

**Topic:**

Exploring the Use of Prediction Markets as Risk Assessment and Hedging Tools in the Financial Industry

**Reason:**

Another blockchain project that is relatively early and popular but not yet adopted by big institution that is worth exploring

**Brief Intro:**

This project investigates the potential of prediction markets to enhance insurance/financial risk management by providing real-time, market-driven insights into event probabilities, e.g. The platform covers a wide range of topics, including politics, economics, and social issues. Derivatives (Yes and No) will be sold to retail and institution for taking risk to earn return or hedging tail risk.

**Ref:**

<https://polymarket.com/>

Research and simple prototype for demonstration

Advisor:

Juergen/ SM Yiu

**Notes:**

**Layer 1:** Basic: yes and no

- prototype operation model
- why exists (what gaps)
- Research type: derivatives market

**Layer 2:** weather predictive (inhuman events) earthquake (calculate %, science vs people voting)

- Use those 2 differences / arbitrage, how to gain
- Mathematical Algo , formula, study
- need to explore any benchmark

**layer 3:** how institutional can take advantage of retail, to ride on layer 2 to take profit (parametric insurance)

- application for firms
- Trade commodities products (e.g. corn, coffee, wheat) → hedge by polymarket voting (e.g. probability of earthquake) → based on layer 2

**Oracle:** how to extract data from real life, blockchain wont have any record for real life

- Chainlink, DCF how to take profit (mechanism)
- **DIRECT take gain for specific event**

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**Layer 4:** how to apply → Prototype (prof become a customer)

- Login with wallet
  - One time/ multiple times
- Frontend: user login
- Backend : dashboard

**Layer 5:** cybersecurity → can publicly launch

### Project Objective

To investigate the efficacy of blockchain-based prediction markets (e.g., Polymarket) as real-time, market-driven probability estimators for enhancing financial risk management, and to develop a prototype framework for binary Yes/No derivative instruments that enable institutional investors to hedge tail risks, exploit arbitrage, or earn returns more efficiently than traditional methods.

### Project Scope

The project focuses on:

1. Identifying gaps and use cases where prediction markets outperform conventional risk transfer tools (e.g., insurance, options).
2. Developing a mathematical/algorithmic framework for detecting and exploiting pricing inefficiencies and cross-market arbitrage.
3. Exploring institutional applications, including parametric insurance with probabilistic triggers and commodity hedging using market consensus.
4. Designing a prototype operational model for binary Yes/No prediction-market derivatives.
5. Integrating oracle protocols and data-extraction mechanisms to map real-world outcomes to on-chain contracts accurately.
6. Assessing governance, regulatory, and cybersecurity requirements for secure public deployment.

**Out of scope:** Full-scale product launch, regulatory approval processes, or live capital deployment.

### Implementation Schedule

Phase	Tasks	Duration	Deadline	Deliverables
<b>Phase 1: Research &amp; Gap Analysis</b>	Literature review; data collection from Polymarket and traditional markets; use-case mapping	3 months	28 Feb 2026	Interim Report; Project Webpage

<b>Phase 2: Framework &amp; Prototype Development</b>	Mathematical modeling; arbitrage algorithm design; oracle integration; prototype smart contract	2 months	30 Apr 2026	Final Report; Presentation
<b>Phase 3: Testing, Governance &amp; Revision</b>	Backtesting; security audit simulation; governance model; stakeholder feedback integration	2 weeks	15 May 2026	Revised Final Report

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## Team Division (5 Members)

### Technology Track (2 Members)

Member	Role	Primary Responsibilities
<b>Tech Lead (T1)</b>	Smart Contract & Oracle Architect	<ul style="list-style-type: none"> <li>• Design and code binary Yes/No derivative prototype (Solidity)</li> <li>• Integrate oracle protocols (e.g., Chainlink, API3) for outcome verification</li> <li>• Implement data-extraction pipelines from prediction platforms</li> <li>• Conduct security and gas optimization audits</li> </ul>
<b>Algo &amp; Data Engineer (T2)</b>	Quantitative Modeler & Backtester	<ul style="list-style-type: none"> <li>• Develop mathematical framework for pricing and arbitrage detection</li> <li>• Build cross-market discrepancy algorithms</li> <li>• Perform historical backtesting across event categories</li> <li>• Automate real-time probability feed aggregation</li> </ul>

### Finance Track (3 Members)

Member	Role	Primary Responsibilities
<b>Finance Lead (F1)</b>	Risk & Institutional Strategy	<ul style="list-style-type: none"> <li>• Identify institutional use cases (parametric insurance, commodity hedging)</li> <li>• Compare prediction market efficiency vs. traditional derivatives</li> <li>• Lead final report structuring and presentation</li> </ul>

<b>Market Analyst (F2)</b>	Use Case & Gap Researcher	<ul style="list-style-type: none"> <li>• Map prediction market event categories to financial risk exposures</li> <li>• Analyze tail risk hedging potential vs. CDS, options, futures</li> <li>• Contribute to interim report and webpage content</li> </ul>
<b>Governance &amp; Compliance Specialist (F3)</b>	Regulatory & Risk Governance	<ul style="list-style-type: none"> <li>• Assess regulatory alignment (CFTC, SEC, EU MiCA)</li> <li>• Design governance model for public deployment</li> <li>• Evaluate cybersecurity and counterparty risk frameworks</li> <li>• Draft stakeholder confidence protocols</li> </ul>

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## Key Submission Dates

- **Interim Report & Project Webpage: 1 March 2026**
- **Final Report & Presentation: 1 May 2026**
- **Revised Final Report: 15 May 2026**