Match Price Engine

Two teams in, a probability for all forty-nine scorelines out.

A Dixon–Coles bivariate Poisson fitted by weighted maximum likelihood on results, blended with a second fit on shots on target. It is the model every football number on the platform starts from.

SPORT
Football

FAMILY
Match pricing

LICENCE
£449
one-off, perpetual

RUNNING IN THE PLATFORM
https://edgeworthарena.com/arena/api/match?home=arsenal&away=chelsea&comp=E0

Inputs

NAME	TYPE	UNITS	WHERE IT COMES FROM
matches	list of (date, home, away, home goals, away goals)	counts	your database, or the platform's football-data ingest
shots (optional)	list of (date, home, away, home shots on target, away shots on target)	counts	the same ingest · omit it and the engine fits on goals alone, which is slower to learn and noisier
as_of	datetime	-	the moment you are pricing at · every match after it is excluded, which is what makes a backtest walk-forward
half_life_days (optional)	float	days	your choice; 240 is what the platform's backtest chose
blend_weight (optional)	float	0 to 1	your choice; 0.4 on shots is what the backtest chose

Outputs

NAME	TYPE	UNITS	NOTES
attack, defence	dict per team	log goal rate	
home_advantage	float	log goal rate	
rho	float	-	the low-score correction, about −0.05 in every league we have fitted
rates(home, away)	(lambda, mu)	goals per match	
score_matrix	11 x 11 array	probability	

Method

1 Weight every past match by w = exp(−ξ (T − t)), with ξ set from the half-life you chose.

THIS IS THE SAMPLE

The method runs to 5 steps; one is shown. The assumptions, the limits, the module layout and the reference implementation come with the licence. Everything on the page below this -- what the model was measured at -- is the same in both versions, because that is the part you should not have to take on trust.

What it was measured at

Walk-forward across every covered league: refit weekly, price the week, score it against the closing line with the margin removed.

MEASURE	RESULT	READING
Leagues	1	
Matches priced before they were played	419	
Brier, shots blend	0.637 to 0.637	a coin scores 0.667
Brier, goals only	0.646 to 0.646	the blend is better in almost every league
Skill against the closing line	-2.0% to -2.0%	negative: the market forecasts better, in every league
Calibration error	0.041 to 0.041	expected calibration error

The range across every league it was tested on

Each line runs from the worst league to the best one in the walk-forward. A model quoted as one number is a model whose worst league has been left out. Only measures on the same scale are shown together; the rest are in the table above.

Assumptions

What has to be true for the numbers to mean what they say.

- Goals arrive at a rate that is constant within a match and independent between the two sides, except for the four scorelines τ corrects.

Limits

Where it is known to be wrong. Published because a model without stated limits is one nobody has pushed on.

- It knows nothing about team news, and team news is most of the gap to the closing line.