11]**

<table>
<thead>
<tr>
<th>Country</th>
<th>1991/92-2000/01</th>
<th>2001/02-2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>0.78</td>
<td>0.61</td>
</tr>
<tr>
<td>Germany</td>
<td>0.66</td>
<td>0.53</td>
</tr>
<tr>
<td>Italy</td>
<td>0.62</td>
<td>0.52</td>
</tr>
<tr>
<td>Spain</td>
<td>0.50</td>
<td>0.46</td>
</tr>
<tr>
<td>England</td>
<td>0.44</td>
<td>0.33</td>
</tr>
</tbody>
</table>

**Level of comp. balance**

1) For an exact definition of the measures/indices and the methodology used, see section E

**COMMENTS**

- The competitive balance ratio (CBR) measures competitive balance for a given team and season by comparing standard deviations
- Declining competitive balance from the 90s to the 00s: The competitive balance has declined in all five leagues
- France remains most exciting, followed by Germany and Italy. The competitive balance remains weakest in Spain and England
- Champions League money as an explanation: The introduction of high Champions League payouts is a likely reason for this development

Source: Roland Berger, University of Tübingen
The competitive balance ratio (CBR) is made up of two separate elements: a static and a dynamic indicator.

Elements of the competitive balance ratio (CBR)\(^1\)

<table>
<thead>
<tr>
<th>Country</th>
<th>Static Indicator (intra-season)</th>
<th>Dynamic Indicator (intra-team)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Points difference between top 5 teams in 1 season</td>
<td>Performance variation for 1 team over several seasons</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>13.7</td>
<td>13.2</td>
</tr>
<tr>
<td></td>
<td>13.7</td>
<td>13.2</td>
</tr>
</tbody>
</table>

\(^1\) For an exact definition of the measures/indices and the methodology used, see section E.

Source: Roland Berger, University of Tübingen
The competitive balance in England and Spain has deteriorated in recent years – Germany and France remain the most balanced.

Long-term competitive balance measured by the H index

Higher competitive balance in German and French leagues

**H index of competitive balance [4-year moving averages]**

- **England**
- **Spain**
- **Italy**
- **Germany**
- **France**

**COMMENTS**

- **The H index measures the sum of the quadratic share of points won by each club in a league**
- **Germany and France most balanced:** The French and German leagues have the most balanced competitive landscapes
- **England most unbalanced:** England has moved from second to first as the most unbalanced league
- **Competitive balance in Italy improving:** The Italian league has improved from last to third place
- **Spain constantly deteriorating:** Spain had the most competitive league but is now in fourth place, only better than England

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
A similar picture emerges when examining the top teams only – France and Germany are the most balanced, England is unbalanced.

Long-term competitive balance measured by C5 index\(^1\)

More excitement among German and French top teams

C5 index of competitive balance [4-year moving averages]

- **England**: More points won by top teams.
- **Spain**: Smallest gap in Spain and Germany.
- **Italy**: Moving in opposite directions.

**COMMENTS**

- **The C5 index measures the share of points won by the top 5 teams\(^1\)**
- **English top teams in a league of their own**: England’s top five teams almost always win the largest share of points in their league.
- **Smallest gap in France and Germany**: The share of points won by the top teams is lowest in the French and German leagues.
- **Spain and Italy moving in opposite directions**: While Spain has constantly become more unbalanced, the gap between top teams and the rest has grown smaller in Italy.

1) For an exact definition of the measures/indices and the methodology used, see section E.
Pronounced inter-season deviations in some cases – Moving averages reveal long-term trends

Inter-season deviations in competitive balance indices

**H index for Italy and France**

**H index of competitive balance [real values vs. 4-year moving avg.]**

- Moving averages over a four-season period were used to smooth out annual fluctuations and make trends more clearly visible
- Pronounced inter-season deviations exist in some cases (such as in 1998/99, when Italy and France briefly changed positions)
- However, the long-term trend remains intact

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
B. Medium-term competitive balance
The medium-term (i.e. intra-season) competitive balance can be measured by analyzing the balance in three key sub-competitions:

Measures of medium-term competitive balance:

1. **Championship race (UCS)**
   - Measures the percentage of games in a given season in which at least one of the teams can still win the championship.

2. **Champions League race (UCL)**
   - Measures the percentage of games in a given season in which at least one of the teams can still qualify for the UEFA Champions League.

3. **Relegation battle (UREL)**
   - Measures the percentage of games in a given season in which at least one of the teams can still be relegated.

Source: Roland Berger, University of Tübingen

1) For an exact definition of the measures/indices and the methodology used, see section E.
The championship race is most exciting in the German and French leagues and least exciting in the Spanish league

Medium-term competitive balance measured by UCS

More exciting championships in Germany and France

% of exciting games [avg. '06/07-'11/12]

To win the championship (UCS)

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
<th>France</th>
<th>England</th>
<th>Italy</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-year trend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

64 66 57 57 51

COMMENTS

- The UCS figure measures the percentage of games in a given season in which at least one of the teams can still win the championship

- German and French championships are the most unpredictable: A higher percentage of games can still have a bearing on the race for the championship in the German and French leagues. Germany and France have each had 5 different champions in the past decade, the UK has had 4 and the other leagues only 3

- Spanish championship most predictable: The last eight championship titles in Spain were won by either Real Madrid or Barcelona. This is reflected in a negative competitive balance trend in Spain over the past six years

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
However, inter-year fluctuation can be significant – The French and German championships are not always the most exciting.

Medium-term competitive balance measured by UCS\(^1\) – Over time

- **France**: Only 9 points between 1\(^{st}\) and 5\(^{th}\) place
- **Spain**: Barcelona and Real 30 points ahead of other teams
- **Italy**: Similarly exciting championship races in all leagues
- **England**: Germany: Dortmund 17 points ahead of 3\(^{rd}\) place
- **Germany**: Scotland has similar races, despite Lyon winning 7 out of last 11 championship titles
- **Spanish duopoly**: Championship is not decided earlier than in other leagues, but less teams are involved in the race (normally only Real and Barcelona)
- **High fluctuation**: Year-on-year fluctuation of up to 35 percentage points in the number of exciting games

1) UCS measures the share of intra-season games in which at least one of the teams can still win the championship; For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
Balance in Champions League race roughly similar in all leagues – Spain, France and Italy slightly more exciting than England/Germany

Medium-term competitive balance measured by UCL\(^1\)

Champions League race equally exciting

<table>
<thead>
<tr>
<th>League</th>
<th>% of exciting games [avg. '06/07-'11/12]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>81</td>
</tr>
<tr>
<td>France</td>
<td>85</td>
</tr>
<tr>
<td>England</td>
<td>80</td>
</tr>
<tr>
<td>Italy</td>
<td>85</td>
</tr>
<tr>
<td>Spain</td>
<td>87</td>
</tr>
</tbody>
</table>

\(^1\) For an exact definition of the measures/indices and the methodology used, see section E

**COMMENTS**

- The **UCL figure** measures the percentage of games in a given season in which at least one of the teams can still qualify for the UEFA Champions League\(^1\)

- **Race for spots in the Champions League equally exciting**: The competition for CL places is more or less equally exciting in all leagues. Spain, France and Italy are slightly ahead of Germany and England

- **Closest CL race in Spain; Germany and England lag behind**: Spain has a smaller points difference between the last place for CL qualification and the last place for EL qualification (avg. 6.0 points\(^2\)). The biggest differences are in England and Germany (7.9 points\(^2\))

Source: Roland Berger, University of Tübingen

1) For an exact definition of the measures/indices and the methodology used, see section E
2) Average from 2001/02-10/11
Similar percentage of exciting matches in the race for UEFA Champion League places across all leagues – Little fluctuation

Medium-term competitive balance measured by UCL\(^1\) – Over time

COMMENTS

- **Little fluctuation:** Year-on-year fluctuation of only 18 percentage points in the number of exciting games
- **More ambitious teams in Spain, Italy and France:** More similarly ambitious/balanced teams in the upper mid-table slots in Spain, France and Italy. France with a very boring CL race in 2011/12

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1) UCL measures the proportion of intra-season games in which at least one of the teams can still qualify for the UEFA Champions League; For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
The relegation battle is almost equally exciting in all five leagues

Medium-term competitive balance measured by UREL\(^1\)

Relegation battle equally exciting

<table>
<thead>
<tr>
<th>League</th>
<th>Percent of exciting games [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>89</td>
</tr>
<tr>
<td>France</td>
<td>92</td>
</tr>
<tr>
<td>England</td>
<td>89</td>
</tr>
<tr>
<td>Italy</td>
<td>91</td>
</tr>
<tr>
<td>Spain</td>
<td>92</td>
</tr>
</tbody>
</table>

**COMMENTS**

- **The UREL figure measures the percentage of games in a given season in which at least one of the teams can still be relegated**\(^1\)
- **Relegation battle equally exciting**: France and Spain have the highest percentage of games in which at least one team can still be relegated. The figures for Germany and England are slightly lower
- **Decision on last day of season**: In all five leagues, the decision on which teams are relegated is, on average, not reached until the last day of the season\(^2\)

To avoid relegation

- Germany
- France
- England
- Italy
- Spain

6 year trend

1) For an exact definition of the measures/indices and the methodology used, see section E
2) Average for the seasons 2001/02-2010/11

Source: Roland Berger, University of Tübingen
Little fluctuation in exciting relegation battles that remain roughly similar

Medium-term competitive balance measured by UREL\textsuperscript{1}) – Over time

<table>
<thead>
<tr>
<th>% of exciting games</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
</tr>
<tr>
<td>95</td>
</tr>
<tr>
<td>90</td>
</tr>
<tr>
<td>85</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>75</td>
</tr>
<tr>
<td>70</td>
</tr>
</tbody>
</table>

\textbf{COMMENTS}

- \textbf{Little fluctuation:} Difference of only 13 percentage points in the number of exciting games in the various leagues over the past five seasons
- \textbf{UREL measure:} A low UREL measure does not necessarily mean that the fight against relegation was not "exciting". Instead it measures the number of teams involved

\textsuperscript{1}) UREL measures the proportion of intra-season games in which at least one of the teams can still be relegated; For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
C. Short-term competitive balance
Short-term competitive balance can be analyzed by comparing the uncertainty of individual match results based on betting odds

Measures of short-term competitive balance

What?
- Comparison of the short-term competitive balance between and within leagues using the Theil index

How?
- Analysis of betting odds (source: www.win-1x2.com based on adjusted betting odds from www.betfair.com) for individual matches to compare the uncertainty of match outcomes

Result?
- Which matches had the most uncertain outcomes, i.e. the most even betting odds?
- How balanced (i.e. unpredictable) are the matches in a league?

1) For an exact definition of the measures/indices and the methodology used, see section E
Betting odds confirm that France and Germany have the highest percentage of exciting games – Spain high, but with negative trend

Short-term competitive balance measured by the Theil index

Betting odds: Closest matches in France, Spain and Germany

% of exciting games [average 2006/07-'10/11]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>67</td>
<td>68</td>
<td>67</td>
<td>68</td>
<td>67</td>
</tr>
<tr>
<td>Spain</td>
<td>70</td>
<td>61</td>
<td>61</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>Germany</td>
<td>60</td>
<td>60</td>
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<tr>
<td>England</td>
<td>60</td>
<td>60</td>
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<td>60</td>
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<tr>
<td>Italy</td>
<td>60</td>
<td>60</td>
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<tr>
<td>Spain</td>
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<td>61</td>
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<td>61</td>
<td>61</td>
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<tr>
<td>Germany</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>France</td>
<td>67</td>
<td>68</td>
<td>67</td>
<td>68</td>
<td>67</td>
</tr>
</tbody>
</table>

Theil index of match result uncertainty

- Theil index measures the uncertainty of a game’s result by comparing betting odds
- Games most exciting in French, Spanish and German leagues: Highest percentage of games with uncertain results in France, Spain and Germany
- Negative trend in Spain: Germany and France clearly outperformed Spain and the other two leagues in the 2010/11 season
- Less exciting games make the difference: Most exciting matches are equally exciting everywhere, but the rest are more uncertain (and hence exciting) in GER and FRA

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
Matches in French and German leagues growing more exciting – Result uncertainty is deteriorating in Spain and low in England

Short-term competitive balance measured by the Theil index\(^1\) – Over time

\[\text{% of exciting games}\]

\[\begin{array}{c}
\text{2006/07} & \text{2007/08} & \text{2008/09} & \text{2009/10} & \text{2010/11} \\
\hline
\text{Germany} & \text{France} & \text{Spain} & \text{Italy} & \text{England} \\
\end{array}\]

\(\text{France} & \text{Germany} & \text{Spain} & \text{Italy} & \text{England}\)

COMMENTS

- **Germany and France remain top:** Increase in percentage of exciting/uncertain matches in German and French leagues
- **Negative trend in Spain:** Percentage of uncertain match results based on betting odds has declined in the Spanish league

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
The Theil index can be expressed in absolute or relative terms – There is no significant difference in the outcomes

Theil index – Absolute and relative figures

**Theil index [% of exciting games]**

<table>
<thead>
<tr>
<th>Country</th>
<th>Germany</th>
<th>France</th>
<th>England</th>
<th>Italy</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>67</td>
<td>70</td>
<td>60</td>
<td>61</td>
<td>68</td>
</tr>
</tbody>
</table>

**Theil index [absolute]**

<table>
<thead>
<tr>
<th>Country</th>
<th>Germany</th>
<th>France</th>
<th>England</th>
<th>Italy</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>1.023</td>
<td>1.028</td>
<td>0.997</td>
<td>1.004</td>
<td>1.017</td>
</tr>
</tbody>
</table>

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
The most exciting matches are equally exciting in all leagues, but the results of the rest are more uncertain in Germany and France.

Short-term comp. balance measured by Theil index\(^1\) – By quarters [avg. 06/07-10/11]

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>1st quarter</th>
<th>2nd quarter</th>
<th>3rd quarter</th>
<th>4th quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
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<td>1.07</td>
<td>1.09</td>
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<td>0.91</td>
<td>0.85</td>
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<td>1.09</td>
</tr>
<tr>
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<td>0.83</td>
<td>0.87</td>
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<td>1.09</td>
</tr>
<tr>
<td>Italy</td>
<td>0.91</td>
<td>1.00</td>
<td>1.03</td>
<td>1.07</td>
<td>1.09</td>
</tr>
<tr>
<td>Spain</td>
<td>0.83</td>
<td>0.85</td>
<td>1.03</td>
<td>1.07</td>
<td>1.09</td>
</tr>
</tbody>
</table>

**COMMENTS**

- Most exciting matches are equally exciting everywhere: 3rd and 4th quarters measured by result uncertainty.
- Matches between unequal opponents more exciting in Germany and France: Matches whose results are least uncertain (1st quarter) are more exciting in Germany and France – **Less difference between top teams and rest of league**

\(^1\) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
Matches involving top teams are the least uncertain on average –
Matches between mid-table teams are the most unpredictable

Theil index by league position

<table>
<thead>
<tr>
<th>League and Theil index positions [average 2006/07-'10/11]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theil index position</td>
</tr>
<tr>
<td>Position in the league</td>
</tr>
</tbody>
</table>

---

**Top teams with least uncertain match results**

- **Spain**
- **France**
- **Italy**
- **England**
- **Germany**

**COMMENTS**

- The Theil index measures the uncertainty of a game’s result by comparing betting odds
- Top teams' matches are the least unpredictable: Across all leagues, matches played by the top 3-4 teams have the most certain results
- Mid-table teams play the closest matches: Teams in places 6-12 play the most unpredictable matches
- Attraction for spectators not only from close matches: A game's perceived attractiveness is linked not only to an uncertain outcome, but also to the possibility of upsets or an away team with a strong brand

1) For an exact definition of the measures/indices and the methodology used, see section E
2) German league has only 18 places
3) Coates, Humphreys & Zhou (2012)
4) Pawlowski & Anders (2012)

Source: Roland Berger, University of Tübingen
D. Outlook: How will the UEFA Financial Fair Play regulations affect the competitive balance?
How the UEFA Financial Fair Play regulations will affect competitive balance is still somewhat unclear

Outlook: The effect of the UEFA Financial Fair Play regulations

KEY COMPONENTS

- Closer tracking of UEFA club licensing standards, especially the **break-even rule**, will require more profitable business operations and less alternative, extraordinary financing

- As of 2013/14, qualification for UEFA club competitions requires compliance with new UEFA Financial Fair Play regulations beginning in 2011/12:
  - Aggregate break-even deficit of less than EUR 5 m over fiscal 2011/12 and 2012/13
  - Higher aggregate break-even deficit tolerable up to EUR 45 m only if fully covered by shareholders
  - No overdue payables, no deteriorating negative equity and positive going-concern validation

POSSIBLE EFFECTS ON COMP. BALANCE

**UEFA Financial Fair Play regulations could curb extreme dominance by top teams**

UEFA Financial Fair Play will somewhat reduce the large deficits of top teams (who may have "bought" their success with these deficits), making leagues more balanced and, in particular, reducing the gap between the top (say 4-6) teams and the rest of the league.

**UEFA FFP could prevent smaller teams from achieving surprising success stories (upsets)**

Clubs with high football-related revenue streams (such as Manchester United, Real Madrid, Bayern Munich, etc.) will continue to dominate their domestic leagues.

---

1) Selected UEFA FFP regulations only
2) Drut and Raballand (2012, p. 85) argue that "Theoretically, the UEFA ‘financial fair-play’ rules should yield more financial equality and rebalance European competitions even if differences in revenue will remain”. The intra-season dimension of CB could therefore improve.
3) Sass (2012, p. 1) argues that "since small clubs are no longer allowed to overspend and thereby invest their way to a greater market size in the future, the model predicts a negative trend in competitive balance.” The (dynamic) intra-team dimension of CB could therefore deteriorate.

Source: Roland Berger
E. Methodology and definitions
**Long-term competitive balance measure: competitive balance ratio (CBR)**

### Formula

\[
CBR = \frac{SDTP}{SDLP}
\]

### Description

- **Development:** Humphreys (2002)
- **Definition:** Humphreys (2002) introduced the competitive balance ratio (CBR), including both components of competitive balance (intra-team (SDLP) and intra-season (SDTP))
- **Interpretation:** The index rises as CB increases
- **Applications:** Booth (2004), Pawlowski et al. (2010)

### References

### Long-term, intra-season UO: standard deviation of league points (SDLP)

<table>
<thead>
<tr>
<th>Formula</th>
<th>Description</th>
</tr>
</thead>
</table>
| \[ SDLP_t = \sqrt{\frac{\sum_{i=1}^{N}(TP_{t,i} - \overline{TP}_t)^2}{N_t}} \] | - **Development**: Humphreys (2002), modification of the standard deviation of winning percentages (WPCT) by Scully (1998) and Quirk & Fort (1997), for example
- **Definition**: The standard deviation of league points (SDLP) is calculated by the individual team points in a season \(TP_{t,i}\) and the average points in a league of \(N\) teams
- **Interpretation**: The index increases as CB decreases
- **Applications**: Eckard (1998), Humphreys (2002)

### References

Long-term, intra-team UO: standard deviation of team points (SDTP)

**Formula**

\[ SDTP = \sqrt{\frac{\sum_{i=1}^{T} (TP_{t_i} - \overline{TP})^2}{T}} \]

**Description**

- **Development**: Buzzacchi et al. (2001), Humphreys (2002)
- **Definition**: The standard deviation of team points (SDTP) was formulated to reflect team components that correlate to the SDLP. The SDTP is calculated by the individual team points \( TP_{t_i} \) and the average points of that team within a period \( t \)
- **Interpretation**: The index increases as CB increases
- **Applications**: Humphreys (2002)

**References**

Long-term competitive balance measure: H index of competitive balance (HICB)

Formula

\[ HICB_t = \frac{\sum_{i=1}^{N} s_{i,t}^2}{\frac{1}{N_t}} \times 100 \]

Description

- **Definition**: The original HHI presents the concentration of turnover within a market. In sport economics research, the HHI was modified to analyze competitive balance (HICB). It thus calculates team-specific squared shares of points \((s_{i,t}^2)\) for \(N\) teams in season \(t\), where \(N\) is the number of teams in the league. The HICB allows for inter-divisional comparisons.
- **Interpretation**: The index increases as CB decreases.
- **Applications (excerpt)**: Michie & Oughton (2004), Pawlowski et al. (2010)

References

# Long-term competitive balance measure: C5 index of competitive balance (C5ICB)

## Formula

![Formula]

\[
C5ICB_t = \frac{\sum_{i=1}^{5} S_{it}}{5/N_t} \times 100
\]

## Description

- **Development**: Industrial Economics, Michie & Oughton (2004)
- **Definition**: The concentration ratio \( CR_i \) is based on shares of points \( S_i \) for \( N \) teams in comparison to the league as a whole. The CR5 index is calculated to display the share of points for the five top teams in a league. To ensure comparability, the measure must be adjusted for the league size. The so-called C5 index of competitive balance (C5ICB) is equal to the relation of actual CR5 to ideal CR5. C5ICB shows the concentration of points and thus the level of team domination.
- **Interpretation**: The index increases as CB decreases.
- **Applications**: Michie & Oughton (2004), Pawlowski et al. (2010)

## References

Medium-term competitive balance measure: UCS measure

Formula

\[
UCS = \begin{cases} 
\frac{100}{c_{CS} - b} & \text{if } c_{CS} - b \leq m - 3t \\
0 & \text{if } c_{CS} - b > m - 3t 
\end{cases}
\]

\[
UCS_{\text{modified}} = \begin{cases} 
1 & \text{if } c_{CS} - b \leq m - 3t \\
0 & \text{if } c_{CS} - b > m - 3t 
\end{cases}
\]

\[
Value = \frac{UCS_i}{N}
\]

Description

- **Development:** Janssens & Késenne (1987)
- **Definition:** $c_{CS}$ refers to the points a team needs to win the championship. $b$ denotes the points already scored at a certain point in time. $m$ is the maximum number of points that can be scored in a season. $t$ stands for a given match day. The index has been modified to simplify the analyses.
- **Interpretation:** The index increases as the uncertainty of the championship outcome increases.
- **Applications (excerpt):** Czarnitzki & Stadtmann (2002), Pawlowski & Anders (2012)

References

Medium-term competitive balance measure: UCL measure

**Formula**

\[
UCL = \begin{cases} 
\frac{100}{c_{CL} - b} & \text{if } c_{CL} - b \leq m - 3t \\
0 & \text{if } c_{CL} - b > m - 3t 
\end{cases}
\]

\[
UCL_{\text{modified}} = \begin{cases} 
1 & \text{if } c_{CL} - b \leq m - 3t \\
0 & \text{if } c_{CL} - b > m - 3t 
\end{cases}
\]

\[
Value = \frac{UCL_i}{N}
\]

**Description**

- **Development:** Pawlowski & Anders (2012), modification of Janssens & Késenne (1987)'s UCS measure
- **Definition:** \(C_{CL}\) refers to the points a team requires to qualify for the UEFA Champions League. \(b\) denotes the points already scored at a certain point in time. \(m\) is the maximum number of points that can be scored in a season. \(t\) stands for a given match day. The index has been modified to simplify the analyses
- **Interpretation:** The index increases as the uncertainty of the UEFA Champions League qualification outcome increases
- **Applications:** Pawlowski & Anders (2012)

**References**

Medium-term competitive balance measure: UREL measure

Formula

\[ UREL = \begin{cases} 1 & \text{if } b < c_{\text{NOREL}} \\ 0 & \text{if } b \geq c_{\text{NOREL}} \end{cases} \]

\[ Value = \frac{UREL_i}{N} \]

Description

- Development: Developed in this study as a modification of Janssens & Késenne (1987)'s UCS measure
- Definition: \( c_{\text{NOREL}} \) refers to the points a team needs to avoid relegation. \( b \) denotes the points already scored at a certain point in time
- Interpretation: The index increases as the uncertainty of the relegation outcome increases
- Applications: Applied for the first time in this study

References

Short-term competitive balance measure: Theil measure

Formula

\[
\text{THEIL} = \sum_{i=1}^{3} \frac{p_i}{\sum_{i=1}^{3} p_i} \log \left( \frac{\sum_{i=1}^{3} p_i}{p_i} \right)
\]

Description

- **Development:** Theil (1967)
- **Definition:** \( p_i \) indicates the home team's probability of winning, the away team's probability of winning and the probability that a match will be drawn based on betting odds
- **Interpretation:** The index increases as the \((a\ priori)\) uncertainty of the match outcome increases

References


List of references (3/3)


Appendix
Pronounced inter-season deviations in some cases – Moving averages reveal long-term trends

Seasonal deviations of competitive balance indices

H index\(^{1)}\)

C5 index\(^{1)}\)

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
The Theil index can be expressed in absolute or relative terms – There is no significant difference in the outcomes

Theil index – Absolute and relative

**Theil index [absolute]¹)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Germany</th>
<th>France</th>
<th>England</th>
<th>Italy</th>
<th>Spain</th>
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**Theil index [% of exciting games]¹)**

<table>
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<th>Year</th>
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</table>

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
The UCS measure can be presented in absolute or relative terms – There is no significant difference in the outcomes.

UCS measure – Absolute and relative

**UCS measure [absolute]¹**

<table>
<thead>
<tr>
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</table>

**UCS measure [% of exciting games]¹**

<table>
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<tr>
<th>Season</th>
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<th>England</th>
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</tr>
</tbody>
</table>

¹) For an exact definition of the measures/indices and the methodology used, see section E.

Source: Roland Berger, University of Tübingen
The UCL measure can be presented in absolute or relative terms – There are only slight differences in the outcomes

UCL measure – Absolute and relative

UCL measure [absolute]

UCL measure [% of exciting games]

1) For an exact definition of the measures/indices and the methodology used, see section E

Source: Roland Berger, University of Tübingen
It's character that creates impact.