

FQE

Financial Quants and Engineers Club

Real-Time Value: A Model for Exchange-Sportsbook Edge Capture

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How Sports Exchanges Differ from Sportsbooks

- Sportsbooks set odds using internal pricing models and risk constraints.
- Bettors can only take the displayed line; no negotiation.
- Exchanges work like marketplaces — users post both sides of a bet.
- A bet becomes live when someone takes the other side - pure price discovery.

Sports Exchanges



Sportsbooks



Why These Inefficiencies Exist and How We Use Them

- In pregame markets, exchanges often move before sportsbooks react.
- Why? Sharp bettors can't get size down on books due to limits on their accounts.
- So they go to the exchange to post lines based on their own models.
- We use these sharp exchange bets as a signal and immediately take the same side on sportsbooks at better odds before the book adjusts.

Core Strategy:

Identify → Validate → Execute

1 Identify

- Continuously monitor exchange markets (e.g., ProphetX) for new bets placed
- Look for sudden volume on one side of a line → signal of sharp action
- Track matching markets on sportsbooks (DraftKings, BetRivers, etc.)

2 Validate

- Calculate the arbitrage % between exchange and sportsbook lines
- Filter only if arb % is above a certain threshold (e.g. 1.00%)
- Confirm the ProphetX volume is above a minimum (e.g. \$1,500)

$$\text{Arb \%} = \left(\frac{\text{dec}_a \times \text{dec}_b}{\text{dec}_a + \text{dec}_b} - 1 \right) \times 100$$

3 Execute

- Continuously monitor exchange markets (e.g., ProphetX) for new bets placed
- Look for sudden volume on one side of a line → signal of sharp action
- Track matching markets on sportsbooks (DraftKings, BetRivers, etc.)

Conceptual Model



Initial Odds

R Play found on DraftKings! 15m ago

Justin Verlander • Under 17.5
Pitcher Outs
-125 vs +134 • 1.74% edge

Adjusted Odds

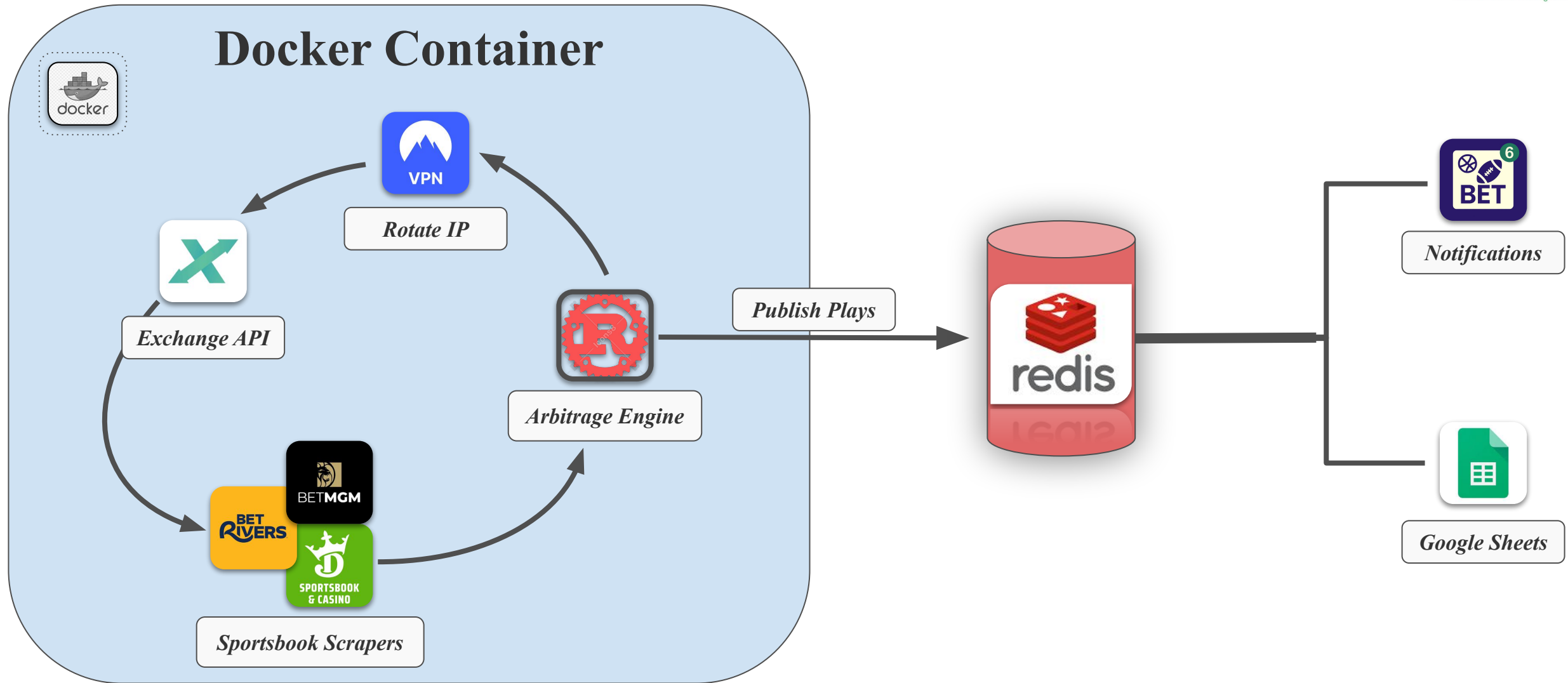


Notification



Our edge lies in capturing value before sportsbooks react to the sharper exchange market.

Data Flow / Architecture



Sample Bet Opportunity

Raw JSON

```
{
  "213b2588-9695-468a-b6e7-2f16a89619e4": {
    "arb_percent": 7.441860465116279,
    "arb_volume": 1541.5,
    "bet_string": "Under 17.5 Pitcher Outs",
    "book_odds": 120,
    "book_player_name": "tony gonsolin",
    "category": "Pitcher Outs",
    "combo_key": "Tony Gonsolin|Pitcher Outs|17.50|Under|May 6, 2025 6:40 PM",
    "event_time": "2025-05-06T22:40:00Z",
    "league": "MLB",
    "line": 17.5,
    "matchup": "Los Angeles Dodgers @ Miami Marlins",
    "player_string": "Tony Gonsolin",
    "prophetx_odds": 110,
    "prophetx_player_name": "tony gonsolin",
    "side": "Under",
    "sportsbook": "DraftKings",
    "timestamp": "2025-05-06T07:16:47.210498296+00:00",
    "unique_bet_key": "213b2588-9695-468a-b6e7-2f16a89619e4"
  }
},
```

Play Card

Matchup	Los Angeles Dodgers @ Miami Marlins
Player	Tony Gonsolin
Bet String	Under 17.5 Pitcher Outs
Sportsbook	DraftKings
Book Odds	+120 
ProphetX Odds	+110 
Arb Volume	\$1541.5
Arb Percent	7.44%
Time Stamp	April 28, 2025 — 9:14 PM UTC

Challenges & Tradeoffs

1) Scaling vs. Speed

- a) Expanding to more books and markets increases coverage but slows execution — increasing the delay between when an opportunity arises and when we detect it.

2) Risk of Limits & Voids

- a) Strong CLV over time attracts restrictions; books may start limiting accounts

3) Short-Term Volatility

- a) Even with long-run profitability, variance in outcomes can lead to short-term drawdowns and uncertainty.

Performance & Results

1) Latency Overview

- Our system cycles through 15–30 events every 10–35 seconds, depending on randomized delay settings and VPN speed.
- Balanced to minimize detection risk while maintaining timely execution.

2) Performance

- Results shown across books, volume filters, and arb % thresholds.

	SportsBooks										Total
	BetRivers	Caesars	Bet365	BetMGM	Draftkings	ESPN BET	Fanduel	Fanatics	Hard Rock	Pinnacle	
# Of Bets vs. ProphetX	334	14	2282	849	887	447	189	451	434	227	6386
# Of Bets vs. Novig	674	14	3363	1290	1238	1207	338	643	823	457	10536
Total # Of Bets	1008	28	5645	2139	2125	1654	527	1094	1257	684	16922
ProphetX P&L	\$3,660.17	-\$440.37	\$10,445.38	\$5,053.35	\$5,420.50	\$816.27	\$2,931.74	\$7,399.81	\$3,029.83	-\$2,129.90	\$39,420.29
Novig P&L	\$3,203.24	\$98.89	\$37,704.69	\$7,093.44	-\$4,020.34	\$4,032.26	-\$437.18	\$3,666.70	\$4,142.69	\$2,598.54	\$62,846.99
Total P&L	\$6,863.40	-\$341.48	\$48,150.07	\$12,146.79	\$1,400.16	\$4,848.52	\$2,494.56	\$11,066.52	\$7,172.52	\$468.64	\$102,267.28
# Of Bets vs. ProphetX W/ Min	207	7	1762	664	719	338	152	345	299	186	4877
W/ Vol Min P&L	\$1,690.56	-\$316.51	\$8,512.14	\$4,540.99	\$4,656.38	\$518.11	\$2,759.45	\$6,014.68	\$1,970.77	-\$2,110.33	\$30,486.18
# Bets Open Arb Min 1500	133	0	1,079	388	526	197	111	212	181	145	3,109
Open Arb Vol Min P&L	\$1,564.68	\$0.00	\$6,740.66	\$2,516.92	\$3,245.29	\$309.03	\$1,872.18	\$3,377.84	\$343.63	-\$1,713.13	\$18,374.16

Performance & Results

	Without Volume Threshold								
	Less than 1.5%	1.5 - 1.99%	2 - 2.49%	2.5 - 2.99%	3 - 3.49%	3.5 - 3.99%	4 - 4.49%	4.5%+	Total
# Of Bets vs. Novig	6241	1706	1552	762	568	387	208	707	12131
Novig P&L	\$12,610.32	\$9,016.76	\$16,243.41	\$11,632.58	\$330.76	\$6,012.77	-\$77.06	\$7,856.47	\$63,626.02
Novig P&L Per Bet	\$2.02	\$5.29	\$10.47	\$15.27	\$0.58	\$15.54	-\$0.37	\$11.11	\$5.24
# Of Bets vs. ProphetX	1000	628	637	446	317	265	163	316	3772
ProphetX P&L	\$1,091.05	\$7,293.34	\$3,498.76	\$3,668.29	\$1,640.46	\$2,917.32	\$631.77	\$2,102.35	\$22,843.33
ProphetX P&L Per Bet	\$1.09	\$11.61	\$5.49	\$8.22	\$5.17	\$11.01	\$3.88	\$6.65	\$6.06
Total # Of Bets	7241	2334	2189	1208	885	652	371	1023	15903
Total P&L	\$13,701.37	\$16,310.10	\$19,742.17	\$15,300.86	\$1,971.22	\$8,930.09	\$554.71	\$9,958.82	\$86,469.35
P&L Per Bet	\$1.89	\$6.99	\$9.02	\$12.67	\$2.23	\$13.70	\$1.50	\$9.73	\$5.44

For reference we started the correct arb volume incorporated ProphetX odds on line 3961	0.015	0.02	0.025	0.03	0.035	0.04	0.045		
	Stats for Minimum Open Arb Volume Threshold of 1500 - Beginning row 3961								
	Less than 1.5%	1.5 - 1.99%	2 - 2.49%	2.5 - 2.99%	3 - 3.49%	3.5 - 3.99%	4 - 4.49%	4.5%+	Total
# Of Bets vs. ProphetX	738	314	341	228	187	144	93	255	2300
# Wins	393	171	192	121	106	81	46	147	1,257
ProphetX P&L	\$1,458.07	\$2,257.23	\$2,913.81	\$523.27	\$2,115.89	\$1,996.14	-\$82.47	\$3,576.03	\$14,757.97
ProphetX P&L Per Bet	\$1.98	\$7.19	\$8.54	\$2.30	\$11.31	\$13.86	-\$0.89	\$14.02	\$6.42

Performance & Results

- **Add More Leagues & Markets**
 - Expand beyond current leagues to capture more opportunities across lesser-covered events.
- **Integrate More Sportsbooks**
 - Continue onboarding additional books into our in-house scraper for broader coverage and sharper line comparisons.
- **Implement Kelly Criterion**
 - Automate bet sizing using Kelly to optimize long-term bankroll growth and risk-adjusted returns.
- **In-App Bet Sizing**
 - Enable users to tap into alerts and instantly receive the recommended stake based on Kelly output.
- **Boost Algo Speed**
 - Refine parsing and detection logic to reduce latency while maintaining scale and robustness.

Q & A