Soccer features a variety of models for rating teams and predicting match outcomes. Here, we look at a network-based rating model called the Offense-Defense Model (ODM) by Govan, Langville and Meyer (2009). We derive an improved rating model from ODM. We apply the improved ratings to predict game outcomes in national team soccer tournaments. The goal is to outperform betting markets and other models.

Model 1 (ODM)

ODM posits that teams have positive attack and defense ratings porportional to points scored and points conceded. It assumes that margin of victory and strength of schedule are important in ranking teams. A brief mathematical description follows. Define P_{ij} as the points scored by team j against team i. Attack and defense ratings of team j are:

$$a_j = \sum_{i=1}^{n} P_{ij} \frac{1}{d_i} \qquad \text{(Attack)}$$

$$d_j = \sum_{j=1}^{n} P_{ji} \frac{1}{a_i} \qquad \text{(Defense)}$$

Ratings for teams 1, 2, 3, ..., n in compact form are:

$$a = \begin{bmatrix} a_1 & a_2 & a_3 & ... & a_n \end{bmatrix}^T = P^T \frac{1}{d} \qquad \text{(Attack)}$$

$$d = \begin{bmatrix} d_1 & d_2 & d_3 & ... & d_n \end{bmatrix}^T = P \frac{1}{a} \qquad \text{(Defense)}$$

Since a and d are mutually dependent, they're computed iteratively in the algorithm below:

Algorithm 1 (ODM Update)
Given a nonnegative matrix P :
$d^{(0)} \leftarrow$ column vector of ones
$a^{(0)} \leftarrow P^T \frac{1}{d^{(0)}}$
for $k = 1, 2, 3, ...,$ until convergence of $a^{(k)}$, $d^{(k)}$:
$d^{(k+1)} \leftarrow P \frac{1}{a^{(k)}}$
$a^{(k+1)} \leftarrow P^T \frac{1}{d^{(k)}}$
end for

To guarantee convergence, P is replaced with $P + cee^T$ where c is positive and e is a column vector of ones.

Model 2 (ODM-S)

While ODM distinguishes attack and defense strengths, it is impractical for three reasons:

> (1) ODM only assigns teams a default rating of 1. In national team soccer, teams are organized into confederations that rarely play each other. Thus, default ratings other than 1 may be necessary to account for differences in confederation strengths.
>
> (2) ODM ratings require teams to play similar numbers of games. When disparities between number of games played is great, teams that play few games have few goals scored and conceded, which leads to weaker attack and stronger defense ratings.
>
> (3) ODM ratings are unstable. For instance, if Germany plays Ukraine but Ukraine plays another at later date, then Germany's ratings are affected by Ukraine's recomputed rating.

To solve these challenges, we propose the Sequential Offense-Defense Model (ODM-S). ODM-S starts by assigning all teams default attack and defense ratings. It then applies ODM to rate teams match-by-match.

In each game, a team has two sets of ratings: they are **pre-game ratings**, which infers the strength of the team before the game and **in-game ratings**, which infers how well the team played during the game. Pre-game ratings for a team's current game are defined as a weighted sum of all its previous in-game ratings. These weights follow an exponential decay of the number of days between the previous and current games.

Only pre-game ratings of participants in a match are used to compute their in-game ratings. To compute in-game ratings from pre-game ratings, ODM-S abstracts Algorithm 1 to accept as input an attack or defense rating:

Algorithm 2 (Scale Rating)
Given a nonnegative matrix P and positive vector x:
$x^{(0)} \leftarrow x$
$y^{(0)} \leftarrow P^T \dfrac{1}{x^{(0)}}$
for $k = 1, 2, 3, ...,$ until convergence of $x^{(k)}$, $y^{(k)}$:
$\quad x^{(k+1)} \leftarrow P \dfrac{1}{y^{(k)}}$
$\quad y^{(k+1)} \leftarrow P^T \dfrac{1}{x^{(k)}}$
end for

Similar to Algorithm 1, P is replaced by $\hat{P}$ to guarantee convergence. To adjust for home advantage, each goal scored by a home team is multiplied by the ratio of average away vs. home goals in the corresponding contest, which are computed with robust regression.

ODM-S employs Algorithm 2 to rate teams in the following manner. Define teams 1 and 2 with pre-game attack and defense ratings a_1, d_1 and a_2, d_2. The scoring matrix P is defined as it is in Algorithm 2:

Algorithm 3 (ODM-S Update)
Given a nonnegative 2-by-2 matrix P and positive a_1, a_2, d_1, d_2 :
$a^{(0)} \leftarrow \begin{bmatrix} a_1 & a_2 \end{bmatrix}^T$
$d^{(0)} \leftarrow \begin{bmatrix} d_1 & d_2 \end{bmatrix}^T$
for $k = 1, 2, 3, ...,$ until convergence of $a^{(k)}$, $y^{(k)}$:
Define $a_A^{(k)}$, $d_A^{(k)}$ as x_k, y_k from Algorithm 2 with inputs P and $a^{(k)}$.

Define $d_D^{(k)}$, $a_D^{(k)}$ as x_k, y_k from Algorithm 2 with inputs P and $d^{(k)}$.

$$a_{k+1} \leftarrow \frac{a_A^{(k)} + a_D^{(k)}}{2}$$

$$d_{k+1} \leftarrow \frac{d_A^{(k)} + d_D^{(k)}}{2}$$

end for

Algorithm 3 provides ODM-S three advantages over its ODM counterpart: it accepts pre-game ratings, is resistant to bias towards teams with few games and is stable. A sample of ratings are in the verification section.

Model 3 (ODM-S/BP)

We convert ODM-S ratings to probablistic forecasts of game outcomes with a bivariate Poisson distribution. The resulting model is called ODM-S/BP.

The bivariate Poisson distribution models bivariate count data over a fixed time interval, which in this case are the goals scored by opposing teams. It is chosen for three reasons: it easily translates probabilities to expected goals scored, models correlation and is resistant to bias against ties.

The parameters of the bivariate Poisson distribution are λ_1, λ_2 and λ_3. Parameter λ_1 is porportional to the expected goals scored by team j against team i. It is defined as it is in Karlis and Ntzoufras (2003) by

$$\log \lambda_1 = \log \mu + \beta_a \log a_j + \beta_d \log d_i$$

where μ is the average goals scored, a_j, d_i are attack and defense ratings of teams j, i and β_a, $\beta_d > 0$ are weights to attack and defense ratings. Parameter λ_2 is similar to λ_1. Parameter $\lambda_3 \geq 0$ is the correlation between λ_1 and λ_2.

Verification

The following pages compare ratings and game predictions between models in all 51 games of Euro 2016.

Page 5 compares pre-game ratings for ODM and ODM-S/BP. For both models, higher attack and lower defense ratings point to stronger teams.

Page 6 aggregates pre-game attack and defense ratings to evaluate a model's predictive power. In particular, a model's aggregate ratings for a game is correct if the higher aggregate rating belongs to the winning team. Pre-game Elo Ratings are also listed as a benchmark.

Page 7 compares game prediction probabilities of ODM-S/BP and the OddsPortal betting markets aggregate. The sum squared error and correctness of each prediction are included.

Regarding correctness, ODM-S/BP outperforms ODM as ODM-S/BP aggregate ratings are correct for 23 games while ODM's aggregate ratings are correct for 20 games. Meanwhile, Elo Ratings are correct for 21 games. Total squared prediction errors of ODM-S/BP and Odds Portal are 32.4 and 31.4 respectively. Yet, Odds Portal only calls 21 games correctly. Lower squared errors for Odds Portal are due to highly aggressive bets in favour of strongly rated teams. In particular, OddsPortal average squared errors for its correct and incorrect calls are 0.28 and 0.85 respectively while ODM-S/BP average squared errors for its correct and incorrect calls are 0.46 and 0.78 respectively.

We briefly discuss how aggregate ratings are computed and how home advantage is accounted for. For ODM, its authors define a team's aggregate rating as the quotient of attack and defense ratings. Since they do not adjust for home advantage, we make our own adjustments for home teams by multiplying their aggregate rating by the ratio of average home vs. away goals in the corresponding contest. For ODM-S/BP, we define a team's aggregate ratings as

$$r = \beta_a \log a - \beta_d \log d$$

where a, d are attack and defense ratings and β_a, β_d are weights as introduced in the previous section. Home advantage is accounted for by increasing a home team's aggregate rating by the difference of log average home goals and log average away goals. For Elo, its originators of factor in home advantage by adding 100 to a home team's rating.

Euro 2016 Attack-Defense Ratings

	Team1	Team2	Date	Goals	OdmAtk1	OdmDef1	OdmAtk2	OdmDef2	OdmsAtk1	OdmsDef1	OdmsAtk2	OdmsDef2
51	France	Portugal	07/10/16	0:1	2.9391	4.8215	3.0154	6.7859	1.3288	-0.8463	1.165	-0.743
50	France	Germany	07/07/16	2:0	2.6586	4.8208	4.101	5.7532	1.278	-0.7667	1.2989	-0.969
49	Portugal	Wales	07/06/16	2:0	2.6869	6.8082	2.7317	5.6033	1.1206	-0.6846	1.0349	-0.5889
48	France	Iceland	07/03/16	5:2	2.1171	4.1494	2.5989	6.3721	1.1624	-0.8437	1.1111	-0.6001
47	Germany	Italy	07/02/16	1:1	3.967	5.4287	2.9228	6.0919	1.3022	-0.9974	1.0829	-0.769
46	Wales	Belgium	07/01/16	3:1	2.2455	5.2997	3.2976	5.2154	0.9385	-0.5833	1.1428	-0.6656
45	Poland	Portugal	06/30/16	1:1	2.8018	5.7389	2.5614	6.5277	1.1352	-0.784	1.1124	-0.684
44	England	Iceland	06/27/16	1:2	3.1355	4.5699	2.2229	6.0929	1.1111	-0.7695	1.0525	-0.5884
43	Italy	Spain	06/27/16	2:0	2.606	6.1025	3.2904	4.6078	0.975	-0.6898	1.2504	-0.956
42	France	Ireland	06/26/16	2:1	1.8745	3.7182	2.1475	6.0307	1.115	-0.8897	0.9769	-0.616
41	Germany	Slovakia	06/26/16	3:0	3.5918	5.453	2.0021	6.9716	1.2531	-0.957	0.7428	-0.3303
40	Hungary	Belgium	06/26/16	0:4	2.8139	7.8674	2.8427	5.3192	1.0355	-0.4207	1.036	-0.5944
39	Croatia	Portugal	06/25/16	0:1	2.9232	5.7076	2.4722	6.6176	1.0498	-0.5826	1.1012	-0.6063
38	Switzerland	Poland	06/25/16	1:1	2.6523	5.5472	2.6401	5.4368	0.8845	-0.634	1.1401	-0.8152
37	Wales	N. Ireland	06/25/16	1:0	2.1558	5.3365	1.943	6.2796	0.926	-0.5161	0.7619	-0.459
36	Hungary	Portugal	06/22/16	3:3	2.4454	6.7168	2.114	5.5895	0.9393	-0.4799	1.0026	-0.7518
35	Iceland	Austria	06/22/16	2:1	1.8972	5.6313	2.1069	4.7298	0.9978	-0.5965	0.892	-0.5845
34	Italy	Ireland	06/22/16	0:1	2.6644	5.6504	1.999	6.1101	1.0594	-0.7369	0.9396	-0.5358
33	Sweden	Belgium	06/22/16	0:1	2.3329	6.779	2.7764	5.3287	0.8146	-0.3937	1.0375	-0.5177
32	Croatia	Spain	06/21/16	2:1	2.5216	5.3714	3.2111	3.8887	0.9325	-0.5504	1.2639	-1.0971
31	Czechia	Turkey	06/21/16	0:2	2.2384	7.6172	1.5834	5.6185	0.8711	-0.2462	0.744	-0.4481
30	N. Ireland	Germany	06/21/16	0:1	2.005	6.1062	3.5418	5.5465	0.8162	-0.445	1.2652	-0.9062
29	Ukraine	Poland	06/21/16	0:1	1.9339	5.3716	2.4603	5.4602	0.6714	-0.4348	1.1504	-0.7545
28	Russia	Wales	06/20/16	0:3	2.2953	5.7396	1.7359	5.3061	0.916	-0.4571	0.7947	-0.4239
27	Slovakia	England	06/20/16	0:0	2.0388	7.0084	3.1921	4.5677	0.7886	-0.2302	1.203	-0.729
26	France	Switzerland	06/19/16	0:0	1.9617	3.6946	2.7218	5.5501	1.2249	-0.8219	0.9287	-0.5557
25	Romania	Albania	06/19/16	0:1	1.8764	4.7947	1.1213	5.853	0.8407	-0.5704	0.4635	-0.3475
24	Belgium	Ireland	06/18/16	3:0	2.2731	5.3866	2.0174	5.0282	0.8771	-0.397	1.0392	-0.6936
23	Iceland	Hungary	06/18/16	1:1	1.8241	5.3754	2.2952	6.1276	0.9987	-0.6204	0.9263	-0.4723
22	Portugal	Austria	06/18/16	0:0	2.1251	5.608	2.157	4.8371	1.105	-0.6757	0.9661	-0.4864
21	Czechia	Croatia	06/17/16	2:2	1.9185	6.9729	2.3177	4.4756	0.7836	-0.268	0.8712	-0.6804
20	Italy	Sweden	06/17/16	1:0	2.5391	5.6395	2.4434	6.4472	1.0551	-0.6543	0.894	-0.39
19	Spain	Turkey	06/17/16	3:0	2.6974	3.8831	1.6102	4.7679	1.1484	-1.043	0.8172	-0.5498
18	England	Wales	06/16/16	2:1	2.8812	4.0645	1.5189	4.6742	1.18	-0.7756	0.7284	-0.4658
17	Germany	Poland	06/16/16	0:0	3.7254	5.4643	2.564	5.4004	1.3588	-0.8332	1.2329	-0.6507
16	Ukraine	N. Ireland	06/16/16	0:2	1.9558	4.3969	1.6465	6.0752	0.7564	-0.555	0.6908	-0.3297
15	France	Albania	06/15/16	2:0	1.7305	3.7434	1.142	4.9793	1.2308	-0.6986	0.5085	-0.3894
14	Romania	Switzerland	06/15/16	1:1	1.697	4.3792	2.5316	5.0434	0.8041	-0.5936	0.9194	-0.576
13	Russia	Slovakia	06/15/16	1:2	2.2184	4.8002	1.7914	6.97	0.9408	-0.5765	0.6821	-0.1917
12	Austria	Hungary	06/14/16	0:2	2.249	3.9452	1.8758	6.2359	1.1361	-0.6496	0.789	-0.3404
11	Portugal	Iceland	06/14/16	1:1	1.9999	5.0723	1.6999	4.9065	1.1115	-0.7053	0.9614	-0.6245
10	Belgium	Italy	06/13/16	0:2	2.3388	4.6213	2.2192	5.6407	1.0137	-0.4902	0.9481	-0.5225
9	Ireland	Sweden	06/13/16	1:1	1.9028	4.5742	2.3204	5.8651	1.0506	-0.7495	0.8624	-0.3567
8	Spain	Czechia	06/13/16	1:0	2.6133	3.9275	1.9513	6.5893	1.1537	-0.9957	0.8949	-0.2015
7	Germany	Ukraine	06/12/16	2:0	3.3641	5.4876	1.9571	3.8592	1.3187	-0.7102	0.8259	-0.6323
6	Poland	N. Ireland	06/12/16	1:0	2.4346	5.3928	1.6534	5.7563	1.2885	-0.5178	0.7949	-0.3031
5	Turkey	Croatia	06/12/16	0:1	1.6624	4.4107	2.1299	4.4783	0.9525	-0.6168	0.7959	-0.5617
4	Albania	Switzerland	06/11/16	0:1	1.169	4.5448	2.3978	5.1876	0.6087	-0.4372	0.9083	-0.4602
3	England	Russia	06/11/16	1:1	2.7519	3.6539	1.9987	4.3977	1.2048	-0.834	0.8748	-0.5594
2	Wales	Slovakia	06/11/16	2:1	1.278	4.1471	1.6012	5.5702	0.5958	-0.5373	0.6639	-0.2676
1	France	Romania	06/10/16	2:1	1.3771	3.1287	1.448	3.5372	1.2022	-0.7839	0.6904	-0.672

Euro 2016 Aggregate Ratings

	Team1	Team2	Date	Goals	OdmAgg1	OdmAgg2	OdmsAgg1	OdmsAgg2	EloRating1	EloRating2	OdmCor	OdmsCor	EloCor
51	France	Portugal	07/10/16	0:1	0.6096	0.4444	1.1618	1.0193	1999	1899	0	0	0
50	France	Germany	07/07/16	2:0	0.5515	0.7128	1.0844	1.2345	1966	2026	0	1	1
49	Portugal	Wales	07/06/16	2:0	0.3947	0.4875	0.9596	0.8559	1870	1786	0	1	1
48	France	Iceland	07/03/16	5:2	0.5102	0.4079	1.0884	0.8965	1954	1733	1	1	1
47	Germany	Italy	07/02/16	1:1	0.7307	0.4798	1.2557	1.0021	2034	1921	0	0	0
46	Wales	Belgium	07/01/16	3:1	0.4237	0.6323	0.8105	0.9559	1729	1926	0	0	0
45	Poland	Portugal	06/30/16	1:1	0.4882	0.3924	1.0351	0.9556	1794	1876	0	0	0
44	England	Iceland	06/27/16	1:2	0.6861	0.3648	1.0146	0.8632	1931	1691	0	0	0
43	Italy	Spain	06/27/16	2:0	0.427	0.7141	0.9005	1.2046	1874	1968	0	0	0
42	France	Ireland	06/26/16	2:1	0.5041	0.3561	1.1001	0.8499	1946	1745	1	1	1
41	Germany	Slovakia	06/26/16	3:0	0.6587	0.2872	1.2064	0.55	2019	1751	1	1	1
40	Hungary	Belgium	06/26/16	0:4	0.3577	0.5344	0.739	0.8603	1723	1901	1	1	1
39	Croatia	Portugal	06/25/16	0:1	0.5121	0.3736	0.858	0.8966	1853	1851	0	1	0
38	Switzerland	Poland	06/25/16	1:1	0.4781	0.4856	0.8226	1.059	1779	1795	0	0	0
37	Wales	N. Ireland	06/25/16	1:0	0.404	0.3094	0.7583	0.6479	1709	1637	1	1	1
36	Hungary	Portugal	06/22/16	3:3	0.3641	0.3782	0.7388	0.9556	1861	1713	0	0	0
35	Iceland	Austria	06/22/16	2:1	0.3369	0.4455	0.8453	0.7914	1662	1719	0	1	0
34	Italy	Ireland	06/22/16	0:1	0.4715	0.3272	0.9696	0.7779	1912	1707	0	0	0
33	Sweden	Belgium	06/22/16	0:1	0.3441	0.521	0.625	0.8074	1727	1887	1	1	1
32	Croatia	Spain	06/21/16	2:1	0.4694	0.8258	0.785	1.3088	1816	2005	0	0	0
31	Czechia	Turkey	06/21/16	0:2	0.2939	0.2818	0.5466	0.6326	1727	1759	0	1	1
30	N. Ireland	Germany	06/21/16	0:1	0.3284	0.6386	0.6615	1.1762	2014	1642	1	1	1
29	Ukraine	Poland	06/21/16	0:1	0.36	0.4506	0.5921	1.0211	1738	1773	1	1	1
28	Russia	Wales	06/20/16	0:3	0.3999	0.3271	0.7128	0.6376	1724	1659	0	0	0
27	Slovakia	England	06/20/16	0:0	0.2909	0.6988	0.4999	1.026	1944	1764	0	0	0
26	France	Switzerland	06/19/16	0:0	0.531	0.4904	1.1001	0.7871	1964	1761	0	0	0
25	Romania	Albania	06/19/16	0:1	0.3914	0.1916	0.7595	0.4417	1661	1575	0	0	0
24	Belgium	Ireland	06/18/16	3:0	0.422	0.4012	0.6542	0.9307	1858	1726	1	0	1
23	Iceland	Hungary	06/18/16	1:1	0.3393	0.3746	0.8623	0.7279	1658	1709	0	0	0
22	Portugal	Austria	06/18/16	0:0	0.3789	0.4459	0.9466	0.7549	1872	1707	0	0	0
21	Czechia	Croatia	06/17/16	2:2	0.2751	0.5179	0.5241	0.8492	1734	1823	0	0	0
20	Italy	Sweden	06/17/16	1:0	0.4502	0.379	0.9102	0.6566	1897	1742	1	1	1
19	Spain	Turkey	06/17/16	3:0	0.6947	0.3377	1.2213	0.735	1984	1780	1	1	1
18	England	Wales	06/16/16	2:1	0.7089	0.3249	1.0485	0.6382	1935	1666	1	1	1
17	Germany	Poland	06/16/16	0:0	0.6818	0.4748	1.1656	0.9842	2030	1761	0	0	0
16	Ukraine	N. Ireland	06/16/16	0:2	0.4448	0.271	0.7125	0.5271	1795	1584	0	0	0
15	France	Albania	06/15/16	2:0	0.4623	0.2294	1.0167	0.4903	1960	1579	1	1	1
14	Romania	Switzerland	06/15/16	1:1	0.3875	0.502	0.7599	0.7972	1731	1763	0	0	0
13	Russia	Slovakia	06/15/16	1:2	0.4622	0.257	0.8068	0.4272	1752	1708	0	0	0
12	Austria	Hungary	06/14/16	0:2	0.5701	0.3008	0.9418	0.5768	1754	1671	0	0	0
11	Portugal	Iceland	06/14/16	1:1	0.3943	0.3464	0.9701	0.8491	1887	1643	0	0	0
10	Belgium	Italy	06/13/16	0:2	0.5061	0.3934	0.778	0.7723	1900	1855	0	0	0
9	Ireland	Sweden	06/13/16	1:1	0.416	0.3956	0.9746	0.6198	1736	1742	0	0	0
8	Spain	Czechia	06/13/16	1:0	0.6654	0.2961	1.1906	0.5256	1974	1730	1	1	1
7	Germany	Ukraine	06/12/16	2:0	0.613	0.5071	1.0626	0.7962	2012	1813	1	1	1
6	Poland	N. Ireland	06/12/16	1:0	0.4514	0.2872	0.9155	0.5534	1742	1599	1	1	1
5	Turkey	Croatia	06/12/16	0:1	0.3769	0.4756	0.8399	0.7341	1803	1797	1	0	0
4	Albania	Switzerland	06/11/16	0:1	0.2572	0.4622	0.5668	0.7117	1594	1748	1	1	1
3	England	Russia	06/11/16	1:1	0.7531	0.4545	1.0999	0.7664	1949	1741	0	0	0
2	Wales	Slovakia	06/11/16	2:1	0.3082	0.2875	0.631	0.4723	1633	1677	1	1	0
1	France	Romania	06/10/16	2:1	0.4402	0.4094	1.0638	0.7656	1953	1738	1	1	1

Euro 2016 Game Predictions

	Team1	Team2	Date	Goals	OddsWin1	OddsTie	OddsWin2	OddsSSE	OddsCor	OdmsWin1	OdmsTie	OdmsWin2	OdmsSSE	OdmsCor
51	France	Portugal	07/10/16	0:1	0.4651	0.3279	0.2375	0.9052	0	0.4686	0.2632	0.2682	0.8244	0
50	France	Germany	07/07/16	2:0	0.3584	0.3356	0.3367	0.6376	1	0.373	0.2785	0.3484	0.5921	1
49	Portugal	Wales	07/06/16	2:0	0.4651	0.3236	0.2439	0.4503	1	0.3884	0.2821	0.3295	0.5622	1
48	France	Iceland	07/03/16	5:2	0.7092	0.2045	0.1176	0.1402	1	0.4751	0.2633	0.2616	0.4133	1
47	Germany	Italy	07/02/16	1:1	0.4386	0.33	0.2618	0.7098	0	0.417	0.2999	0.2831	0.7442	0
46	Wales	Belgium	07/01/16	3:1	0.2045	0.2976	0.5291	1.0013	0	0.3175	0.2828	0.3997	0.7055	0
45	Poland	Portugal	06/30/16	1:1	0.2717	0.3436	0.4184	0.6797	0	0.3765	0.291	0.3325	0.755	0
44	England	Iceland	06/27/16	1:2	0.6803	0.2392	0.1099	1.3123	0	0.3996	0.2856	0.3148	0.7107	0
43	Italy	Spain	06/27/16	2:0	0.2217	0.3436	0.4651	0.9401	0	0.2715	0.2957	0.4328	0.8055	0
42	France	Ireland	06/26/16	2:1	0.6536	0.266	0.1109	0.203	1	0.4859	0.2689	0.2452	0.3967	1
41	Germany	Slovakia	06/26/16	3:0	0.7042	0.2353	0.0928	0.1515	1	0.5494	0.2564	0.1942	0.3065	1
40	Hungary	Belgium	06/26/16	0:4	0.1427	0.2801	0.6098	0.2511	1	0.3292	0.2697	0.4011	0.5398	1
39	Croatia	Portugal	06/25/16	0:1	0.3534	0.3367	0.3425	0.6706	0	0.3499	0.2778	0.3723	0.5936	1
38	Switzerland	Poland	06/25/16	1:1	0.3333	0.3472	0.3521	0.6612	0	0.2893	0.2938	0.4168	0.7561	0
37	Wales	N. Ireland	06/25/16	1:0	0.4926	0.339	0.2	0.4124	1	0.3909	0.2812	0.3279	0.5576	1
36	Hungary	Portugal	06/22/16	3:3	0.1072	0.2525	0.6711	1.0206	0	0.2975	0.2839	0.4186	0.7765	0
35	Iceland	Austria	06/22/16	2:1	0.2762	0.3165	0.4405	0.8181	0	0.372	0.2864	0.3417	0.5932	1
34	Italy	Ireland	06/22/16	0:1	0.4329	0.3226	0.2755	0.8164	0	0.411	0.2851	0.3039	0.7348	0
33	Sweden	Belgium	06/22/16	0:1	0.2045	0.2985	0.5263	0.3553	1	0.3114	0.2696	0.4189	0.5073	1
32	Croatia	Spain	06/21/16	2:1	0.189	0.33	0.5128	1.0296	0	0.2216	0.2829	0.4955	0.9315	0
31	Czechia	Turkey	06/21/16	0:2	0.4219	0.2801	0.33	0.7054	0	0.3403	0.2678	0.3918	0.5574	1
30	N. Ireland	Germany	06/21/16	0:1	0.0738	0.2114	0.7462	0.1146	1	0.2248	0.2691	0.5062	0.3668	1
29	Ukraine	Poland	06/21/16	0:1	0.2222	0.3135	0.4975	0.4002	1	0.2445	0.2751	0.4804	0.4054	1
28	Russia	Wales	06/20/16	0:3	0.3802	0.3268	0.3245	0.7077	0	0.3844	0.2751	0.3405	0.6584	0
27	Slovakia	England	06/20/16	0:0	0.1748	0.3145	0.5435	0.7959	0	0.223	0.2478	0.5293	0.8957	0
26	France	Switzerland	06/19/16	0:0	0.5181	0.3436	0.1704	0.7283	0	0.5249	0.25	0.2251	0.8887	0
25	Romania	Albania	06/19/16	0:1	0.483	0.3268	0.2625	0.884	0	0.4447	0.2846	0.2707	0.8106	0
24	Belgium	Ireland	06/18/16	3:0	0.5319	0.2976	0.2016	0.3483	1	0.2841	0.2736	0.4423	0.783	0
23	Iceland	Hungary	06/18/16	1:1	0.3788	0.3333	0.3195	0.6901	0	0.3995	0.2782	0.3223	0.7845	0
22	Portugal	Austria	06/18/16	0:0	0.5714	0.274	0.1883	0.889	0	0.4176	0.2755	0.307	0.7935	0
21	Czechia	Croatia	06/17/16	2:2	0.2257	0.3205	0.4854	0.7483	0	0.2713	0.2724	0.4563	0.8112	0
20	Italy	Sweden	06/17/16	1:0	0.4926	0.3279	0.2114	0.4097	1	0.4382	0.2708	0.291	0.4736	1
19	Spain	Turkey	06/17/16	3:0	0.6711	0.2433	0.1136	0.1803	1	0.4799	0.2911	0.229	0.4077	1
18	England	Wales	06/16/16	2:1	0.5952	0.2681	0.1661	0.2633	1	0.4753	0.2758	0.249	0.4134	1
17	Germany	Poland	06/16/16	0:0	0.6173	0.2481	0.1626	0.9729	0	0.4144	0.2758	0.3098	0.7922	0
16	Ukraine	N. Ireland	06/16/16	0:2	0.5682	0.2959	0.1661	1.1058	0	0.4113	0.282	0.3067	0.7294	0
15	France	Albania	06/15/16	2:0	0.8	0.1669	0.0635	0.0719	1	0.5887	0.2305	0.1808	0.255	1
14	Romania	Switzerland	06/15/16	1:1	0.2849	0.3279	0.4184	0.7079	0	0.3439	0.2915	0.3646	0.7532	0
13	Russia	Slovakia	06/15/16	1:2	0.4132	0.3175	0.2994	0.7624	0	0.4811	0.26	0.2589	0.8483	0
12	Austria	Hungary	06/14/16	0:2	0.5952	0.2732	0.1629	1.1296	0	0.4756	0.2619	0.2625	0.8387	0
11	Portugal	Iceland	06/14/16	1:1	0.6993	0.2212	0.1116	1.108	0	0.3909	0.2861	0.3231	0.7668	0
10	Belgium	Italy	06/13/16	0:2	0.3704	0.3344	0.33	0.6979	0	0.3652	0.2729	0.3619	0.615	0
9	Ireland	Sweden	06/13/16	1:1	0.2688	0.3279	0.4348	0.713	0	0.4663	0.2697	0.264	0.8205	0
8	Spain	Czechia	06/13/16	1:0	0.6944	0.2237	0.1145	0.1565	1	0.562	0.2459	0.1921	0.2892	1
7	Germany	Ukraine	06/12/16	2:0	0.6579	0.2336	0.1393	0.191	1	0.4351	0.2797	0.2853	0.4787	1
6	Poland	N. Ireland	06/12/16	1:0	0.5618	0.2933	0.1767	0.3093	1	0.4876	0.2472	0.2651	0.3939	1
5	Turkey	Croatia	06/12/16	0:1	0.241	0.2985	0.4902	0.4071	1	0.3847	0.2893	0.326	0.686	0
4	Albania	Switzerland	06/11/16	0:1	0.1976	0.3096	0.5236	0.3619	1	0.3185	0.2803	0.4012	0.5386	1
3	England	Russia	06/11/16	1:1	0.565	0.2809	0.1838	0.8701	0	0.4508	0.282	0.2672	0.7901	0
2	Wales	Slovakia	06/11/16	2:1	0.3247	0.339	0.3676	0.7061	0	0.4027	0.2839	0.3134	0.5356	1
1	France	Romania	06/10/16	2:1	0.7299	0.2061	0.0914	0.1238	1	0.4984	0.2681	0.2336	0.378	1