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A DEEP DIVE INTO THE FUTURE OF ONCHAIN LIQUIDITY ROUTING

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ABSTRACT

This report examines the evolving landscape of onchain liquidity routing, detailing how DEX aggregators have transitioned from simple price-comparison tools to sophisticated execution orchestrators.

As DeFi liquidity fragments across thousands of pools and disparate blockchains, 1inch has emerged as a full-stack leader by bridging the gap between classic imperative routing and the new frontier of declarative, intent-centric execution. By utilizing its Pathfinder algorithm for pathfinding and its Fusion protocol for auction-based intent fulfillment, 1inch abstracts away the immense complexity of the market to ensure best execution and MEV protection for the end user.

The report highlights 1inch's strategic expansion into non-EVM domains like Solana and the introduction of Fusion+, which utilizes cross-chain intents to provide a "chain-abstracted" trading experience. It further provides a comparative analysis of the aggregator market, noting that while 1inch maintains a technical edge, it faces intensifying competition from distribution-led platforms and niche-specific leaders.

Finally, the analysis explores the future of the sector, where the rise of institutional DeFi is shifting the aggregator's objective from "best price" to "best compliant outcome." Overall, this report illustrates how 1inch is building a universal swap marketplace, positioning itself as the essential infrastructure layer for a unified and compliant global onchain economy.



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1inch accelerates decentralized finance with a seamless crypto trading experience for 27M users. Beyond being the top platform for low-cost, efficient token swaps with \$300M+ in daily trades, 1inch offers a range of innovative tools, including a secure self-custodial wallet, a portfolio tracker for managing digital assets, a dedicated business portal giving access to its cutting-edge technology, and even a debit card for easy crypto spending. By continuously innovating, 1inch is simplifying DeFi for everyone.

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The authors of this report may hold tokens mentioned in this report. Please refer to The Block's financial disclosures [page](#) for author token holdings.

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1. AGGREGATOR OVERVIEW

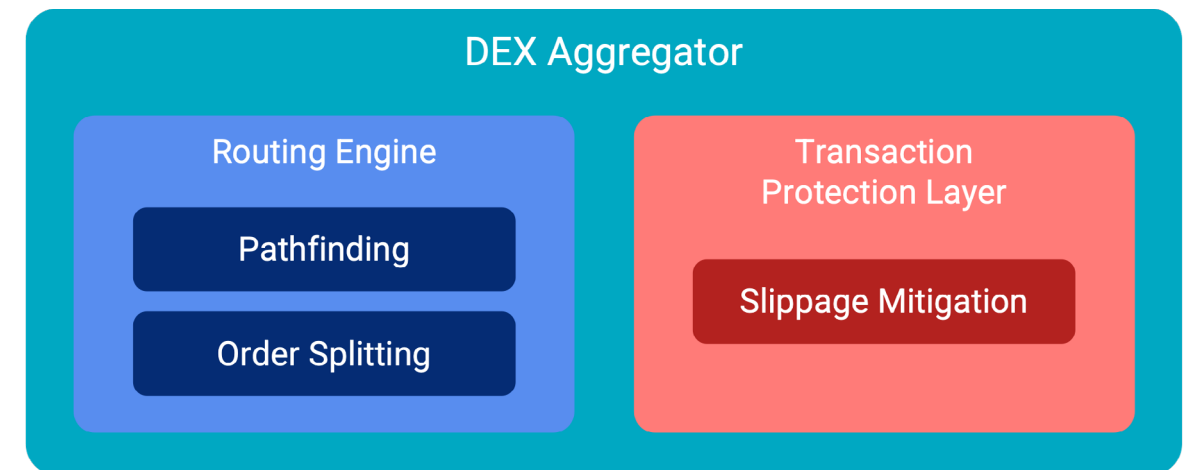
WHY AGGREGATORS MATTER

In a fragmented onchain market, best execution is no longer guaranteed by sticking to a single venue. Liquidity that once lived in a handful of places now spans thousands of pools and a growing set of DEX venues across multiple networks, each offering different prices and liquidity depth. This fragmentation turns a simple token swap into a complex search and optimization problem.

DEX aggregators exist to abstract away that complexity and present users with a single best option. Conceptually, they play the same role as a flight search engine. Rather than forcing users to check venues one by one, an aggregator scans the market and presents a route that maximizes realized execution quality. As onchain activity expands and liquidity continues to fragment, aggregators are no longer merely a convenience; they are increasingly the default access layer for efficient onchain trading.

HOW AGGREGATORS WORK

Mechanically, an aggregator takes a user instruction such as "swap X of token A for at least Y of token B" and converts it into an execution plan. To do so, aggregators rely on two primary infrastructure components: a routing engine and a transaction protection layer.



The routing engine is the aggregator's core decision system. Its job is to find the most cost-effective way to source liquidity across onchain venues and complete the trade. It does this through two tightly coupled tasks.

The first is pathfinding, which searches across possible swap paths, including multi-hop routes, to identify an efficient route under current liquidity conditions. This is computationally non-trivial because the search space grows rapidly with the number of venues and intermediate assets, while the environment changes continuously as pool states update block by block.

The second is order splitting. Even when a single venue can fill a trade, pushing a large



order through one path often results in significant price impact. The routing engine therefore splits the order across multiple liquidity sources to reduce overall price impact. That, however, increases the optimization burden because the routing problem becomes both "which paths" and "in what proportions" under tight time constraints.

While the routing engine optimizes for price, the transaction protection layer focuses on preserving that value during execution. This infrastructure mitigates slippage from adversarial flow, most visibly MEV-driven behaviors such as sandwich attacks. The root issue is that pending transactions in the mempool are public, giving MEV searchers the opportunity to frontrun trades to extract value at the users' expense.

Aggregators therefore compete not only on finding an attractive route on paper, but on how consistently they can deliver the quoted outcome in real conditions, often by limiting information leakage to mitigate MEV extraction. This is where "best price" turns into "best effective spread," and where aggregators start to look like infrastructure rather than a mere UI feature.

Those mechanics feed directly into market structure. Aggregators do not just help users find better prices; they also redirect order flow across venues, determine which liquidity models remain competitive, and serve as the default point of access between users and venues. Over time, that shifts bargaining power away from individual DEXs and toward aggregators that control distribution, routing intelligence, and execution reliability.

HOW AGGREGATORS EVOLVE

Early aggregators largely resembled best-of routers on a single chain. They compared a limited set of pools, selected a route, and executed a straightforward onchain swap. As liquidity fragmented and DEX design evolved, routing became a genuine optimization discipline, requiring broader venue coverage, native multi-hop support, and more robust handling of execution risk, including MEV-related slippage.

The direction of travel is clear even if implementations differ: aggregators are moving



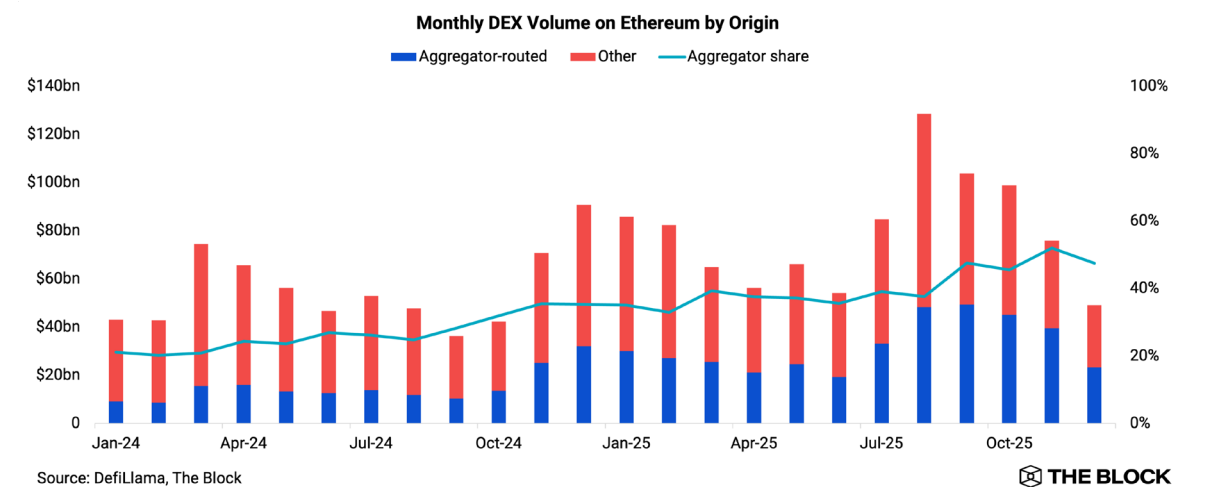
from "choosing a route" to "orchestrating execution," expanding their scope from price discovery to outcome delivery.

Now the frontier is delegated execution. Instead of committing to fixed routing upfront, users express an intent, say "swap X of token A for at least Y of token B," and allow third-party solvers to compete to deliver the fill. This intent-centric design effectively outsources routing and execution to a competitive marketplace, where solvers source liquidity flexibly and internalize the associated execution risk, thereby optimizing execution quality under real conditions.

HOW AGGREGATOR ADOPTION GROWS

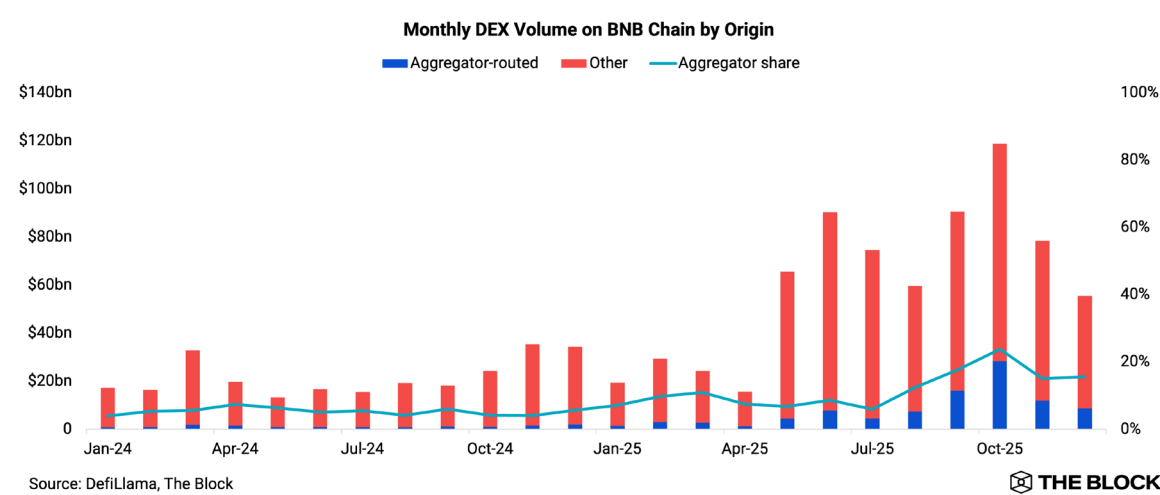
Aggregator penetration is best framed as the share of spot DEX volume that flows through aggregators rather than being executed directly on a single venue. Viewed this way, the largest chains can look quite different, because aggregator value is tightly linked to the degree of liquidity fragmentation and the cost of traversing it.

On Ethereum, despite the cyclical nature of monthly DEX volumes, aggregator share has trended upward over time, from 21% at the beginning of 2024 to 47% at the end of 2025, suggesting steady user acceptance as aggregator UX and execution reliability improved.

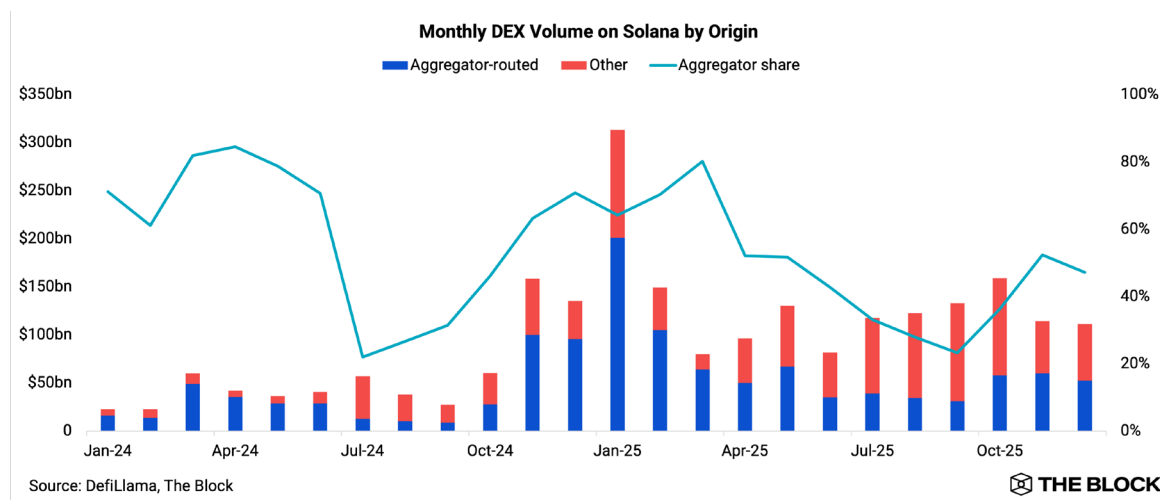




On BNB Chain, a similar pattern appears, but at a lower share. Liquidity is often highly concentrated in a small set of dominant venues, reducing the marginal benefit of aggregator use while still leaving them useful as a best-of router.



On Solana, low transaction costs make multi-hop routing and order splitting far less punitive, strengthening the case for aggregators. Even so, aggregator share remains sensitive to liquidity concentration and disintermediation through direct-to-consumer integration. The introduction of PumpSwap is a useful example of vertical integration that can pull activity away from aggregators, as memecoin liquidity and trading experiences become more tightly integrated within Pump, the largest memecoin launchpad.



All in all, DEX aggregators are most valuable when liquidity is scattered and route complexity is economically viable. They deliver superior execution in fragmented environments and, at a minimum, provide a best-of comparison in monotonous environments.



2. LIQUIDITY LANDSCAPE

HOW LIQUIDITY MODELS VARY

The routing problem aggregators solve is ultimately a liquidity problem. DEX liquidity is no longer homogeneous: each liquidity model comes with distinct tradeoffs in price impact, fill certainty, and exposure to execution risk. A good aggregator is not just finding the best displayed price at a point in time; it is deciding when to tap into various liquidity venues with different designs to actualize the trade in production.

AMMs remain the baseline onchain liquidity primitive, but AMM design has proliferated into several variants. Concentrated liquidity improves capital efficiency, yet it also creates micro-fragmentation. The same token pair can exist across multiple fee tiers and liquidity distributions, so “one venue” effectively becomes many subtly different liquidity pools with meaningfully different depth profiles. While this makes liquidity provisioning more flexible, it pushes complexity upstream into routing.



At the same time, CLOB-style designs have regained relevance, especially on high-throughput chains where order placement and cancellation are cheap enough to support active market making. The dynamic state of order books compels aggregators to handle a different class of routing logic, since rapid shifts in order book depth and queue position can invalidate trading routes faster than AMM state typically does.

Beyond AMMs and CLOBs, quote-based liquidity expands the menu further. RFQ systems bring in professional market makers who provide firm prices and can source liquidity across a broader set of onchain, interchain, and offchain venues, including channels that retail traders cannot access directly. In effect, RFQ expands the set of liquidity onchain traders can reach.

Liquidity fragmentation, then, is not only about dispersion. It is also about heterogeneity in how liquidity is expressed, especially when part of it appears as ephemeral RFQ quotes rather than persistent onchain reserves. That mix is what makes routing computationally non-trivial under tight time constraints.

HOW LIQUIDITY FRAGMENTATION SHIFTS

A practical proxy for liquidity fragmentation on a given chain is the concentration of monthly DEX volume across venues. The Herfindahl-Hirschman Index (HHI) is used to characterize whether a market is concentrated or fragmented.

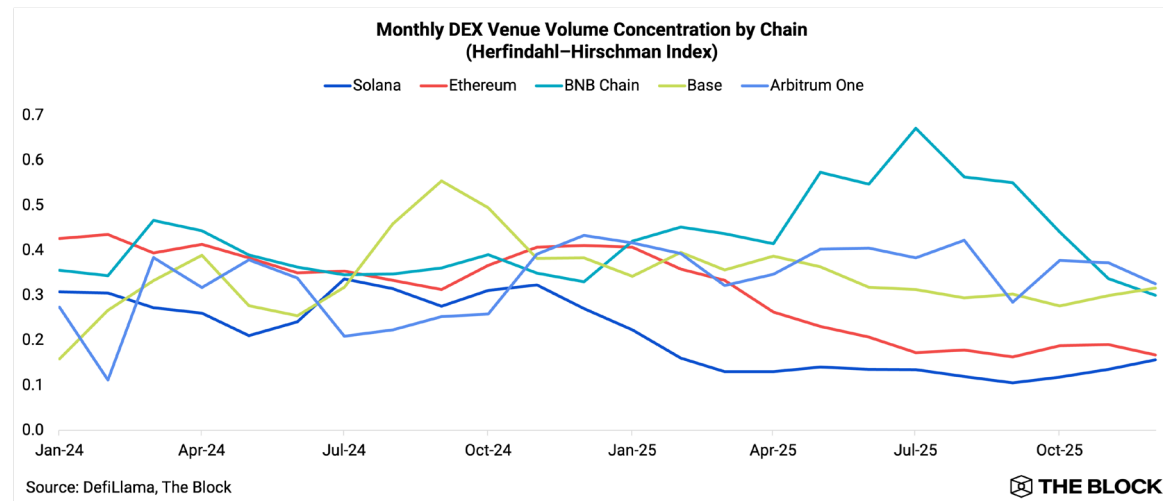
HHI is calculated by squaring each DEX's market share of monthly volume (x_i) and summing across venues. The result is the average market share weighted by market share, ranging from 0 to 1. Values closer to 0 imply a more fragmented and evenly distributed market, whereas values closer to 1 imply monopolistic concentration.

$$HHI = \frac{\sum_i x_i^2}{(\sum_i x_i)^2}$$

By market convention, an HHI below 0.15 indicates a fragmented landscape, whereas an HHI above 0.25 suggests a highly concentrated market.

Calculating monthly HHI across 2024 to 2025 for the top five chains by DEX activity, decentralized L1s like Solana and Ethereum show rising liquidity fragmentation from late 2024. Both begin 2024 with fairly concentrated liquidity, with HHIs of 0.31 and 0.43, respectively, and fall to 0.16 and 0.17 by the end of 2025, approaching a fragmented liquidity regime as new entrants take meaningful share from incumbents.

BNB Chain and L2s such as Base and Arbitrum One tell a different story. Their HHIs fluctuate but hover around similar levels, roughly 0.3, suggesting that liquidity development remains early-stage and volume continues to concentrate in one or two dominant venues.



This pattern also aligns with aggregator penetration mentioned earlier. Chains with more fragmented liquidity (lower HHI) generally show higher aggregator penetration (higher aggregator share), with Arbitrum One as a notable exception.

Chain	Yearly HHI in 2025	Yearly Aggregator Share in 2025
Solana	0.12	50.4%
Ethereum	0.21	40.6%
BNB Chain	0.46	13.4%
Base	0.31	15.5%
Arbitrum One	0.37	25.9%

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One plausible explanation is the rollout and adoption of Timeboost in 2025, a transaction ordering policy on Arbitrum One that auctions top-of-the-block transaction slots to the highest bidder. Retail users cannot easily access this directly through a standard DEX UI, whereas DEX aggregators and intent solvers can bid for these slots. This pushes aggregator penetration higher even if the underlying liquidity landscape has not meaningfully changed.



3. ROUTING ENGINES

HOW ROUTING ENGINES VARY

What ultimately determines user experience is how effectively a routing engine translates fragmented liquidity into a realized fill under constraints, including price impact, fees, latency, and execution risk. As onchain liquidity has diversified across AMMs, CLOBs, and RFQ venues, routing engines have increasingly differentiated along two modes: classic onchain routing and auction-based intent execution.

Classic routing is imperative. The aggregator computes an explicit route across liquidity venues, and the user signs a transaction that executes that route onchain. Routing engines such as 1inch's Pathfinder and Velora's Augustus sit in this category.

Routing decisions directly influence price impact. A router that sends an order through a single steep AMM curve can look competitive at small sizes but becomes increasingly



inefficient as trade size grows. By contrast, intelligent order splitting can reduce marginal slippage, but it introduces a second-order tradeoff. Every additional hop adds execution complexity and transaction overhead, which matters most in high-fee environments and for time-sensitive trades. The competitive frontier is therefore smarter pathfinding and order splitting optimization under tight constraints, alongside minimizing transaction costs and reducing execution failure risk caused by slippage.

Meanwhile, auction-based intent execution is declarative. Instead of signing a transaction that commits to a specific path, the user signs a message describing the desired outcome, typically expressed as a minimum receive condition plus additional constraints. Third-party solvers then compete to fulfill the intent, and the winning solver settles via an onchain transaction.

This model often provides built-in order-flow protection because users are not broadcasting signed transactions into the public mempool. When paired with private transaction relay, it can reduce information leakage and increase the probability that the realized fill resembles the users' expectations.

At the same time, it shifts more responsibility to the solver, effectively outsourcing routing decisions to market wisdom, from sourcing liquidity to internalizing execution risk. It also introduces additional latency: classic routing can settle as soon as the signed transaction is included in a block, whereas auctions add a bidding window that trades settlement immediacy for lower information leakage and better realized execution.

Within this category, implementations differ in how they structure competition. 1inch's Fusion is an example of a Dutch auction approach, where the exchange rate starts high and decays until a solver accepts and executes. On the other hand, CoW Protocol targets a similar objective through batch auctions, grouping orders into batches and auctioning the settlement to competing solvers, which can match opposite trades within a batch at effectively zero marginal cost.



Characteristics	Classic Routing	Auction-based Intent Execution
Paradigm	Imperative	Declarative
Routing Decision	Pre-committed by Routing Engines	Chosen by Solvers
User Action	Signs Onchain Transactions	Signs Offchain Messages
Transaction Cost	Paid by Users	Covered by Solvers
Transaction Speed	Fast (if gas is sufficiently high)	Slower
Order-flow Protection	Requires Manual Configuration by Users	Built-in
Example	1inch's Pathfinder	1inch's Fusion

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HOW 1INCH EXCELS

With routing engines increasingly bifurcating between classic onchain routing and auction-based intent execution, 1inch **Aggregation Protocol** stands out for building a full-stack liquidity routing suite that spans both modes. The suite combines routing intelligence with market structure primitives that improve access to onchain liquidity and make execution outcomes more reliable in practice.

Pathfinder is the cornerstone of 1inch's classic onchain routing engine. It is designed to make sub-second routing decisions and search for the best routes while accounting for gas costs. As liquidity fragmentation increases, routing quality becomes a first-order product. Pathfinder is positioned as the engine that keeps imperative swaps competitive by consistently solving the time-sensitive route-searching problem at scale.

The second pillar is **Fusion**, 1inch's implementation of intent execution through a Dutch auction. Instead of committing the user to a fixed route, Fusion lets the market compete to deliver the fill. Reducing information leakage often translates into lower adverse slippage in practice. 1inch also positions Fusion as enabling gasless trades from the users' perspective, which matters because gas remains one of the most persistent frictions in DeFi UX.



Fusion+ extends this logic across chains. It is an intent-based system designed to make cross-chain swaps feel like a single action rather than a multi-step workflow that forces users to bridge assets manually. The value proposition is not simply convenience; it is that the dynamics of cross-chain execution remain market-driven, with solvers competing to satisfy user requests, while the complexity of cross-chain messaging is abstracted from the user.

This becomes materially more consequential with 1inch's expansion to Solana. Solana is not just another endpoint for integration; it is a parallel liquidity universe with its own dominant DEX venues, token distribution patterns, and trading culture, and it has recently led the market in spot DEX volume. Bringing Solana into the same aggregator framework meaningfully expands the surface area of what 1inch can access, both in token coverage and in accessible liquidity. If the integration holds up under sustained production stress, it reframes the Solana expansion from "new chain coverage" to "new liquidity domain access," which is a materially groundbreaking move.

It also demonstrates that 1inch can conduct intent execution in an ultra-fast blockchain environment with sub-second block times. More importantly, this is 1inch's first major step toward integrating a non-EVM environment, setting the stage for cross-chain swaps spanning EVM and SVM ecosystems without adding UX overhead. Ideally, users should not need to think about bridging, network switching, or maintaining a portfolio of native gas tokens just to trade. The direction is a chain-abstracted trading UX where the user expresses the desired outcome, and the platform decides where and how to execute across networks.

On the other hand, the 1inch **Limit Order Protocol** expands 1inch's role beyond smart routing. Limit orders turn trading from "take what the market gives right now" to "execute when my conditions are met," broadening the product's usefulness for sophisticated traders and enabling advanced order expression, such as conditional execution and dynamic pricing logic.

Finally, **Aqua** signals a more ambitious attempt to reshape liquidity architecture itself.



The core idea is shared liquidity, where assets remain self-custodial in users' wallets until LP strategy conditions are met, and multiple strategies can draw from the same approved token balance. The goal is to reduce capital fragmentation that comes from forcing liquidity into many isolated pools.

The broader takeaway is that liquidity fragmentation is not a temporary phase. It is a structural trend driven by multi-chain expansion, proliferating liquidity models, and increasingly specialized venues. Aggregators are the layer that makes that fragmented market behave like a unified one, and 1inch is increasingly positioning itself as more than a router. It aims to become an abstraction layer that hides the complexity of liquidity models, intent execution markets, and cross-chain communication behind a single coherent trading interface.



4. AGGREGATOR COMPARATIVE ANALYSIS

HOW AGGREGATOR FEATURES COMPARE

DEX aggregators are all trying to become the default access layer to onchain liquidity. That creates a competitive environment where roadmaps gravitate toward the same headline features and surface-level parity is easy to claim. The real differences show up in places that are harder to see at first glance, such as chain coverage, routing engine optionality, feature breadth that spans limit orders and cross-chain execution, and user interface choices that shape distribution.

To keep this comparison grounded, the analysis focuses on the leading group of DEX aggregators by volume across 2024–2025: Jupiter, 1inch, CoW Swap, OKX DEX, KyberSwap, Odos, and Velora. The table below summarizes the feature set across the seven aggregators in scope.



Aggregator	Chain Coverage	Classic Onchain Routing	Auction-based Intent Execution	Limit Orders	Cross-chain Swaps	Interfaces
Jupiter	Solana	Yes	Yes	Yes	No	Web, API & Mobile
1inch	12 EVMs & Solana	Yes	Yes	Yes	Yes w/ Abstraction	Web, API & Mobile
CoW Swap	11 EVMs	No	Yes	Yes	Yes w/ Abstraction	Web & API
OKX DEX	36 EVMs, Aptos, Solana, Sui & TON	Yes	No	Yes	Yes	Web, API & Mobile
KyberSwap	16 EVMs	Yes	No	Yes	Yes	Web & API
Odos	13 EVMs	Yes	No	Yes	Yes w/ Abstraction	Web & API
Velora	10 EVMs	Yes	Yes	Yes	Yes w/ Abstraction	Web & API

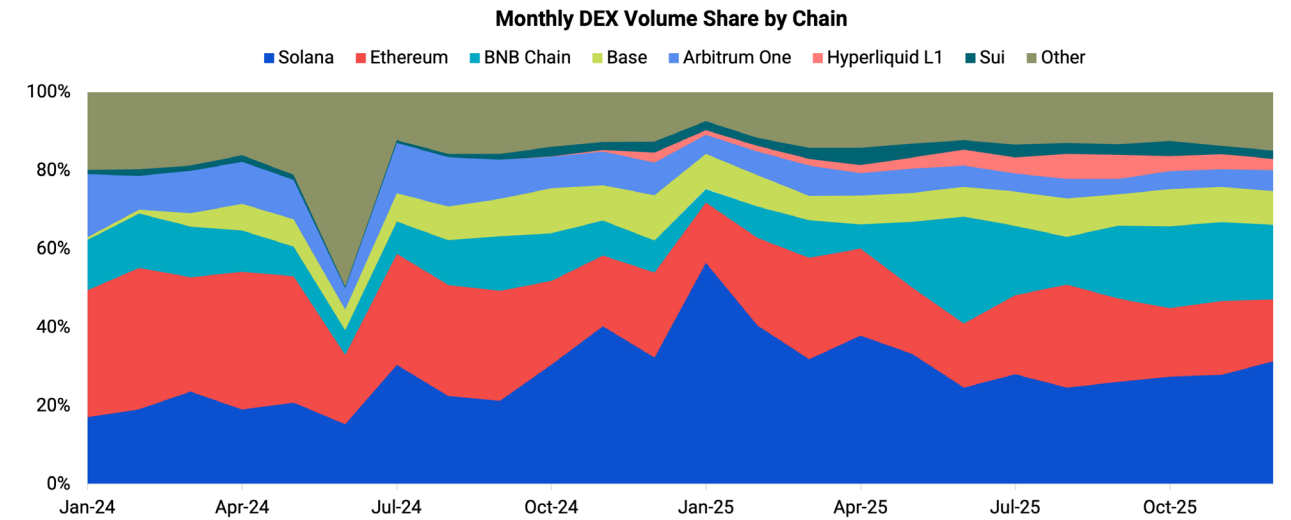
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Chain Coverage: The breadth of chain coverage used to be an easy shorthand for ambition, but it is a less informative discriminator today because most major aggregators cover 10+ chains.

OKX DEX is the clear outlier on sheer breadth, spanning 36 EVM networks plus several non-EVM environments, including Aptos, Solana, Sui, and TON. Jupiter sits at the other end of the spectrum. As an early mover on Solana, it has prioritized depth within Solana rather than broadening across networks.

More coverage is not automatically better. Providing coverage to a low-use chain is often framed as a strategic land grab, but it comes with real operational and financial overhead. Every incremental chain adds integration work, maintenance burden, and ongoing costs, often for negligible return. In practice, the relevant question is not "how many chains," but "which chains," and whether that portfolio aligns with where spot DEX activity actually concentrates.

Viewed through DEX volume distribution by chain, most activity clusters around Solana, Ethereum, and BNB Chain, with a long tail spread across a handful of alternative EVMs and Sui.



Source: DefiLlama, The Block

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From that perspective, OKX DEX has the most comprehensive coverage, but an optimized coverage portfolio looks more like 10+ meaningful EVM networks plus Solana, with Sui increasingly emerging as a high-upside addition.

On that framing, 1inch stands out as especially well-positioned because it pairs wide EVM coverage with a Solana integration that meaningfully expands accessible liquidity rather than adding a marginal chain for optics.

Routing Engine Optionality: A second differentiator is whether an aggregator gives users access to both classic imperative routing and auction-based declarative intent execution.

Most aggregators started with classic onchain routing, but CoW Swap is the notable exception. As an early pioneer of intent execution, it was built around the auction-based intent model from the start.

The broader market, however, is converging toward optionality on routing engines. Several aggregators that started with classic routing have added intent-based execution as solver markets matured and intent execution proved capable of delivering stronger realized outcomes, especially when MEV protection is embedded into the execution design.



Jupiter's JupiterZ accessed through Ultra, 1inch's Fusion, and Velora's Delta Engine reflect this direction. The practical implication is that users increasingly have a choice between faster settlement and stronger execution properties.

Limit Orders: Limit orders now appear across the board, which makes them less useful as a headline discriminator.

Cross-chain Swaps: Excluding Jupiter's Solana-only positioning, cross-chain swaps are broadly supported across the rest of the group, but the user experience differs sharply based on product design.

Some treat cross-chain as a distinct workflow with its own interface. OKX DEX and KyberSwap, for instance, present cross-chain swaps through a separate UI. That can simplify engineering, but it also makes the consumer experience more convoluted and tends to preserve the mental model that cross-chain swapping is categorically different from same-chain swapping.

Others are closer to chain abstraction, where cross-chain trading is designed to feel as similar as possible to an ordinary swap. 1inch, CoW Swap, Odos, and Velora push in this direction by minimizing UX branching before transaction commitment.

From a user perspective, cross-chain swaps should not require a different mental workflow. Cross-chain transactions are precisely where friction accumulates fastest due to manual bridging, network switching, and managing gas across multiple environments.

Aggregators that make cross-chain feel like a standard swap flow remove that cognitive and operational overhead, which is a prerequisite for cross-chain trading to become mainstream rather than a power-user behavior.

Interfaces: Every aggregator in scope offers a web app and an API, but mobile is increasingly becoming a strategic differentiator.

Web remains the baseline interface, but interfaces now carry distribution implications that can matter as much as routing quality. APIs, in particular, are not a side feature. They



are a primary distribution channel that allows third-party wallets, dApps, and trading frontends to route volume through an aggregator as embedded infrastructure.

Mobile support is meaningful because it signals a shift from tooling primarily used by crypto-native power users to a consumer product posture, particularly in mobile-first markets such as the global south and amongst younger user segments.

Amongst the seven, Jupiter, 1inch, and OKX DEX have made the clearest move into native mobile experiences by pairing a wallet and an aggregator inside the same mobile app. This vertical integration reduces friction by enabling one-tap trading without switching to a separate wallet app for transaction authentication.

Aggregator	Chain Coverage	Classic Onchain Routing	Auction-based Intent Execution	Limit Orders	Cross-chain Swaps	Interfaces	Aggregated Feature Score
Jupiter	2	3	3	3	1	3	15
1inch	3	3	3	3	3	3	18
CoW Swap	2	1	3	3	3	2	14
OKX DEX	3	3	1	3	2	3	15
KyberSwap	2	3	1	3	2	2	13
Odos	2	3	1	3	3	2	14
Velora	2	3	3	3	3	2	16



The table above summarizes the feature surface across the seven aggregators along the aforementioned dimensions that matter most for practical competitiveness. On this cut of the market, 1inch stands out for the most balanced complete stack.

Its broad chain coverage signals a distribution-first strategy; its dual routing engines indicate an adaptive approach that optimizes for execution quality; its cross-chain UX is closer to true chain abstraction; and its mobile interface further compresses the trading

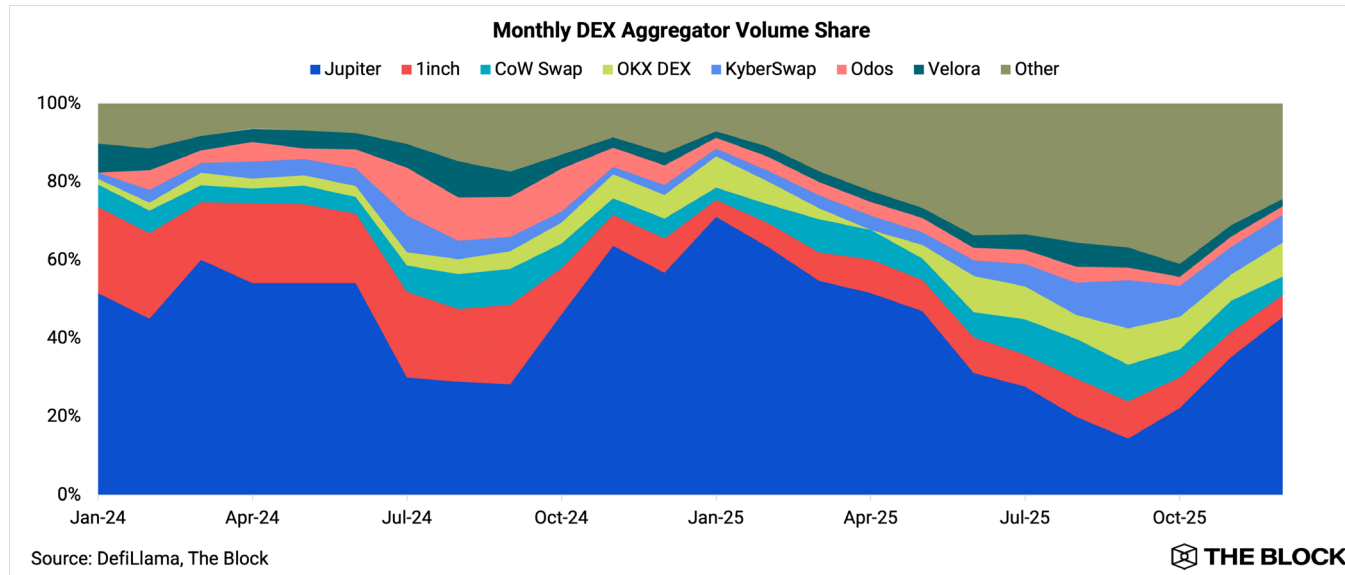


funnel by reducing authentication friction and making execution feel closer to a one-tap consumer experience.

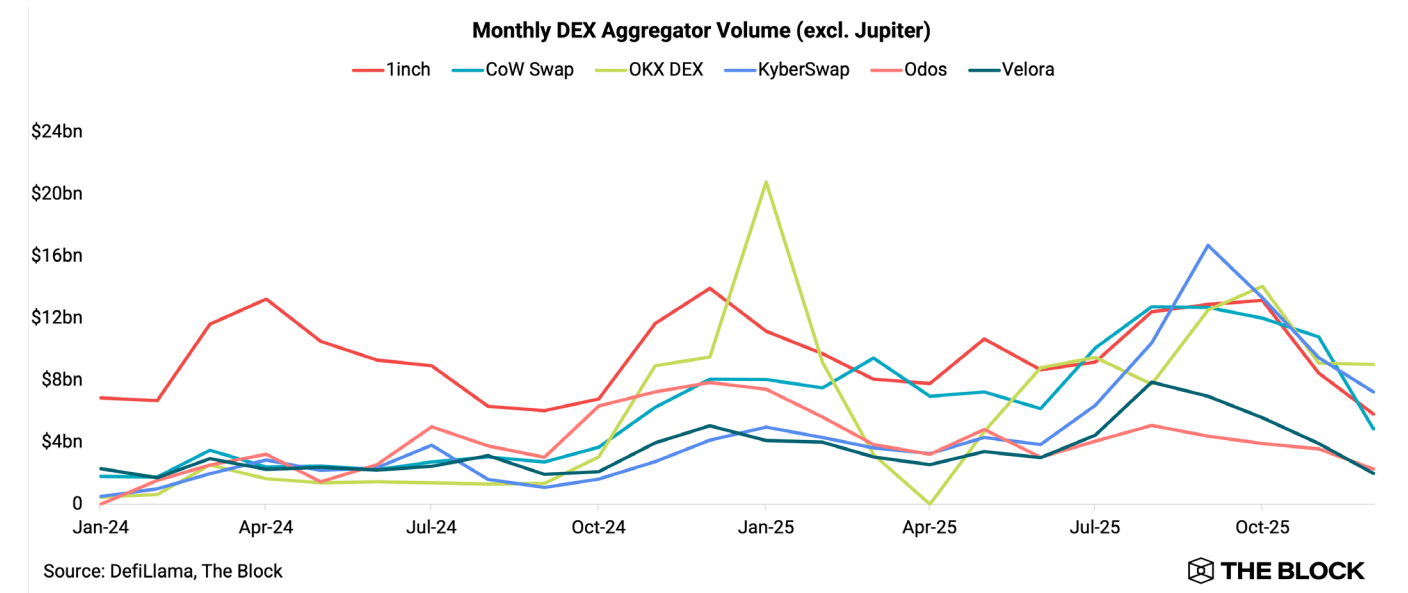
Taken together, this feature comparison makes it clear that headline parity is increasingly common, and differentiation is shifting from whether a feature exists to how deeply it is integrated into a coherent execution and distribution stack.

HOW AGGREGATOR VOLUME COMPARES

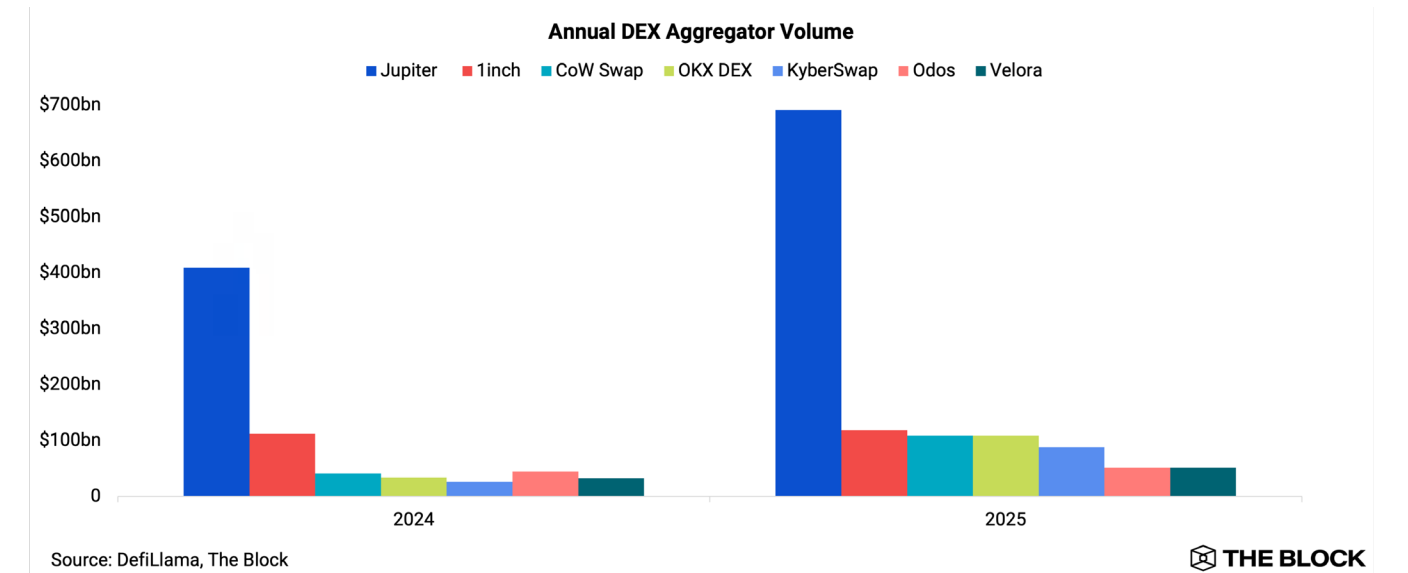
The DEX aggregator landscape has shifted from a clear hierarchy to a tighter race. Jupiter remains the unquestioned leader by volume, but the more consequential development in 2025 is the scramble for the number-two slot. The position that 1inch held comfortably in 2024 became meaningfully contested as multiple competitors scaled into the same range.



As an early mover in the Ethereum aggregator space, 1inch finished 2024 as the clear number-two venue by volume, but that advantage eroded in 2025. Despite its feature superiority as established in the prior section, those attributes did not translate into faster growth or durable share gains.



On a year-over-year basis, 1inch's volume was essentially flat in 2025 (+5%), while every major peer in the top cohort expanded materially faster: Jupiter (+69%), CoW Swap (+167%), OKX DEX (+223%), KyberSwap (+240%), Odos (+15%), and Velora (+57%).

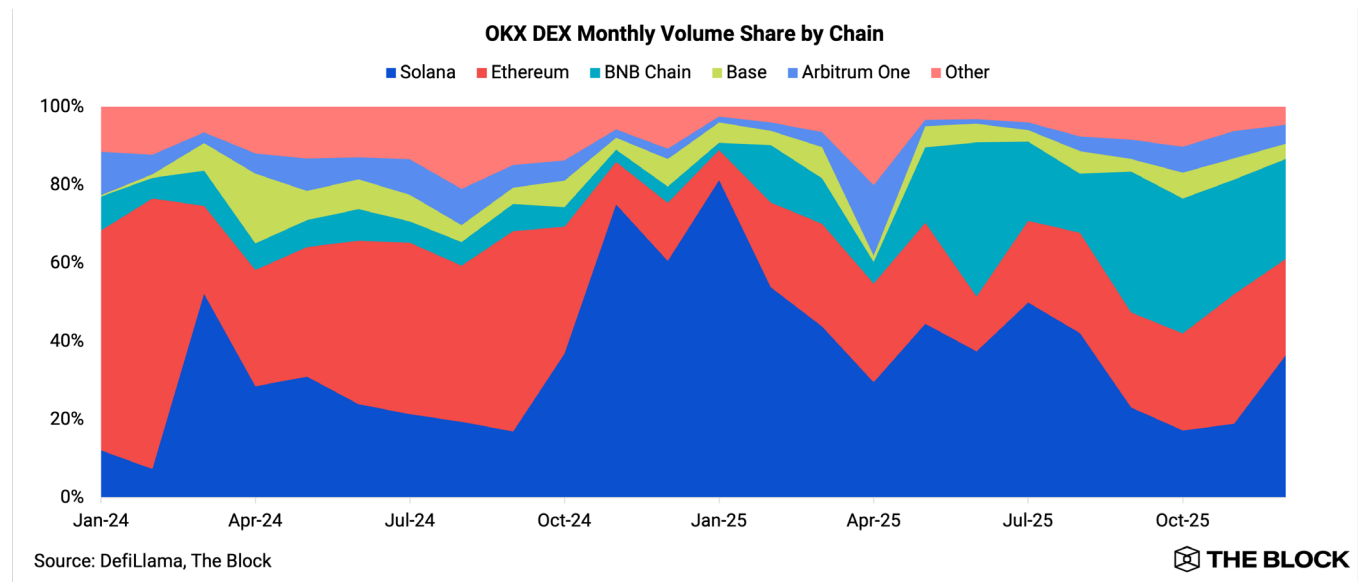




The implication is that most marginal category growth was captured by 1inch's competitors, particularly as aggregator share on Ethereum and BNB Chain increased. By the end of 2025, 1inch is competing at a comparable scale with CoW Swap, OKX DEX, and KyberSwap.

OKX DEX posted the strongest momentum in 2025 despite a seven-week service disruption from mid-March, which likely understates its underlying run rate. Its growth is best explained by distribution rather than feature breadth alone.

Even with very broad chain coverage, OKX DEX's realized volume concentrates in a small set of chains. Solana (45%), Ethereum (22%), and BNB Chain (18%) account for the bulk of activity over 2024-2025, with L2s like Base (5%) and Arbitrum One (4%) forming the next tier and the remaining supported networks contributing a long tail. This validates the framing from the prior section that chain count is not a proxy for relevant coverage. Long-tail integrations carry real cost, but often contribute little to actual flow.



What differentiates OKX DEX is its proximity to a major CEX funnel. Being embedded in

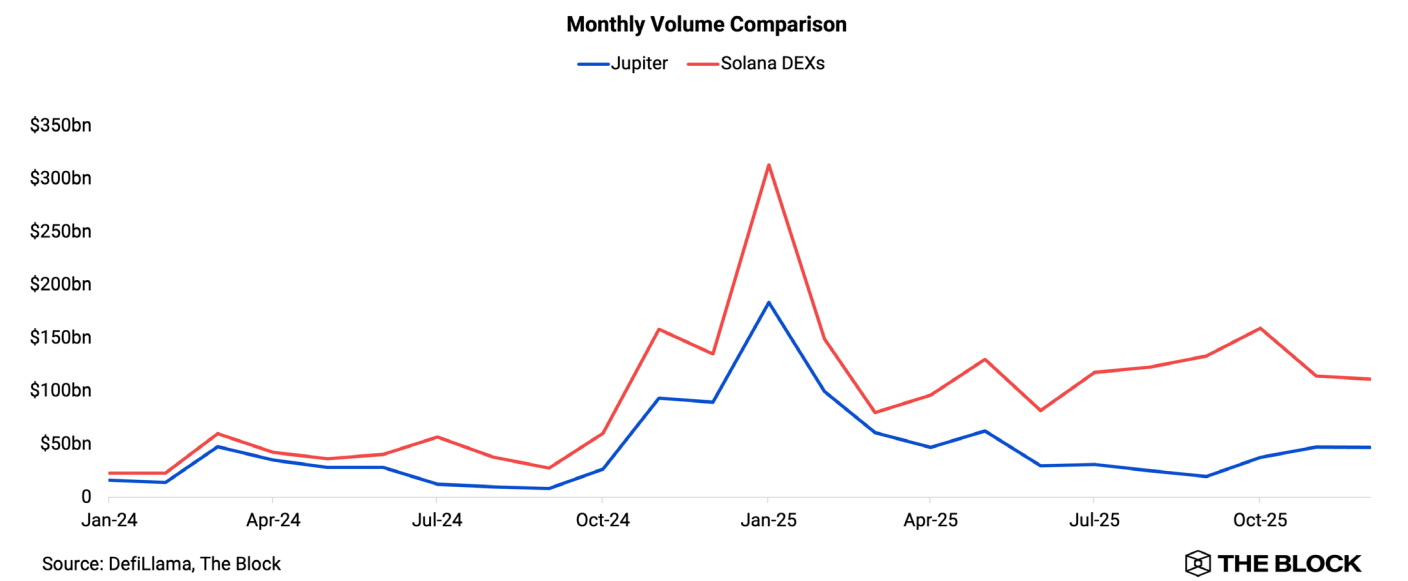


the same mobile app as a large centralized exchange product creates a lower-friction path from attention to execution that standalone aggregators struggle to replicate. Breadth helps monetize that funnel, but distribution is what makes the funnel exist.

CoW Swap, by contrast, reads as a case of specialization showing up in the numbers. Its intent-only model scaled into a much larger market footprint as solver markets matured and MEV-aware execution became a baseline expectation. While several competitors now offer similar forms of auction-based intent execution, CoW Swap's positioning is less "feature parity" and more "execution philosophy," and the 2025 volume trajectory suggests that philosophy resonated in the Ethereum environment.

Similarly, Jupiter's depth-first strategy on Solana continues to be validated at scale. When Solana spot DEX activity accelerates, Jupiter captures outsized upside. The tradeoff is cyclical, as its Solana-only footprint makes performance more dependent on Solana's market cycle.

Monthly Jupiter volume and monthly Solana DEX volume over 2024-2025 have a Pearson correlation coefficient of 0.85 on a scale from -1 to 1, underscoring how tightly Jupiter's volume tracks Solana's overall DEX activity. When activity rotates toward other ecosystems, such as BNB Chain, Jupiter cannot capture that momentum directly.





Jupiter also faces rising pressure even while remaining the largest aggregator overall. On one side are specialization-focused venues that pull flow into more vertically integrated platforms. On the other are distribution-led entrants like OKX DEX that continue to deepen Solana support and expand their presence on the chain.

Competition is now in a white-hot phase as aggregators converge in feature sets, coverage, and routing optionality. As differentiation compresses, first-mover advantage decays and distribution becomes the decisive lever. Proximity to large user funnels increasingly determines where incremental volume lands, even when products look similar at the surface.

At the same time, specialization-focused platforms are emerging as an alternative strategy, winning by mastering a niche rather than building the broadest surface area. That path can be less capital-intensive, but it is also structurally riskier because the niche must be both large and durable. This strategy becomes fragile if the niche is driven by a transient regime.



5. AGGREGATOR REVENUE

HOW AGGREGATORS GENERATE REVENUE

DEX aggregators monetize by capturing value from both end-users executing trades and third-party integrators that embed aggregator routing as a backend. Most revenue models fall into two buckets: transaction-linked monetization that scales with trading activity, and distribution-linked monetization that scales with integrator order flow.

Swap Fee: The simplest revenue model is an explicit swap fee charged as a percentage of the notional trade size.

Fees typically vary by execution mode, such as onchain routing, intent execution, limit orders, or cross-chain swaps, and by the token pair involved. Stable token pairs generally incur lower fee rates than volatile or exotic assets do.

Percentage-based pricing scales naturally with order size, which keeps smaller trades viable and provides a steady and scalable revenue stream that grows directly with trading



volume, which matters for protocol sustainability.

Some aggregators waive fees for selected execution features or token pairs to stay competitive and drive retention. Jupiter, for example, offers zero-fee trading for onchain routing and stable-pair swaps, while 1inch and KyberSwap do not impose swap fees to deliver tighter quotes. Zero-fee execution can function as a loss leader that expands the surface area for downstream monetization.

Swap Surplus: Another revenue model is swap surplus capture. Swap surplus refers to positive slippage, where the realized execution price is better than the quoted price prior to execution.

Capturing part of this surplus allows an aggregator to monetize without necessarily worsening quoted prices, and in intent auctions it can reinforce solver incentives to discover more efficient execution paths.

The tradeoff is that users give up some or all of the upside they would have received if positive slippage were passed through. More importantly, surplus capture can create a conflict of interest by incentivizing more conservative quoting to increase the likelihood of generating revenue through surplus capture.

This revenue stream is inherently volatile because it depends on market conditions and execution dynamics. CoW Swap captures half of the surplus, capped at 0.98% of the trade size, whereas KyberSwap captures the entirety of positive slippage.

As aggregators increasingly position themselves as DeFi's default access layer, their APIs become distribution rails. Monetization of B2B relationships commonly takes the form of subscription access, usage-based fees, or a mix of both.

API Subscription Fee: Integrators pay recurring subscription fees for access to aggregator quotes and execution endpoints, usually via tiered plans differentiated by rate limits, feature access, and support.

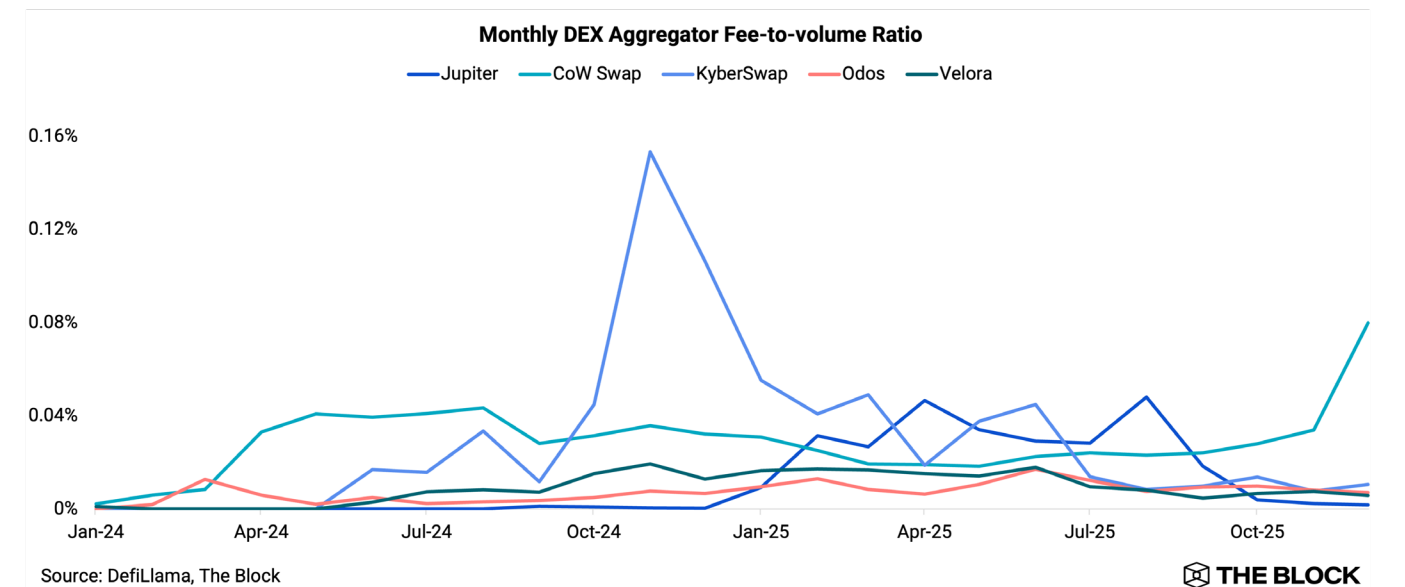


Embedded Infrastructure Fee: Aggregators may also charge a platform fee that scales with activity routed through the integrator.

This can take the form of a fixed percentage of trading volume routed through the integrator, as seen in integrations with 1inch. Alternatively, the aggregator may take a share of the commission that the integrator adds on top of a trade. For example, Jupiter and Odos take 20% of integrator-added commissions. Platform fee sharing can align incentives by rewarding integrators for distribution while enabling the aggregator to monetize as the backend execution engine.

HOW HISTORICAL AGGREGATOR REVENUE TRENDS

The efficacy of transaction-linked monetization is best captured by an aggregator's fee-to-volume ratio. Across the cohort, the monthly average fee captured on aggregator-routed trades ranges from effectively zero to roughly 0.05%, reflecting how aggressively each venue chooses to monetize flow.





Toward the end of 2025, competitive pressure pushed most venues' effective fee rates toward the floor. Fee-to-volume ratios generally compressed below 0.01% as feature parity increased and aggregators competed more aggressively on price.

CoW Swap is the notable exception. Its ability to sustain higher fee capture highlights why surplus-based monetization becomes more viable as solver markets mature. Revenue can be extracted from execution improvement rather than layered on as an explicit toll.

Moving forward, compression in the effective fee rates is likely to push aggregators to lean harder on secondary revenue streams. One path is to keep the core swap experience priced near zero, while concentrating monetization in feature-specific lanes where users are willing to pay for incremental execution complexity or convenience, as reflected in Jupiter's emphasis on monetizing advanced features.

A second path is to shift monetization toward distribution. As integrator-driven volume becomes a larger share of total flow, platform fee sharing becomes more defensible than raising swap fees.

Taken together, the late-2025 fee-rate compression suggests that transaction-linked monetization on vanilla swaps is approaching a competitive floor. Future revenue growth is therefore increasingly driven by harder-to-replicate levers such as premium features and distribution, rather than broad-based increases in swap fees.



6. FUTURE OF AGGREGATORS

WHAT USERS PRIORITIZE

Aggregator competition used to center on routing optimization. It has now morphed into a multi-dimensional contest across realized execution quality, abstraction-rich UX, distribution, and monetization.

That shift makes it worth breaking down what users actually want from an aggregator, because those priorities will dictate which capabilities remain durable differentiators and where sustainable revenue can realistically be captured.

Execution Certainty: User satisfaction is highly sensitive to the gap between the quote



and the realized outcome. Users dislike losing value to slippage and want assurance that their transactions are protected from common forms of MEV. In practice, anything that narrows variance, reduces the probability of transaction failure, and brings the experience closer to a quote guarantee is perceived as a direct upgrade.

Transaction Hygiene: The EVM approval workflow forces users into an awkward choice: either sign two messages per swap, or pre-approve an effectively unlimited amount of tokens to aggregator contracts. The former creates persistent friction, while the latter leaves users exposed if the contract is ever compromised. Users want a smoother approval experience without normalizing unlimited, persistent permissions.

Chain abstraction: Even when cross-chain swaps are available, the frontend experience remains chain-aware. That pushes cognitive load back onto the user and turns a simple swap into a multi-step workflow. The end state is a chain-unified interface in which balances across networks are treated as one, cross-chain messaging is hidden, and settlement latency is absorbed by market participants that can front liquidity or otherwise smooth the experience when underlying rails take time to finalize.

HOW AGGREGATORS POWER INSTITUTIONAL DEFI

As institutions enter DeFi, the role of aggregators expands beyond solving the routing problem. The objective shifts from “best price” to “best compliant outcome.” In practice, the aggregator becomes a SaaS-style execution layer that standardizes access to fragmented liquidity while enforcing compliant constraints that institutions cannot ignore.

This shift changes what venue coverage entails. For institutional users, broad venue access is valuable only if it is configurable. Aggregators need to preserve a smooth trading experience while giving institutions the ability to exclude specific permissionless venues and route to permissioned venues that impose constraints such as address whitelisting and jurisdiction gating. The point is not simply to add more venues, but to make venue



selection a governed decision that is programmable, auditable, and consistent.

Compliance and operational tooling then becomes inseparable from execution. Institutions increasingly need transaction-level traceability, risk screening, rule-based policy enforcement, and deterministic post-trade records that map cleanly into internal controls. Aggregators need to produce an audit-ready trail that shows which liquidity sources were considered, why a route was selected, which constraints were applied, and how the transaction can be reconciled within reporting and oversight workflows. In the institutional setting, the best route is irrelevant if it cannot be reconciled and audited.

The strategic implication is that institutional DeFi pushes aggregators toward a marketplace model where execution quality and compliance are tightly coupled. The winners will be the aggregators that can remain neutral access layers while offering policy-aware routing, permissioned liquidity connectivity, and enterprise-grade integrations without turning the UX into a compliance-heavy workflow. In that environment, distribution and trust are not ancillary to the product; they constitute the product itself.

HOW AGGREGATORS MAINTAIN COMPLIANCE

DEX aggregators attract regulatory attention because they are often the user-facing access layer that translates user intent into execution. Across jurisdictions, regulators have limited leverage over immutable smart contracts, so pressure tends to concentrate on access points and intermediaries such as frontends, APIs, operators, and any parties deemed to exercise control or sufficient influence. This aligns with FATF’s general posture that the code itself may be difficult to regulate directly, but the people and entities operating, marketing, or shaping access to it can still fall within regulatory scope.

In the EU, the Markets in Crypto-Assets (MiCA) regulation is the first comprehensive regulatory regime implemented at bloc scale, and it creates a clear perimeter around virtual asset service providers (VASPs). MiCA includes an exemption for services provided



in a “fully decentralized manner without any intermediary,” but that exemption is narrow in practice. A protocol can be credibly decentralized at the smart contract layer while still presenting an intermediary-like profile at the interface layer, particularly when a legal entity operates the UI, controls key parameters, or retains privileged capabilities through admin keys.

Once an operator or interface is treated as a VASP, the burden goes well beyond licensing. VASPs in the EU are expected to implement robust KYC/AML controls and comply with the Travel Rule regime by collecting and transmitting originator and beneficiary information for relevant crypto-asset transfers. Separately, DAC8 extends the automatic exchange of information to crypto-asset activity and requires VASPs to collect data on reportable transactions and report it to relevant tax authorities starting in 2026.

MiCA also hardens asset eligibility requirements. VASPs are prohibited from offering or facilitating services for stablecoins unless the issuer is authorized in the EU. They are also expected to ensure that any token admitted to trading is supported by the required MiCA disclosures, including a compliant white paper.

The practical consequence is “compliance by default” at the interface layer, even when the underlying routing contracts remain permissionless. For aggregators, that pushes token admission away from reactive blacklisting and toward jurisdiction-aware whitelisting.

Meanwhile, the regulatory landscape in US is very different. Congress passed the Congressional Review Act in April 2025 to repeal Treasury and IRS regulations that would have expanded broker-style tax reporting requirements to interfaces for non-custodial DeFi services, reducing near-term reporting pressure relative to the EU's DAC8 regime.

At the same time, stablecoins moved toward a federal framework through the GENIUS Act, which prohibits the offer and sale of payment stablecoins in the US unless issued by permitted issuers. That creates a different compliance filter, pushing aggregators toward jurisdiction-specific token visibility rules even when access to liquidity venues remains largely permissionless.



Looking forward, decentralization is unlikely to operate as a blanket carve-out for DeFi service providers. Regulators can tolerate the fact that smart contracts are difficult to police, but they are far less willing to tolerate large-scale consumer interfaces that resemble organized access to financial markets without accountable operators.

The practical path for aggregators is to separate protocol neutrality from interface compliance, build policy-aware routing and token eligibility controls that can vary by jurisdiction, and invest in auditability so each execution can be reconciled post-trade. The winners will treat compliance as a product capability that preserves distribution, not as a bolt-on that degrades UX.

HOW 1INCH LEADS AS THE UNIVERSAL SWAP MARKETPLACE

1inch's core edge is multi-mode execution. It gives users more than one credible way to express and complete a trade by offering classic onchain routing through Pathfinder alongside intent auctions through Fusion. That flexibility now extends into cross-chain execution through Fusion+, which is designed to make cross-chain swaps feel like a single action rather than a bridge-heavy workflow. The expansion to Solana builds on that trajectory by adding a major non-EVM liquidity domain under the same product umbrella, thereby widening the practical universe of liquidity that 1inch can reach through a single interface.

Beyond swaps, 1inch has invested in adjacent primitives that expand the range of intents it can satisfy within the same ecosystem. The Limit Order Protocol broadens order expression beyond spot swaps. Aqua reflects a longer-horizon bet on shared-liquidity architecture as a way to reduce fragmentation.

Taken together, these investments reinforce 1inch's positioning as an abstraction layer that compresses every trading-related complexity into a single coherent interface, strengthening the foundations of its early lead in the aggregator landscape.



As feature parity rises across aggregators, distribution becomes the key lever in the next competitive cycle. 1inch is structurally aligned with that shift through its mobile-first strategy, where pairing a wallet and an aggregator inside the same app compresses the authentication funnel and moves execution closer to one tap. Its integration into Safe{Wallet} also extends that distribution into institutional workflows by enabling DAOs and treasury operators to execute large swaps directly from multisig wallets. This points to a strategic expansion that serves distinct user segments.

Compliance is the scaling constraint for institutional distribution, but it can also become a differentiator when cleanly productized. 1inch has implemented continuous address screening for illicit-finance risk at the interface level via TRM Labs, zeroShadow, and a set of internal solutions, which is a concrete example of “compliance by default” even when the underlying contracts remain permissionless, as outlined in its [Risk Management whitepaper](#). On the solver side, Fusion solvers undergo KYB as part of onboarding, signaling that the intent execution layer is built to accommodate institutional expectations around counterparty standards.

Institutional trust also depends on operational security posture, not just protocol design. 1inch positions its Enterprise offering as a compliant package for high-volume and financial-institution users, emphasizing role-based access controls, risk management screening, and infrastructure designed for high-throughput usage. It has also obtained ISO 27001 certification and SOC 2 Type 1 attestation, both widely recognized security assurance standards that matter in enterprise procurement.

Taken together, this is what a universal swap marketplace looks like in practice. 1inch is not only simply routing trades across liquidity venues; it is building a multi-mode execution market that scales through consumer distribution while remaining credible for institutions through compliance-first rails and enterprise-grade assurances.