Predicting the 2024/25 UEFA Europa League league phase (before the second matchday)

Club	Pot	Elo	ΔElo	Opp. Elo	Top 8	PO	EL	Change	R16
Tottenham	1	1799	8.89	1619	68.92%	29.44%	1.64%	3.55	91.06%
Roma	1	1796	2.94	1653	42.74%	50.03%	7.23%	−3.48	80.38%
Porto	1	1789	0.08	1661	30.06%	56.77%	13.17%	−8.76	72.29%
Lazio	1	1779	4.78	1644	63.58%	33.99%	2.44%	7.57	88.21%
Athletic Club	4	1774	22.38	1627	52.95%	42.60%	4.45%	3.19	82.35%
Man Utd	1	1772	5.66	1623	39.21%	52.43%	8.35%	−6.35	76.47%
Slavia Praha	1	1766	24.55	1634	61.25%	36.19%	2.57%	10.93	85.65%
Real Sociedad	2	1730	−14.75	1637	35.74%	54.29%	9.97%	−3.02	72.24%
Galatasaray	3	1723	23.90	1555	66.49%	31.58%	1.94%	10.27	85.55%
Frankfurt	1	1717	14.09	1592	27.95%	59.74%	12.31%	−6.20	63.46%
Lyon	2	1703	7.10	1615	47.29%	47.21%	5.50%	10.23	75.01%
Nice	4	1701	5.13	1618	28.42%	57.45%	14.13%	−2.84	61.81%
Fenerbahçe	2	1700	−3.83	1686	25.18%	57.47%	17.35%	5.28	59.23%
Hoffenheim	4	1670	−9.26	1644	16.10%	59.70%	24.20%	−3.88	48.41%
Braga	2	1654	−3.13	1651	22.40%	58.88%	18.72%	9.28	51.98%
Olympiacos	2	1641	−33.00	1611	13.69%	57.16%	29.14%	−16.13	43.96%
Union SG	3	1633	−25.83	1662	6.63%	46.30%	47.07%	−14.18	29.37%
Viktoria Plzeň	3	1625	8.96	1659	10.33%	54.32%	35.36%	3.69	32.91%
Anderlecht	4	1623	−28.07	1599	22.01%	61.16%	16.83%	−0.28	51.94%
Ajax	1	1621	9.93	1614	22.52%	60.54%	16.94%	10.51	47.72%
Twente	4	1618	11.81	1658	10.28%	53.78%	35.94%	6.45	31.69%
PAOK	2	1616	−9.97	1595	10.43%	58.66%	30.91%	−10.67	35.81%
AZ Alkmaar	2	1613	16.41	1659	11.89%	56.27%	31.84%	7.52	33.21%
Midtjylland	3	1613	2.17	1628	9.17%	52.31%	38.52%	−3.57	30.33%
Rangers	1	1607	22.69	1650	16.37%	60.49%	23.14%	16.71	38.09%
Bodø/Glimt	3	1604	1.97	1653	17.27%	60.66%	22.07%	14.71	41.26%
M. Tel Aviv	2	1591	2.19	1596	7.18%	50.22%	42.60%	−6.27	25.36%
Qarabağ	3	1570	−5.20	1602	7.06%	49.19%	43.74%	−4.86	23.68%
Dynamo Kyiv	3	1540	−9.23	1630	1.37%	30.17%	68.45%	−7.53	9.97%
Malmö	3	1521	−21.32	1615	1.40%	25.37%	73.22%	−11.03	8.44%
Beşiktaş	4	1516	−2.89	1644	1.03%	21.60%	77.36%	−4.77	6.27%
Ludogorets	3	1501	−0.30	1687	0.33%	12.07%	87.59%	−2.76	2.96%
Elfsborg	4	1496	−17.81	1704	0.29%	11.25%	88.46%	−3.18	2.89%
Ferencváros	2	1478	1.03	1641	0.68%	18.27%	81.06%	−1.60	4.12%
FCSB	4	1427	2.84	1590	1.78%	30.55%	67.67%	1.56	5.85%
RFS	4	1236	−7.09	1607	0.02%	1.90%	98.08%	−0.11	0.08%

Teams are ranked according to their Elo ratings.

Pot: The number of Pot from which the team has been drawn.

Elo: Football Club Elo Ratings on 27 September (http://api.clubelo.com/2024-09-27).

ΔElo: Change in the Elo rating compared to the previous simulation before the first matchday (2 September 2024).

Opp. Elo: Average Elo rating of the eight opponents.

Top 8/PO/EL/R16: The probability of ranked 1–8/ranked 9–24/ranked 25–36/qualification for the Round of 16.

Change: Change in the probability of qualification for the Round of 16 in percentage points compared to the previous simulation before match day 1.
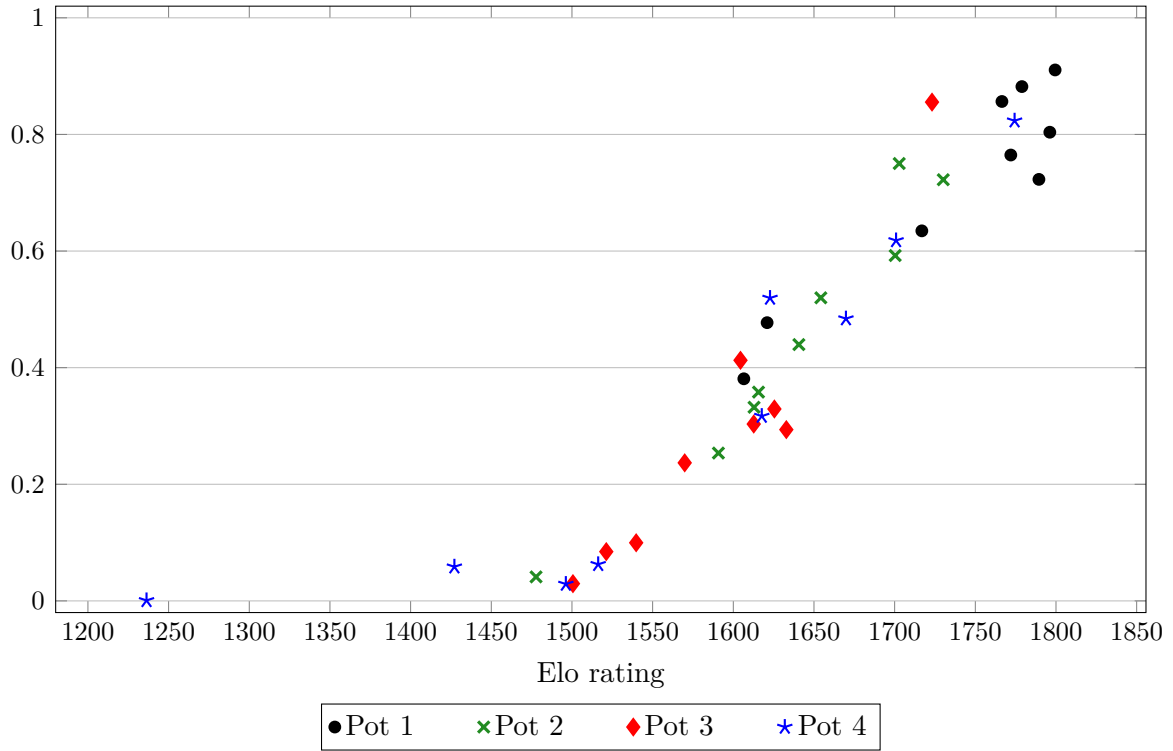
Figure 1: The probability of qualification for the Round of 16 as a function of team strength

Discussion

- Now *Tottenham* has the highest chance to qualify for the Round of 16, followed by *Lazio* since only they won their first matches among the six strongest teams

- Compared to the forecast before the first match day, the biggest winners are *Rangers*, *Bodø/Glimt*, and *Slavia Praha*, while the biggest losers are *Olympiacos*, *Union SG*, and *Malmö* in terms of the probability of qualification for the Round of 16

- *Galatasaray* (from 6.89% to 1.94%) and *Rangers* (from 50.75% to 23.14%) have managed to drastically reduce the threat of elimination in the league phase

- On the other hand, the chance of elimination has increased by more than 15 percentage points for *Dynamo Kyiv*, *Malmö* and *Union SG*

- One of the strongest teams, *Porto* has lost much due to its away loss against *Bodø/Glimt*, the probability of its elimination has increased from 7.53% to 13.17%, while the chance of finishing in the Top 8 has declined from 47.01% to 30.06%

- From Pot 1, *Ajax* and *Rangers* are still less likely to qualify for the Round of 16 than being eliminated in the league phase or the play-offs, even though they won their first matches

- None of the weakest 10 teams have achieved surprise victories, hence, six teams have marginal likelihood to play in the Round of 16 (below 5%) and three teams have less than 15% chance to survive the league phase

Methodology

The approach of Football rankings (2020) is followed. The number of goals scored in a match is modelled by a Poisson distribution (Maher, 1982). The expected number of goals is a polynomial of win expectancy, the function is estimated separately for home and away teams based on about 8 thousand matches played in the UEFA club competitions (Champions League, Europa League, [Europa] Conference League) and their qualifications between 2003 and 2024. Win expectancy is derived from Football Club Elo Ratings (http://clubelo.com/) (Football Club Elo Ratings, 2024), which provides a more accurate strength of measure than UEFA club coefficient (Csató, 2024a). This model is widely used in the tournament design literature, especially for national football teams (Csató, 2022, 2023a,b,c, 2024b; Stronka, 2024) but also in club football (Gyimesi, 2024).

Ranking is determined according to the official ranking rules (UEFA, 2024, Article 19) but fair play points are ignored. The probability of qualification to the Round of 16 is computed by simulating the play-offs where the win expectancies in the two-leg matches are calculated based on the methodology of Football Club Elo Ratings (Football Club Elo Ratings, 2024).

The effect of the draw is analysed by comparing the probability of qualification to the Round of 16 to this probability under a random draw with all constraints. Therefore, ΔDraw shows the effect of the UEFA draw in percentage points for each team.

The results are based on 1 million simulation runs. In the case of random draw, 1 million consists of 1 thousand random draws with 1 thousand simulation runs each.

Limitations

- Our model of match outcomes is not necessarily the most accurate one

- The sequence of matches does not affect the results of the simulation

- Incentives are not taken into account but teams that are already qualified or eliminated may play with little enthusiasm (Chater et al., 2021; Csató et al., 2024)

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References

Chater, M., Arrondel, L., Gayant, J.-P., and Laslier, J.-F. (2021). Fixing match-fixing: Optimal schedules to promote competitiveness. *European Journal of Operational Research*, 294(2):673–683.

Csató, L. (2022). Quantifying incentive (in)compatibility: A case study from sports. *European Journal of Operational Research*, 302(2):717–726.

Csató, L. (2023a). Group draw with unknown qualified teams: A lesson from the 2022 FIFA World Cup. *International Journal of Sports Science & Coaching*, 18(2):539–551.

Csató, L. (2023b). How to avoid uncompetitive games? The importance of tie-breaking rules. *European Journal of Operational Research*, 307(3):1260–1269.

Csató, L. (2023c). Quantifying the unfairness of the 2018 FIFA World Cup qualification. *International Journal of Sports Science & Coaching*, 18(1):183–196.

Csató, L. (2024a). Club coefficients in the UEFA Champions League: Time for shift to an Elo-based formula. *International Journal of Performance Analysis in Sport*, 24(2):119–134.

Csató, L. (2024b). On head-to-head results as tie-breaker and consequent opportunities for collusion. *IMA Journal of Management Mathematics*, in press. DOI: 10.1093/imaman/dpae016.

Csató, L., Molontay, R., and Pintér, J. (2024). Tournament schedules and incentives in a double round-robin tournament with four teams. *International Transactions in Operational Research*, 31(3):1486–1514.

Football Club Elo Ratings (2024). The system or how this works. http://clubelo.com/System.

Football rankings (2020). Simulation of scheduled football matches. 28 December. http://www.football-rankings.info/2020/12/simulation-of-scheduled-football-matches.html.

Gyimesi, A. (2024). Competitive balance in the post-2024 Champions League and the European Super League: A simulation study. *Journal of Sports Economics*, 25(6):707–734.

Maher, M. J. (1982). Modelling association football scores. *Statistica Neerlandica*, 36(3):109–118.

Stronka, W. (2024). Demonstration of the collusion risk mitigation effect of random tie-breaking and dynamic scheduling. *Sports Economics Review*, 5:100025.

UEFA (2024). *Regulations of the UEFA Champions League 2024-27 Cycle. 2024/25 Season.* https://kassiesa.net/uefa/files/2024-25-uefa-cl-rules.pdf.