

1 Thesis: Market Design, Price Discovery and Temporal Liquidity

1.1 Design Philosophy

The Siprifi Prediction Market MVP v3 is intentionally designed as an **underlying settlement layer**, not as a monolithic on-chain exchange. The core thesis is that *price discovery, liquidity formation, and user interaction should emerge from market behavior rather than be enforced by protocol-level curves*.

This approach mirrors traditional OTC derivatives desks, where:

- Contracts are standardized
- Settlement is deterministic
- Pricing is negotiated and evolves organically

The blockchain is used strictly for:

1. Trustless minting and burning of exposure
2. Capital pooling and final settlement
3. Collateralization guarantees

All other dynamics are intentionally abstracted off-chain in the early phases.

1.2 OTC-Native Market Structure

Each prediction market is exposed to the user as a single OTC-style contract, not as a DeFi pool.

- There is no automated price curve on-chain
- There is no forced liquidity provision
- There is no protocol-defined price

Instead, price emerges from:

- User demand for protection or exposure
- Time remaining until event resolution
- Aggregate market sentiment

The YES token acts as a **time-decaying risk instrument**, whose perceived value is inversely proportional to the probability of event occurrence and the remaining duration until resolution.

1.3 Orderbook as a Narrative Device

The orderbook is not merely a trading primitive, but a **narrative interface**.

Displayed per market:

- Bid / Ask depth
- Last traded YES price
- Historical price chart
- Time-to-expiry overlay

Importantly, the orderbook is initially implemented **off-chain**, enabling:

- High-frequency updates
- Zero gas cost for order placement
- Flexible UX experimentation

Only matched trades are settled on-chain via the existing mint/burn mechanisms.

1.4 Temporal Price Dynamics

A core insight of the system is that YES token pricing naturally follows a **temporal decay curve**, even without an AMM.

Let:

$$P_{YES}(t) = f(D(t), R(t), T)$$

Where:

- $D(t)$ is demand for protection at time t
- $R(t)$ is perceived residual risk
- T is time remaining until resolution

Empirically:

- Early markets with high uncertainty exhibit high YES prices
- As time progresses without adverse signals, YES prices decay
- Late-stage markets converge toward binary outcomes

This behavior mirrors insurance premium decay and option theta in traditional finance.

1.5 Why No AMM in MVP

Automated Market Makers impose artificial liquidity and pricing assumptions that are incompatible with early-stage prediction markets:

- They require predefined curves
- They mask true demand signals
- They subsidize liquidity before organic interest exists

For this reason, Siprifi v3 explicitly avoids AMMs in its initial design, allowing:

- True price discovery
- Real bid-ask spreads
- Volatility driven by sentiment, not math

1.6 Future Evolution: Temporal Market Maker

Once sufficient market data is collected, the protocol can transition toward a **Temporal Market Maker (TMM)**.

This future module would:

- Use historical orderbook data
- Incorporate time-to-expiry explicitly
- Adjust liquidity provisioning dynamically

A conceptual pricing function could take the form:

$$P_{YES}(t) = \alpha \cdot \frac{1}{T-t} + \beta \cdot \sigma + \gamma \cdot S$$

Where:

- σ is recent price volatility
- S is market sentiment skew
- α, β, γ are governance-controlled parameters

Importantly, this Market Maker would be:

- Optional
- Modular
- Backward-compatible with OTC markets

1.7 Separation of Concerns

The architecture enforces a strict separation:

Layer	Responsibility
Solidity Core	Settlement, mint/burn, collateral
Off-chain Engine	Order matching, price discovery
Frontend	Narrative, charts, UX
Future MM	Liquidity smoothing, fallback pricing

This separation ensures that the system remains:

- Extensible
- Upgradable
- Resilient to UX iteration

1.8 Conclusion

Siprifi's market design deliberately prioritizes **emergent behavior over enforced liquidity**. By starting with an OTC-native, orderbook-driven system and evolving toward a temporal market maker only when justified by data, the protocol avoids premature optimization while preserving a clear path to scalability.

This philosophy positions Siprifi not as a prediction AMM, but as a **risk-native financial substrate**.