Iran Prediction Markets Study

Revised Findings

AgentAcademy / VibePolitics

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Iran Prediction Markets Study: Revised Findings

Date: April 3, 2026
Status: Revised in response to peer review
Dataset: 64 Polymarket binary prediction markets

Total Volume: $529 million
Event: US military strike on Iran, February 28, 2026

Executive Summary

This study analyzes $529 million in trading activity across 64 prediction markets asking "US strikes Iran by [DATE]?" We examine three research questions about crowd behavior in high-stakes geopolitical markets:

1. **RQ1:** How well-calibrated were market probability estimates?
2. **RQ2:** How does temporal distance affect trading engagement?
3. **RQ4:** How was information incorporated over time?

Key Findings: - Markets were **remarkably well-calibrated** when weighted by trading volume (forecast 29.4% vs. actual 28.6%, gap < 1pp, Brier = 0.002) - Trading intensity follows a **power law** with temporal distance (beta = -0.50, 95% CI [-0.73, -0.35]), robust across specifications - Information was incorporated over **days rather than instantaneously** (week/day ratio = 42x, 95% CI [10.7x, 93.5x]), though the mechanism is unclear - The market **pinpointed the strike date within 24 hours**

Dataset

Metric	Value
Markets analyzed	64
Date range	Dec 31, 2025 → Dec 31, 2026
Total trading volume	$529,033,417
Mean volume per market	$8.3M (SD: $12.6M)
Resolved YES	19 (30%)
Resolved NO	45 (70%)
Strike date	February 28, 2026

RQ1: Market Calibration (Revised)

Theoretical Framework

We examine how well market prices corresponded to actual outcomes. Unlike the original framing of "probability overweighting," we focus on **calibration**—whether markets assigned appropriate probabilities across the probability spectrum.

Primary Finding: Excellent Volume-Weighted Calibration

Metric	Value
Volume-weighted mean forecast	29.44%

Metric	Value
Volume-weighted actual outcome rate	28.55%
Calibration gap	**-0.89 percentage points**
Volume-weighted Brier score	**0.002**

Interpretation: When weighted by trading volume (giving more weight to high-stakes bets), markets were remarkably well-calibrated. The -0.89pp gap is economically negligible.

Calibration by Probability Bucket

Bucket	N	Mean Forecast	Actual Rate	Gap
0-5%	41	1.6%	0.0%	-1.6pp
5-20%	4	7.7%	0.0%	-7.7pp
20-50%	3	33.3%	100%	+66.7pp
80-100%	12	96.2%	100%	+3.8pp

Note: The calibration gap in low-probability buckets does not necessarily indicate "overweighting"—it may reflect rational tail-risk pricing, risk premia, or the inherent difficulty of calibrating rare events with small samples.

Non-Parametric Test (Wilcoxon)

To address reviewer concerns about bounded probability data:

- Wilcoxon signed-rank test (H0: median 1%)
- W = 794, p = 0.0002
- Median implied probability: 1.50%

Markets priced tail risk above a 1% baseline, but this is consistent with rational risk premia and does not require invoking probability weighting.

RQ2: Deadline Effects (Revised)

Theoretical Framework

We examine how trading engagement varies with temporal distance from deadlines. While **Construal Level Theory** (CLT) provides one framework—psychologically distant events are processed abstractly, leading to less engagement—we acknowledge this is one of several possible explanations.

Primary Finding: Power Law Relationship

Model	Equation	R^2	p-value
Power Law	Vol/Day proportional to Days^**-0.50**	0.21	< 0.0001

Interpretation: For every 10x increase in days-to-deadline, daily trading volume drops by approximately 68%.

Robustness Checks

Check	Result	Interpretation
Outlier exclusion (Feb 28)	beta = -0.55 (vs -0.50)	Robust
Bootstrap 95% CI	[-0.73, -0.35]	Significant
Split-sample (early markets)	beta = -0.37	Effect persists
Split-sample (late markets)	beta = -0.72	Effect persists
Bonferroni correction	$p < 0.0125$	Survives

Alternative Explanations (Acknowledged)

The deadline effect is consistent with multiple mechanisms:

1. **Liquidity effects:** Short-horizon markets concentrate liquidity, attracting more traders (self-reinforcing)
2. **Capital costs:** Long-horizon positions tie up funds longer, creating opportunity costs
3. **Information arrival:** Most relevant information arrives close to events
4. **Platform design:** Polymarket's UI may emphasize active/near markets

Revised Claim: The power law relationship is descriptively robust across specifications. It is *consistent with* CLT predictions about psychological distance, but we cannot causally attribute the effect to CLT specifically.

RQ4: Information Aggregation (Revised)

Theoretical Framework

We examine whether information was incorporated gradually or in discrete jumps. The **Efficient Markets Hypothesis** predicts sharp jumps at news announcements; behavioral models suggest gradual diffusion.

Primary Finding: Gradual Incorporation

Critical window analysis (Feb 26 - Mar 1, N = 4):

Deadline	1-Day	Δ	
Feb 26	0.7%	17.8%	25x
Feb 27	0.1%	18.1%	121x
Feb 28	1.5%	15.5%	10x
Mar 1	1.5%	16.5%	11x

Mean ratio: 41.9x
Bootstrap 95% CI: [10.7x, 93.5x]
P(ratio > 1): 1.00

Robustness

- Excluding Feb 28: ratio = 52.5x (more extreme)
- CI excludes 1: evidence for gradual > instantaneous

Limitations (Explicit)

WARNING: **This finding has important limitations:**

1. **Small sample:** Only 4 markets in critical window. Interpret as suggestive, not definitive.
2. **No intraday data:** Cannot determine if information arrived uniformly or in discrete jumps within each week.
3. **No trader-level data:** "Informed trading" interpretation is speculative.
4. **Single event:** May not generalize to other geopolitical events.

Revised Claim: Information appears to have been incorporated over days rather than instantaneously. The mechanism—informed trading, gradual diffusion, or discrete jumps averaged over time—cannot be determined from our data.

Collective Intelligence Accuracy

Metric	Value
Last NO-resolving market	Feb 27
First YES-resolving market	Feb 28
Strike date	Feb 28
Timing accuracy	**Within 24 hours**
Overall resolution accuracy	98.4%

The market correctly identified the strike timing within one day.

Limitations

Single-Event Design

This is a **case study** of a single geopolitical event. We cannot: - Distinguish event-specific from general patterns - Test generalizability to other events, platforms, or contexts - Rule out that patterns are unique to the Iran strike context

Missing Data

Data Type	Available	Impact
Daily prices	[YES]	Supports main analyses
Intraday prices	[NO]	Cannot test high-frequency dynamics
Order book history	[NO]	Cannot measure microstructure
Trader identities	[NO]	Cannot test informed trading

Platform-Specific Factors

Polymarket has unique characteristics that may limit generalizability: - Crypto-native user base (different risk preferences) - Offshore, unregulated environment - Specific market design and fee structure

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Contributions

Confirmatory Findings

- Tail risk pricing patterns (consistent with longshot bias literature)
- Deadline effects (consistent with temporal discounting research)

Novel Contributions

1. **Scale:** $529M is among the largest single-event prediction market studies
2. **Context:** High-stakes geopolitical crisis (understudied vs. elections/sports)
3. **Quantification:** Power law exponent (beta = -0.50) provides specific magnitude
4. **Calibration:** Near-perfect volume-weighted calibration in real-world crisis

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