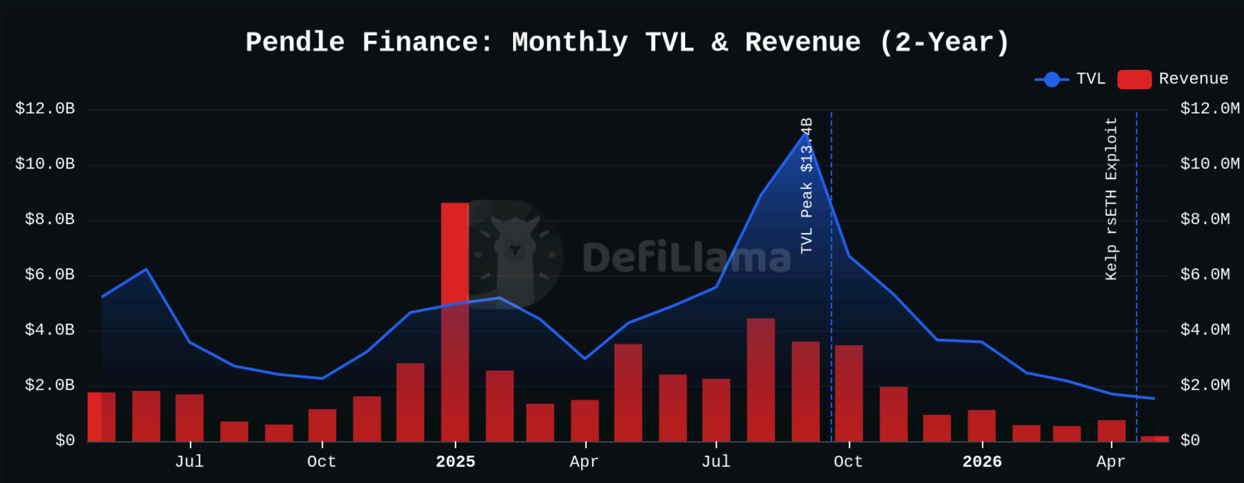
Pendle Finance: Deep Dive Report

May 8, 2026

Executive Thesis

Pendle is the dominant infrastructure layer for on-chain fixed income — a protocol that structurally survived an 88% TVL drawdown, never lost a dollar from its own contracts, and is now executing a credible three-vector expansion (Boros funding rates, Saturn RWA, Sonic multichain) precisely as its tokenomics shifted from dilutive to net-deflationary. At $344M MCap and 36.9x P/S against a revenue trough, the market is pricing a recovery — and early data says that recovery is underway.

I. Current State: Anatomy of a Compression Cycle



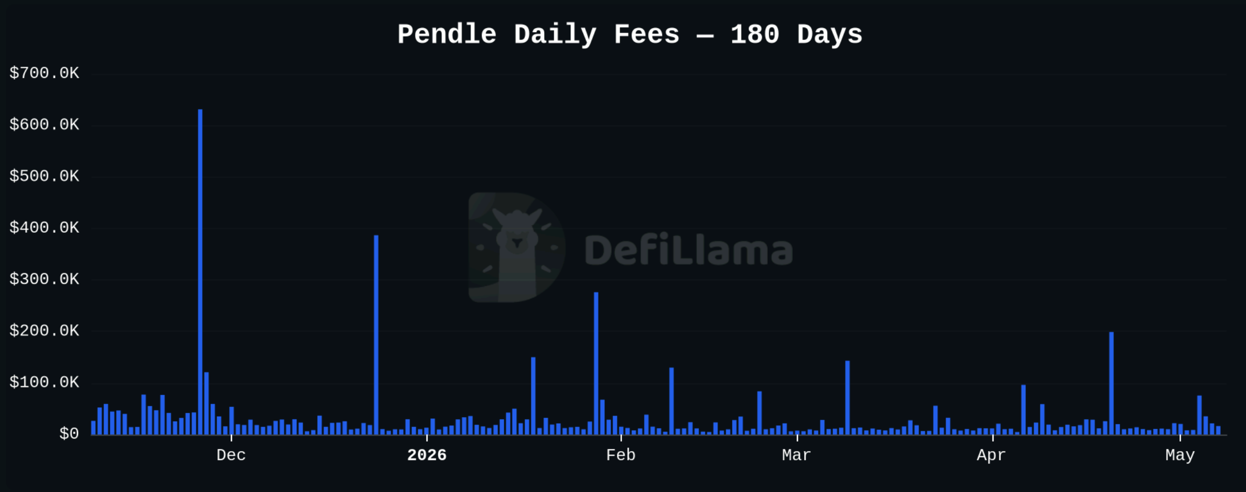
Pendle's TVL peaked at **$13.39B on September 19, 2025** — making it, for a brief moment, one of the largest DeFi protocols by deposits. Today, TVL stands at **$1.592B**, an **88.1% drawdown** that is perhaps the single most extreme compression of a non-hacked major DeFi protocol in recent history. Understanding *why* this happened is essential to evaluating whether it can reverse.

The mechanism is well-documented: Pendle's TVL was architected as a leveraged carry-trade machine. Users deposited Ethena's sUSDe into Pendle to receive Principal Tokens (PTs), used those PTs as collateral on Aave's E-Mode (which pegged sUSDe at USDT to eliminate liquidation risk), borrowed USDC at 5.4%, swapped back to sUSDe, and repeated — achieving 10x+ effective leverage on the Ethena yield spread. When sUSDe's APY was 15-20%+, this was extraordinarily profitable. When Ethena funding rates compressed below the 5.4% USDC borrowing cost on Aave in late 2025, the carry turned negative and the entire structure unraveled simultaneously. **Roughly 60-70% of Pendle's peak TVL was Ethena-derived** (per Sandmark analysis, March 2026), meaning a single yield source's compression triggered a cascade that took TVL from $13.4B to $1.96B in three months.

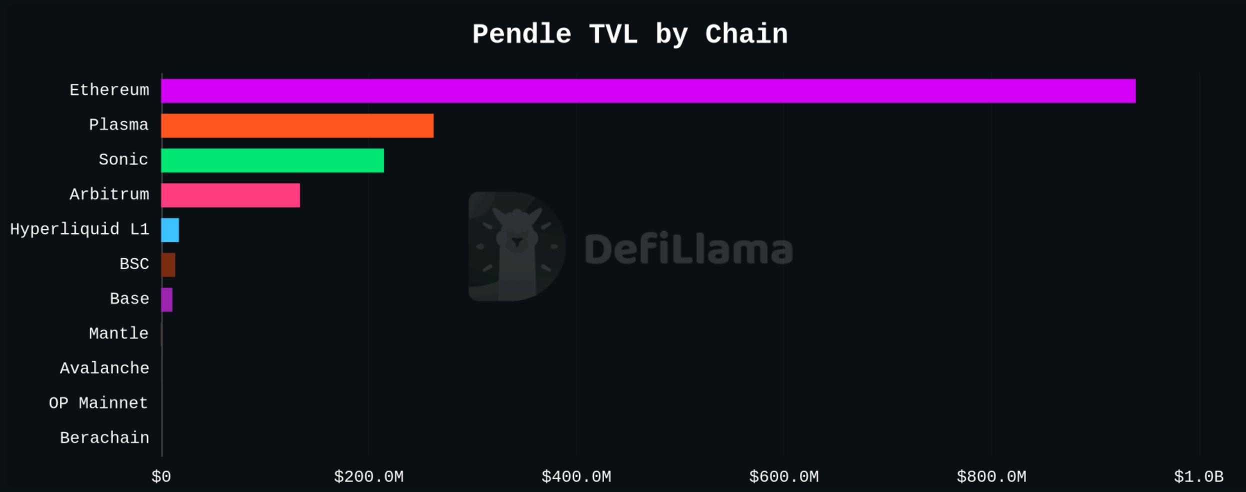
The revenue data tells the same story with brutal clarity: monthly fees peaked at **$1.602M in November 2025** and collapsed **87.6%** to $552K by March 2026. The daily fee on the day of this report is **$20,932** — about 3.3% of peak. This isn't a protocol failure; it's a demand cycle. When institutional carry trades are unprofitable, PT/YT trading volume evaporates.

The critical signal is *what happened next*. TVL troughed at **$1.362B on April 24** and has bounced **$230M** (+16.9%) since. More importantly, the **30-day daily fee run rate is now 17.7% above the 90-day average** — an early inflection. The partial May 2026 data shows earnings exceeding incentive costs, a first since the compression began. Annualized revenue at the 30-day run rate: **$9.33M**.

The TVL lifecycle exposes a structural truth about Pendle that most drawdown analysis misses: **PT/YT tokens expire**. Pendle TVL is inherently cyclical — pools mature, TVL resets to zero for those pools, and new pools must attract fresh deposits. The November 2025 peak partially reflects a large cohort of pools reaching maturity and being rolled, not pure organic churn. This makes TVL drawdown comparisons to evergreen lending protocols (where TVL is sticky) misleading. Pendle's "real" floor TVL is lower than traditional DeFi because the asset base literally expires — but the ceiling is also far higher when new pool cycles attract fresh leverage.



II. Chain Architecture: Ethereum Dominance + Sonic's Explosion



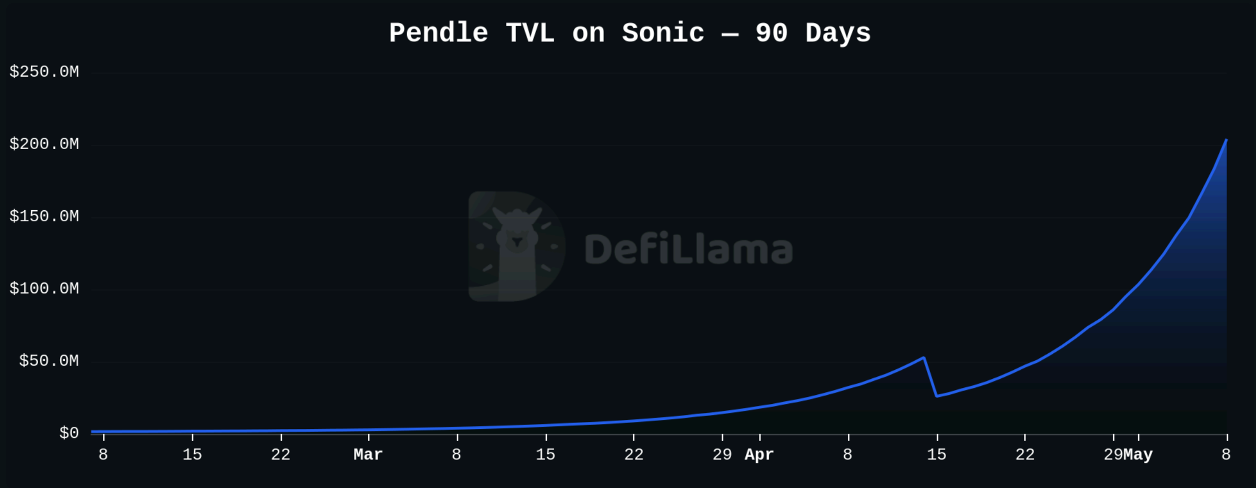
Pendle operates across **11 active chains**, but the distribution is sharply unequal:

CHAIN	TVL	SHARE	30D CHANGE
Ethereum	$939M	59.0%	—
Plasma	$263M	16.5%	▼ 59.4%
Sonic	$215M	13.5%	▲ +568.6%
Arbitrum	$134M	8.4%	▲ +38.6%
HyperEVM	$17M	1.1%	▼ 80.7% (90d)
BNB Chain	$14M	0.9%	—

Base	$11M	0.7%	▲ +93.4%

Three dynamics stand out:

Sonic's parabolic rise. Starting from just $1.57M on February 7, Sonic grew to $214.76M by May 8 — a **+13,585% 90-day expansion** that has made it Pendle's #3 chain in under 3 months. The 7-day figure is still +107.7%, suggesting the trajectory isn't exhausted. Sonic's DeFi ecosystem has attracted competitive yields from staking products that map cleanly to Pendle's PT/YT mechanic.



Plasma's collapse. Down 59.4% in 30 days, Plasma's contraction (-72.9% over 90 days) is the starkest countertrend. This appears to be pool-expiry-driven rather than structural abandonment — but if Plasma was Ethena-linked pools maturing without renewal, it confirms the Ethena dependency is still present even at current TVL levels.

HyperEVM as a cautionary tale. The Citadel launch on HyperEVM (Hyperliquid's L1) reached a reported $785M TVL "under one month after launch" in September 2025. It now sits at $17.17M — a 97.8% decline. This pattern (incentive-driven TVL spike → rapid decay) is a risk template for evaluating Sonic's durability. The difference is that Sonic's growth has been more sustained (3 months vs. 1 month for Hyperliquid), and Sonic's broader DeFi ecosystem is more developed — but the risk of incentive-dependent TVL should be flagged.

III. What's Working: The Three-Vector Expansion

A. Boros: Funding Rate Derivatives ($2.1B/Month Volume)

Boros is Pendle's most strategically ambitious product — and arguably the purest expression of the team's intellectual thesis: *if yields can be tokenized, any rate can be tokenized*.

Launched publicly on Arbitrum on **August 6, 2025** for BTC and ETH Binance funding rates, Boros reached $10B in cumulative notional volume by **February 5, 2026** — **2.7x faster than Pendle V2 reached its first $10B**. Current metrics: $11.79M TVL, **$2.079B in 30-day perp volume**, $5.83K in Q2 2026 fees (partial quarter). Revenue has been modest ($224.75K in Q1 2026, $92.98K in Q3 2025) but the volume trajectory is impressive for a 9-month-old product category.

The market it addresses is enormous: over $200B in daily perp open interest across CEXs, with $250B+ in daily transactions. Boros has captured ~0.03% of that market (per the team's own estimate at launch). Even reaching 3% implies $5B+ in OI and $73M+ in annual revenue — which would 7-8x Pendle's current annualized run rate.

The product roadmap is expanding from crypto (BTC, ETH, SOL, BNB, Hyperliquid, Bybit) to TradFi markets: NVDA, gold, and silver funding rates are explicitly planned. If Boros can replicate the PT mechanism's success — becoming the infrastructure layer that "everyone routes through" for funding rate hedges, the way PT sUSDe became the standard for Ethena yield — the TAM expansion is genuinely transformational.

Caveat: Boros revenue in Q2 2026 is tracking at $5.83K through May 8 — well below the $224K quarterly run rate. Volume exists but fee conversion remains low, suggesting thin margins or a fee structure that hasn't yet activated at scale.

B. Saturn RWA: Institutional Yield Infrastructure

Saturn launched on public mainnet on **April 8, 2026** — exactly one month before this report. It is Pendle's institutional-grade RWA product, built around a dual-token system:

- **USDat**: 1:1 backed with USDC, underpinned by tokenized U.S. Treasuries via M0 infrastructure (Galaxy, Securitize, Clear Street as partners)
- **sUSDat**: The yield layer — staking USDat triggers movement of reserves into Strategy's STRC preferred dividend instrument, passing ~11% APY to holders

The yield chain is multi-hop: **BTC → MSTR equity → STRC preferred dividends → sUSDat**. This is not a pure Treasury product — it's credit exposure to MicroStrategy's capital structure, which carries equity correlation risk alongside its nominal 11% yield.

Despite this complexity, the market response was immediate: **$45M in TVL within 24 hours of launch** (per PANews, April 10). The private testing phase raised $10M from Flowdesk and Galaxy. Pendle PT/YT markets for both USDat and sUSDat (maturing August 27, 2026) offer approximately **13-14% fixed APY** via PTs — versus 4-8% on traditional RWA platforms.

The regulatory tailwind is real: the **GENIUS Act** restricts stablecoin *issuers* from paying yield, but explicitly does not apply to DeFi exchanges. Pendle's PT/YT mechanism sits in the legal clear — the yield comes from market mechanics, not issuer distribution. This creates a structural moat as TradFiadjacent stablecoins proliferate under the new framework.

The broader RWA pipeline is building: Apollo Global Management ($840B AUM) via the Ember protocol, Paxos's USDG ($120M+ TVL shortly after launch), and Strategy's STRC are already live. **RWA markets have contributed $151M to Pendle TVL over the past 8 months** (per The DeFi Investor analysis, May 2026). With $69.8B+ in total yields settled since launch, Pendle's fixed-income infrastructure thesis is crystallizing into a multi-issuer TradFi access layer.

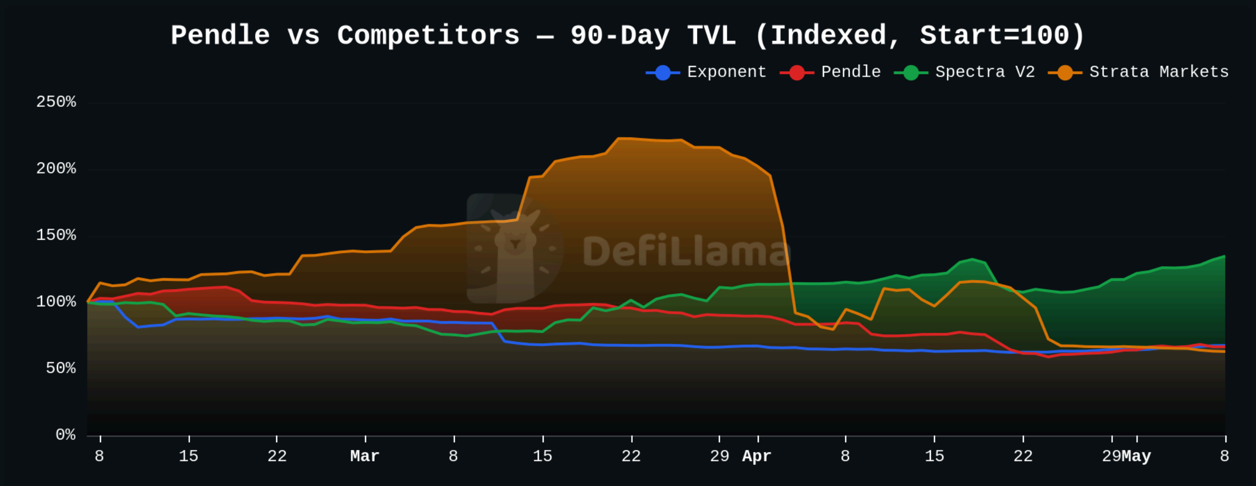
C. Multichain Citadels: Progress and Caution

Pendle's 2025 "Citadels" roadmap targeted non-EVM ecosystems: Solana, TON, and Hyperliquid. Status as of May 8, 2026:

- **HyperEVM**: Live since ~August 2025. Peak TVL $785M, current TVL $17.17M. 97.8% decline from peak — incentive-driven rather than organic. The HyperEVM experience is the template for evaluating new Citadel launches.
- **Solana**: Database confirms no active Pendle chain row for Solana. Planned but not yet live.
- **TON**: Same — planned, not live.
- **Sonic**: Not a Citadel-branded deployment (it's EVM), but the fastest-growing chain in the entire portfolio. $215M TVL after 3 months.

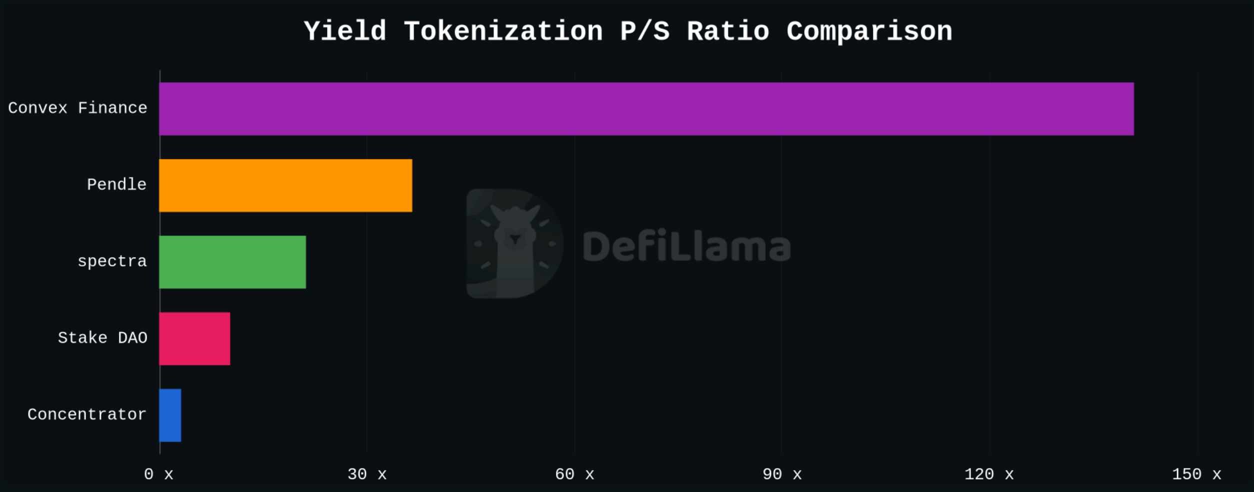
The Citadel 2 (KYC-compliant institutional product) is strategically important but has no confirmed live metrics yet.

IV. Competitive Moat: The Yield Tokenization Oligopoly



Within the DefiLlama "yield" category ($6.12B total TVL across 603 sub-protocols), Pendle ranks #2 at 26% market share — but the context matters enormously. The #1 protocol is Spark Savings ($1.987B), a savings product, not a yield tokenizer. In **pure yield tokenization**, Pendle's dominance is overwhelming:

PROTOCOL	TVL	30D CHANGE	90D CHANGE	P/S
Pendle	$1,592M	▼ 18.6%	▼ 31.0%	**36.9x**
Convex Finance	$621M	—	—	140.9x
Spectra	$67M	+13%	**+74.5%**	21.2x
Exponent	$78M	+5.2%	▼ 31.6%	—
Strata Markets	$78M	▼ 33.4%	▼ 36.9%	—



Pendle's TVL is **24x Spectra's** ($67M) and **20x Exponent's** ($78M). No competitor is within an order of magnitude in the yield tokenization sub-category. The closest genuine structural threat is Spectra, which is growing at +74.5% over 90 days from a small base and trades at a lower P/S (21.2x). But Spectra's total TVL ($67M) would need to grow 24x just to match today's Pendle — and Pendle is itself recovering.

The moat is not just size. Pendle's composability advantage is structural: PT tokens are now embedded in Aave, Morpho, and Fluid as collateral assets. This integration flywheel — where yield-tokenized PT assets become standard collateral across the DeFi lending stack — is nearly impossible for a smaller competitor to replicate quickly. Gauntlet and Steakhouse (top Aave/Morpho curators) have both adopted Pendle's Linear Discount Oracle for new integrations, implicitly endorsing Pendle PT as institutional-grade collateral.

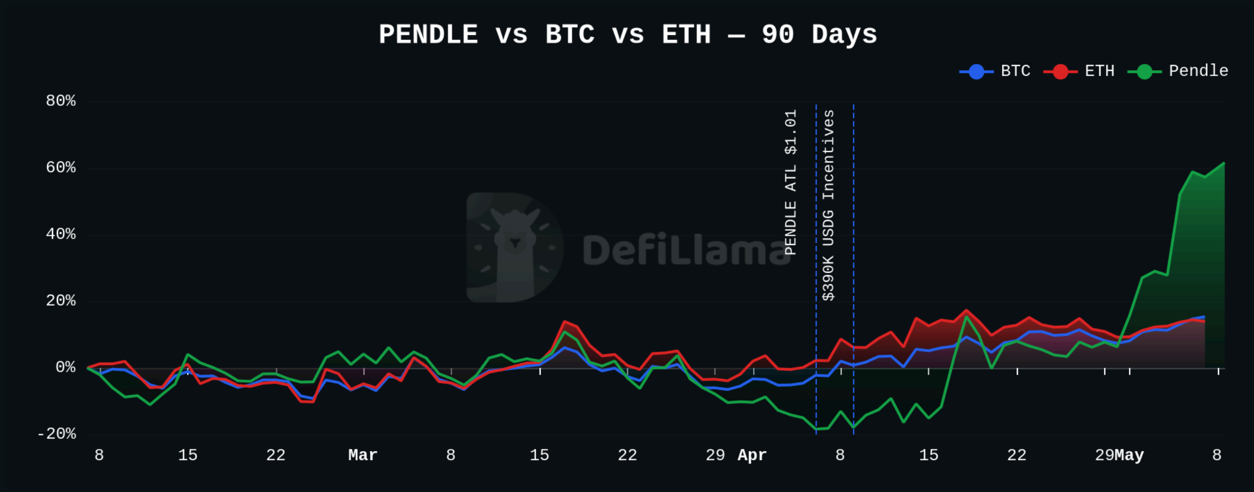
The Convex comparison is instructive: Convex's 140.9x P/S is an outlier driven by minimal revenue retention relative to fee generation. Pendle at 36.9x, against a revenue trough, reflects the market assigning forward multiple expansion — essentially betting that revenue recovers toward the 2025 peak.

V. Token Economics: From Dilutive to Deflationary

PENDLE's price history over the last year is a compressed version of the protocol's business cycle:

PERIOD	PENDLE	BTC	ETH
7d	▲ +27.24%	▲ +1.82%	▼ -0.99%
30d	▲ +96.87%	▲ +11.93%	▲ +3.73%
90d	▲ +65.07%	▲ +14.93%	▲ +8.80%
180d	▼ -28.42%	—	—
365d	▼ -37.87%	▼ -17.96%	▲ +25.41%

PENDLE hit its cycle ATL of **$1.013 on April 6, 2026** — a -83% drawdown from the August 24 ATH of $6.11. From that floor, it has recovered **+98.08%** to $2.02. The 30-day return of +96.87% is one of the strongest bounces in mid-cap DeFi this cycle, and it's outpacing BTC (+11.93%) by **8.1x**.



The sPENDLE revolution. The key structural change underpinning the token rally is the January 20, 2026 launch of sPENDLE:

- **80% of protocol revenue** (V2 fees from yield and swap) now buys PENDLE from the open market via hourly TWAP
- Rewards distributed to sPENDLE holders — creating a liquid, accessible staking layer replacing the illiquid vePENDLE lockup model
- Emissions cut **~30%** through algorithmic allocation replacing manual gauge voting
- **Terminal 2% annual inflation** activated in April 2026 (on circulating supply)

The arithmetic of supply pressure is now net-positive for holders:

- Annual emissions: ~$6.88M (circulating supply × 2% × $2.02 price)
- Annual buybacks from revenue: ~$7.56M ($777K × 12 × 80%)
- **Net position: ~$680K/year net deflationary at current revenue levels**

This is marginal, but the direction matters: at 2025 peak revenue ($4.44M/month), the buyback would be **~$42.6M/year** against ~$6.88M in emissions — 6.2x net buyback surplus. As revenue recovers, the deflationary pressure accelerates.

The **FDV/MCap ratio** of 60.46% is the critical overhang: roughly 40% of total supply sits in the sPENDLE contract, ecosystem fund, and governance multisig — not classified as circulating. Importantly, all team and investor vesting completed in September 2024. **There are no scheduled cliff unlocks.** The non-circulating tokens are protocol-controlled, not time-released to investors — a meaningful distinction.

Institutional validation: Grayscale. PENDLE appeared on Grayscale's Assets Under Consideration list in **both Q1 2026 (January) and Q2 2026 (April)** in the Financials/DeFi category, alongside Morpho, Hyperliquid, and Jupiter. This is a watchlist, not a product commitment — but consecutive quarterly appearances from the world's largest digital asset manager signal persistent institutional research interest that most DeFi protocols never achieve.

VI. Risk Matrix

Smart Contract Security: MEDIUM Risk

Pendle has **never been directly exploited**. Zero funds lost from Pendle's own contracts across its entire operating history. The codebase has been audited by **6 firms**: Ackee, Dedaub, Dingbats, Code4rena wardens, ChainSecurity, and WatchPug. All contracts are open source.

The oracle architecture has evolved: the original TWAP-based PendlePYLpOracle (wrapped as Chainlink AggregatorV3Interface) has been supplemented by a **Linear Discount Oracle** — AMM-independent and manipulation-resistant — which Pendle now recommends for all new integrations. Top curators (Gauntlet, Steakhouse) have adopted it for Aave/Morpho markets. This represents genuine oracle security improvement, though the TWAP oracle remains in use for existing integrations.

Residual smart contract risk: The SY (Standardized Yield) wrapper architecture means Pendle's security assumptions extend to underlying yield sources. As the protocol becomes more permissionless in market creation, the quality of SY wrappers is increasingly outside Pendle's direct control.

Economic Risk: HIGH (Primary Risk)

This is the dominant risk dimension. The fundamental business model couples Pendle's revenue directly to DeFi yield levels:

1. **Ethena dependency** (estimated 68%+ of current TVL per March 2026 analysis): Despite diversification efforts, Ethena-linked assets (sUSDe, USDe, srUSDe) still represent the majority of Pendle's TVL base. A repeat compression of Ethena yields — triggered by declining crypto funding rates, a USDe de-peg event, or a shift in market structure — would trigger another TVL drawdown. The 2025-26 cycle demonstrated this mechanism with -88% TVL severity.

2. **Revenue-yield coupling**: Unlike evergreen lending protocols that generate revenue in any rate environment, Pendle's fee model requires users to *actively want to trade yield* — which requires yield spreads to be interesting enough to justify PT/YT positioning. In a low-volatility, low-yield environment, there is simply less to trade.

3. **Pool expiry mechanics**: TVL is structurally non-sticky. Even in ideal conditions, pools mature and capital must actively re-enter. This creates a perpetual re-acquisition cost that lending protocols don't face.

4. **HyperEVM precedent**: The Citadel on HyperEVM went from $785M to $17M in ~8 months. This pattern — rapid incentive-driven TVL followed by sharp decay — is a risk template for Sonic if its growth is primarily incentive-driven rather than organic.

Ecosystem Dependency Risk: HIGH (April 2026 rsETH Event)

On April 18, 2026, Kelp DAO's LayerZero OFT bridge was exploited by North Korea's Lazarus Group for **$293M** (116,500 rsETH, 18% of circulating supply). Pendle PT and YT markets for rsETH were **frozen as part of a nine-protocol emergency response**.

Critically: **Pendle's own contracts were not exploited**. The freeze was a precautionary market pause — appropriate and executed correctly. As of May 7, Aave completed liquidation of the attacker's remaining rsETH positions, and the DeFi United recovery coalition (Circle, Ethena, Frax, Kraken-backed Ink) is working to restore rsETH backing. Over 90% of Arbitrum DAO voters support releasing $71M in frozen ETH for the recovery fund.

The broader lesson: Pendle's composability is both its greatest strength and its systemic risk. Being embedded in 10+ protocols as collateral means Pendle markets get frozen whenever any upstream dependency is compromised — even if Pendle itself is entirely clean.

Centralization / Governance: MEDIUM Risk

The emergency multisig exercised pause capabilities appropriately during the Kelp incident. vePENDLE governance is transitioning to sPENDLE (more distributed, more liquid). Market creation is not yet fully permissionless — the team controls SY wrapper security assessments, which is a centralization point that becomes more important as the protocol scales permissionlessly.

Risk Summary:

DIMENSION	SCORE	KEY FACTOR
Smart Contract	MEDIUM	0 exploits, 6 audits, evolving oracle
Economic	HIGH	~68% Ethena dependency, yield-rate coupling
Ecosystem/External	HIGH	Kelp rsETH event, LRT contagion risk
Oracle	MEDIUM	TWAP + new Linear Discount Oracle
Liquidity	MEDIUM	59% Ethereum concentration
Centralization	MEDIUM	Emergency multisig, SY wrapper control

Overall	**HIGH**	Economic dimension drives overall rating

VII. Valuation: The Recovery Bet

The P/S ratio of **36.9x** is the crux of the valuation debate. Against *trailing 365-day revenue* of **$25.73M**, this is elevated but not absurd for infrastructure with demonstrated product-market fit. Against the *current 30-day annualized run rate* of **$9.33M**, it prices in aggressive recovery — effectively 37x an already-bouncing revenue base.

The bull case math:

- If monthly revenue recovers to the $2-3M range (roughly Nov 2025 levels), annualized revenue = **$24-36M**
- At 20x forward P/S (a compression from current 37x), MCap = **$480-720M**
- Current MCap: $344M → implied upside: **+40-110%**

The bear case:

- Revenue stalls at current ~$777K/month run rate
- Annualized revenue stays ~$9.33M
- At 25x P/S → MCap = $233M → **-32% from here**

The recovery signal: 30d revenue is already up **+23.79%** from 30 days ago, and the 30d daily run rate is 17.7% above the 90d average. Sonic (+568% in 30d) is adding new revenue-generating pools. RWA (Saturn, USDG, Apollo) is adding new TVL categories. And the sPENDLE buyback mechanism is now live — for the first time in Pendle's history, revenue directly buys and burns tokens rather than flowing to governance lockers.

The unresolved question is whether Pendle can **diversify away from Ethena** fast enough that the next funding rate compression doesn't produce another 88% drawdown. The current TVL base (~68% Ethena-linked per the most recent available analysis) suggests it cannot yet — making Pendle's forward performance still substantially correlated to Ethena's yield environment.

VIII. Investment Verdict

Pendle is a high-conviction infrastructure recovery story with a critical single-concentration risk that cannot yet be diversified away.

The core thesis — on-chain fixed income infrastructure that captures a share of the $140 trillion global fixed-rate market — is structurally sound and increasingly validated by institutional adoption (Apollo, Paxos, Grayscale watchlist, Strategy/Saturn). The protocol has never been exploited. Its competitive moat in yield tokenization is enormous (24x the nearest direct competitor). The tokenomics just became net-deflationary for the first time. Revenue is trending up (+23.79% 30d). Sonic is growing explosively. Boros is at $10B+ cumulative notional.

The bear case is simple and powerful: ~68% of TVL is still Ethena-driven. One more funding rate compression cycle, and this story repeats. The HyperEVM precedent shows how quickly "new chain momentum" can evaporate. The +96.87% 30-day recovery already prices in significant optimism.

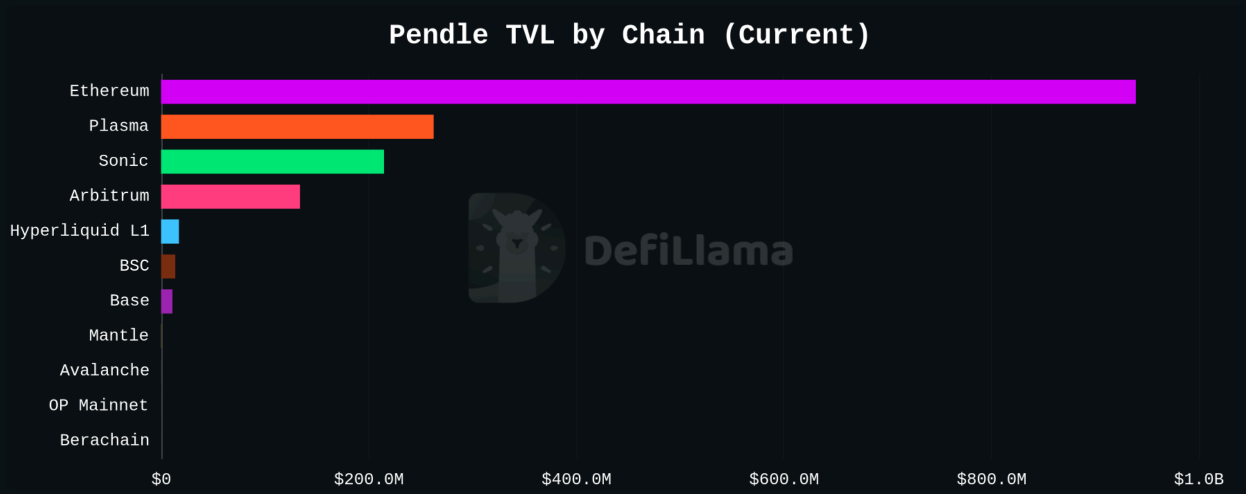
Conviction: MEDIUM-HIGH — with a specific watchpoint. The most important metric to track is NOT Pendle's total TVL — it's the *non-Ethena share of TVL*. Saturn RWA, USDG, Apollo, and new asset categories are the only way Pendle de-risks the Ethena dependency. If that share crosses 30-35% of TVL in the next 3-6 months, the risk-adjusted case becomes significantly stronger. Until then, this is a high-beta recovery trade with meaningful downside if carry trades compress again.

PENDLE's 30d bounce of +97% already partially reflects the narrative — but the protocol's peak monthly revenue of $4.44M implies 5.7x more revenue potential vs. today's run rate. If Pendle is infrastructure, and infrastructure is being rebuilt, the current price is not obviously wrong.

NFA, DYOR.

Data as of May 8, 2026. Protocol metrics sourced from DefiLlama warehouse. Web-sourced figures (Boros TVL, Saturn launch metrics, Ethena share estimates, Kelp rsETH hack details, tokenomics, Grayscale watchlist) noted inline — treat as directional, not DefiLlama-verified. Source: DefiLlama.

Pendle TVL by Chain (Current)



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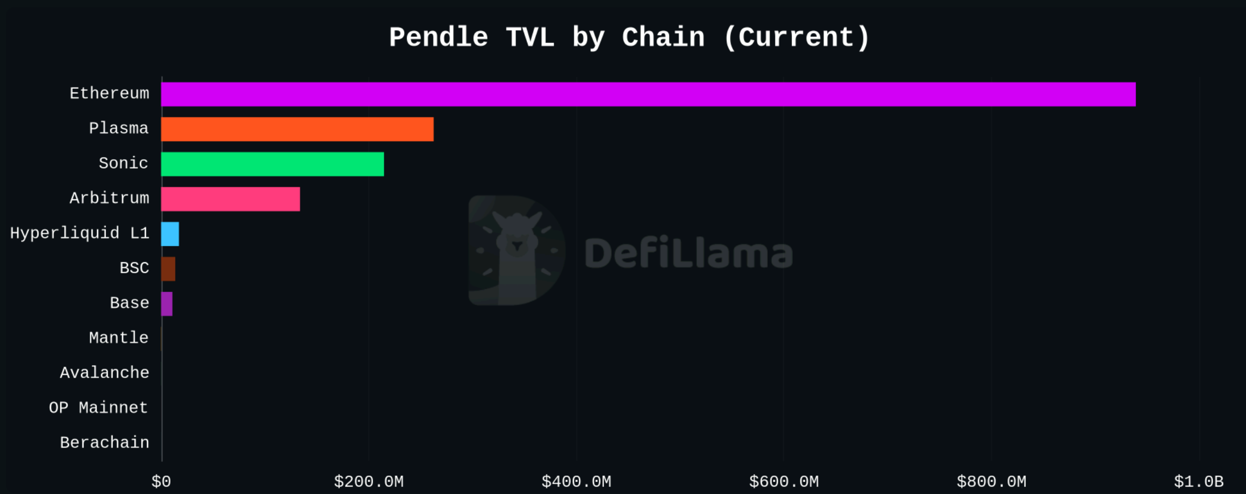

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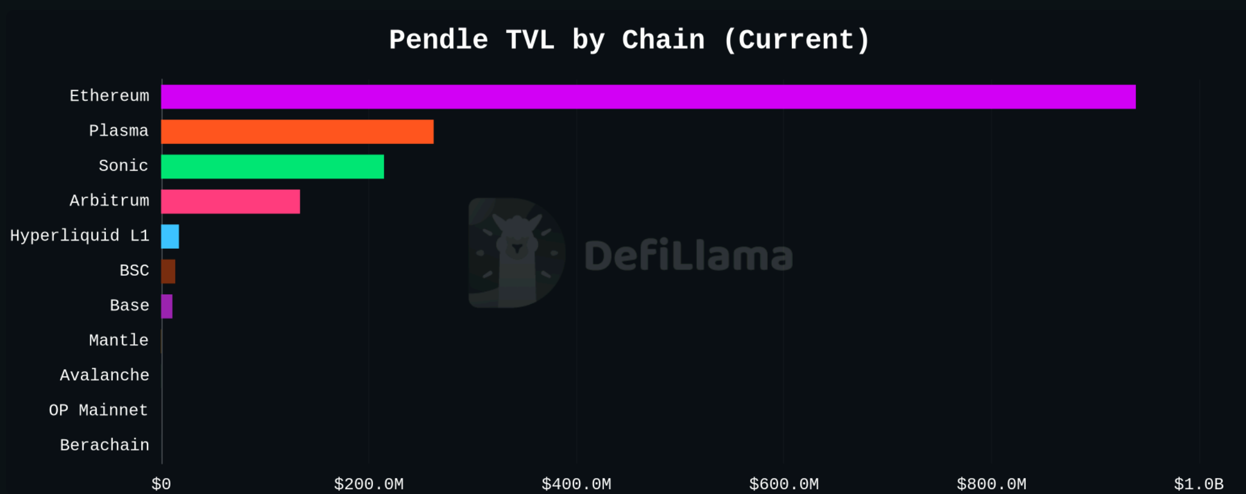

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