



FUTURESPORTS

Performance Indexes

FSPI Futures

A Fair Value Framework

A fair value framework for sports performance index futures

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FutureSports Index Services



FSPI has no investable spot — fair value needs a different anchor

Equity & commodity futures

Anchored by arbitrage to a tradable underlying

Fair value = Spot $\times$ (1 + r·t/360) – Dividends

- Cash-and-carry forces convergence
- Cost of carry is the dominant input
- Basis is small, predictable, financing-driven

FSPI futures

Anchored by expected accumulation, not arbitrage

Fair value = $I(t) + E[\Delta I(t,T)]$

- No spot, no carry, no arbitrage channel
- Expected future accumulation is the modelled object
- Basis driven by expectation dynamics & risk premia



FSPI sits inside a family of established benchmark markets

01

Benchmark architecture

CME CF Bitcoin BRR · Platts oil

IOSCO-aligned, methodology-driven aggregation of real underlying activity, published as a regulated reference value.

02

Non-investability

VIX futures

Most familiar precedent for pricing a futures contract on a non-investable calculated index. Persistent variance risk premium.

03

Cumulative settlement

Weather derivatives

Decomposition of expectation into a sum of per-event contributions across a known schedule of contributing events.

04

Binary events

Insurance & digital options

Threshold events priced as probability-weighted payoffs — the machinery for the end-of-game milestone component.

05

Credibility-driven basis

Carbon markets (analogy only)

Not a structural family member — allowances are tradable. Empirical evidence that credibility affects basis behavior.



THE CORE PRINCIPLE

Fair value is current level plus expected future accumulation

$$F(t, T) = I(t) + E[\Delta I(t, T)]$$

Futures fair value at t for expiry T

Current observable Index Level

Expected accumulation between t and T

No carry term. Same shape as VIX futures pricing — fair value is the expected terminal index value under the empirical measure $\mathbb{P}$, not a discounted spot. Observed market price adds three risk premia (slide 9).



DECOMPOSING THE EXPECTATION

Three additive components, each with its own modelling machinery

1

In-game statistical accumulation

Per-game distributions estimated from historical NHL data, conditional on opponent, home/away, rest, back-to-backs. Schedule is a known input.

$$\Sigma (\text{SAF_game} \cdot M_g \cdot \mathbb{E}[\text{events}])$$

Weather derivatives — structural form

2

End-of-game milestone probabilities

Threshold events: Goals 6+, Saves % bands, Win/Loss, Game Winning Goal, Shutout. Methodology overrides enforced (Goals=1 overrides Opponent Shutout; OT Loss overrides Loss).

$$\Sigma (\text{probability} \cdot \text{payoff})$$

Digital & binary option pricing

3

Period & competitive milestones

Monthly, seasonal, conference, postseason. Competitive — depend on relative ranking. Postseason cascades through round-by-round qualification.

Joint Monte Carlo across 32 teams

Ranking-aware simulation



Annual reset and the cross-season contract pricing

Listed contracts will include expiries that fall after the annual reset event. Contracts within a season use equation (7). Contracts spanning the reset use equation (9) and reference the post-reset base level 7,500, with expected accumulation across the new season.

2026 season contracts (listed now)

$$F(t, T) = I(t) + \mathbb{E}[\Delta I]$$

Reset to 7,500 · one week post-postseason · contracts spanning this point switch to equation (9)

Multi-season contracts (listed today, expiring after reset)

$$F(t, T) = 7,500 + \mathbb{E}[\Delta I \text{ from reset}]$$

Implications for pricing

- Within-season contracts use equation (7); contracts spanning the reset use equation (9).
- Market participants need to be aware of the reset and price for it accordingly.
- Cross-season contracts decouple from current Index Level — they reference the post-reset base of 7,500.



Negative values are realistic, not theoretical

BASE LEVEL

7,500

with no floor mechanism

Sustained underperformance can drive index value below zero within a season.

Annual reset does not prevent this — it only resets between seasons.

Implications for futures pricing

Mathematically clean

Fair value of a future on a weak team can be below zero. Nothing in the equation prohibits it.

Margin & clearing

Contract specs need to define how negative settlement values are margined and cleared.

Precedent exists

CME handled negative-priced WTI in April 2020. The infrastructure pattern is established.



STRUCTURAL DISTINCTIONS

FSPI futures vs single-event contracts

The framework prices these as multi-event aggregations on a regulated benchmark, not single-event binaries. *Five structural features distinguish them from event contracts that have attracted regulatory attention in adjacent markets.*

1

IOSCO benchmark

Underlying is a published, governed benchmark with formal oversight, methodology change procedures, and complaint handling.

2

Multi-event settlement

Settles on benchmark level, not on any single underlying event. No single game causes settlement.

3

Central clearing

Listed on a regulated derivatives exchange with daily mark-to-market, margin, position limits, and standard futures infrastructure.

4

Multi-day horizons

Contracts span days, weeks, or months across many contributing events. Payoff is an aggregation, not a binary.

5

Continuous fair value

Continuous index level under the methodology. No fixed binary win-or-lose payout structure.

The framework addresses pricing only — regulatory classification is a matter for regulators, exchanges, and counsel.



BASIS DECOMPOSITION

Observed market price has four components

$$F_{\text{market}} = F_{\text{model}} + \text{VRP} + \text{LRP} + \text{CRP}$$

Market clears not at the model fair value alone but at the model fair value plus three premia

F_model

Model fair value

Current index level plus expected accumulation under the empirical measure $\mathbb{P}$ (the framework on slide 5).

VRP

Variance risk premium

Compensation for bearing the risk of the relevant outcome distribution. Persistent in VIX, weather, and analogous markets.

LRP

Liquidity risk premium

Compensation for warehousing inventory in a thin market. Wider in early markets; narrows as participation deepens.

CRP

Credibility risk premium

Compensation for uncertainty about the underlying benchmark itself. Tightens with governance, methodology transparency, and track record.

Operationally useful: uniform widening across teams signals liquidity or credibility shocks; team-specific widening signals model-input change.



Governance quality is a measurable input to basis

Carbon allowance markets — not a structural analogue, but the cleanest empirical evidence of credibility-driven basis dynamics. When policy credibility is high, basis is tight; when questioned, basis widens. For FSPI, the credibility input shifts from policy regime to benchmark administrator.

Governance

Independent committees, documented escalation, clear separation from commercial activity

Methodology

Transparent rules, predictable change processes, public consultation on material changes

Track record

Demonstrated consistency over time — the credibility premium tightens as the market matures

Commercial implication: stronger governance should reduce the credibility component of basis. It is a necessary input, not a sufficient one — liquidity, market-making capacity, and reliable settlement also matter.



WORKED EXAMPLE

Simplified framework applied end-to-end (illustrative)

Generic Team A, mid-season, 35 regular-season games remaining, current index level $I(t) = 8,400$. Within-season contract; equation (7) applies.

Component	Contribution to fair value (index points)	
Current index level $I(t)$ <i>Anchor — current observable level</i>		+8,400
Expected statistical accumulation <i>Weather-style sum across 35 remaining games</i>		+1,939
Expected end-of-game milestones <i>Insurance-style book of binary expectations</i>		+756
Expected period & competitive miles. <i>Joint Monte Carlo across league outcomes</i>		+74
Model fair value $F(t, T)$		11,169

Statistical multipliers shown are illustrative composites; milestone values are actual NHL PAT. Components are additive in expectation. Each is independently modellable from observable or estimable inputs.



OPERATIONAL CONSIDERATIONS

Settlement mechanics, hedgeability, and data risk

These are not pricing questions, but they shape final settlement risk, basis behavior, and market-making capacity. The pricing framework takes the methodology's settlement convention as given; the operational machinery around it is the substance of contract specs and clearing design.

1	2	3	4	5
Settlement timing	Amendment handling	Hedgeability	Data finality risk	Latency & source risk
Official Index Close published 9:00 AM CT on T+1, reflecting final verified league data. Monthly and seasonal milestones applied T+1 after the relevant period.	Subsequent league amendments treated as discrete statistical events on the calculation day following publication. No retroactive effect on historical milestone determinations.	No arbitrage channel. Proxy hedges via sportsbook lines, prediction markets, correlated team indexes, news-driven inputs. Risk warehoused, not hedged, in early stages.	Statistics treated as official may be subsequently corrected. Distinct basis-input category — clearing teams should not aggregate with general CRP.	Gap between game-end and official publication. Feed disruptions may require alternate data sources with differing accuracy or timing.

Drawn from the FS Index Calculation and Publication Schedule. Last-trading-day design, treatment of late corrections, and proxy-hedge correlation should be addressed in contract specs and operational documentation.



WHAT COMES NEXT

How the framework and ecosystem extend from here

01

Fair value calculator

A calculator that applies the framework end-to-end, with user-selectable modes for estimating per-game expectations as the market converges on preferred approaches.

02

Prediction-markets integration

As milestones list on prediction markets, their quotes feed back as a near-real-time fair value input, tightening estimates on the competitive component.

03

Live repricing

The additive structure reprices cleanly as injuries, trades, and results arrive, with the period and competitive component carrying most of the news sensitivity.

04

Multi-team products

Dispersion, basket, and spread products across team indexes follow naturally, priced through additive aggregation of single-team expectations.

05

Multi-league extension

The same three-component framework carries to new leagues by substituting league-specific inputs, each a natural extension of the NHL model.

06

Clearing maturity

Margining and settlement, including negative values, build on established clearing infrastructure already preceded in regulated futures markets.



IN ONE LINE

The framework in a sentence

FSPI futures price as a VIX-style expectation of the terminal Index Level, decomposed into a weather-derivative-style sum of expected per-game accumulation, digital-option-style milestone probabilities, and Monte Carlo league-wide simulation for competitive milestones. The whole instrument reads like a convertible: a points-yield component that accrues across the schedule plus an embedded book of contingent payoffs, with the playoff multiplier a knock-in on the yield. Administrator credibility enters as a measurable basis input.

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