CBOE gideon lens

Cboe Global Markets (CBOE) - Gideon Lens

Report date: 2026-09-09 **Price anchor:** USD 293.33 at the 2026-09-08 completed-session close **Operating anchor:** TTM ended 2026-06-30 **Exact horizon:** 2031-06-30, five calendar years **Report ID:** CBOE-ER2-20260909

Verdict

Verdict: PASS

Scorecard:

Gate	Result	Notes
Management	YELLOW	New CEO and mixed acquisition record need execution proof
Moat	PASS	SPX/VIX rights, liquidity and data pass the 2046 test
P/E <= 15 on confident EPS at TTM + 5 calendar years	FAIL	Base EPS USD 19.0476 implies a negative 2.60% cushion
Compounder Score	Audited 56 / 100	Reject classification; strong core does not offset valuation and evidence gaps
Business Quality Score	Audited 55 / 80	Promising but incomplete dream-business evidence
20% Return UW Score	Audited 1 / 20	Today's price cannot support the stretch hurdle without major expansion

One-line reason to pass: Cboe owns a rare proprietary-derivatives moat, but USD 293.33 already prices in much of the base-case compounding while management continuity and the post-2031 SPX renewal remain unresolved.

The decision is mechanical. Management is YELLOW, the moat and 2046 durability test PASS, and the valuation gate FAILS. The base case earns USD 19.047596 per share in 2031, below the USD 19.555333 required for today's price to equal 15 times confident horizon EPS. A negative 2.60% cushion forces an ER2 PASS regardless of the attractive business. The audited score is diagnostic rather than a fourth gate, but its 56/100 result reinforces the same conclusion: quality is real, yet the security is not a dream investment at the current price.

What the market is paying for

Cboe's economic center is proprietary derivatives. Options supplies about three quarters of modeled base-case segment operating income, supported by exclusive SPX option rights, Cboe-owned VIX intellectual property, deep liquidity, market-maker capital, broker integration, and the data created by that ecosystem. Those assets are difficult to reproduce with software alone. The same protection is materially weaker in cash equities and FX, where customers can multi-home and routing or capture can move quickly.

The base model compounds statutory revenue from USD 5.061 billion to USD 7.024 billion and statutory operating income from USD 1.756 billion to USD 2.691 billion. Options net revenue reaches USD 2.724 billion at a 75.5% segment operating margin. North American Equities contributes USD 1.983 billion of gross revenue and USD 287.5 million of operating income; Europe and Asia Pacific, Futures, and Global FX add smaller but improving profit pools. The model gives no base-case additive revenue to event products, excludes Australia, Japan, and CEDX owned revenue where appropriate, and credits no disposal proceeds.

That is a credible operating outcome, but it is not a conservative price. The base exit P/E is 23.0 times, close to Cboe's 23.38 times normalized current P/E and the live exchange-peer cluster. It produces only an 8.35% gross USD return before investor-specific costs and FX. Bull requires stronger proprietary-index adoption, 78% Options margins, and a 26.0 times exit multiple. Bear combines weak operating outcomes and an 18.0 times exit multiple just before the 2032-2033 SPX renewal window.

Security return underwriting

Measure	Result	Notes
Primary valuation method	P/E	Statutory diluted EPS times scenario exit P/E in every bridge
Gross local-currency bear / base / bull IRR	-7.37% / 8.35% / 17.06%	Five-year annualized shareholder return in USD
Probability-weighted gross local-currency IRR	7.44%	CAGR of terminal wealth at 25% / 55% / 20% weights
Return bridge	USD 293.33 to USD 200.01 / 438.09 / 644.89	Terminal EPS times 18.0x / 23.0x / 26.0x; no post-P/E net-debt adjustment

Gross local-currency underwriting is in USD; net-SGD adjustments appear separately in CIO actionability. The audited model uses a conservative zero-distribution diagnostic because synthesis did not freeze a forward dividend schedule. Red-team work found that a supportable dividend path would add approximately 1.36 / 0.99 / 0.84 percentage points to bear / base / bull IRRs and 0.99 point to the probability-weighted return. That is below the 2-point materiality threshold, so the omission is disclosed but does not reopen the model.

Bear-case operating and return bridge

Bear case	Start (2026-09-08)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	USD 5,061.3m	USD 5,408.4m	1.34%	Weak proprietary mix and portfolio exits constrain growth
Operating margin	34.69%	31.47%	-3.22 pp	Rebate pressure and fixed resilience costs reduce leverage
Operating earnings	USD 1,755.7m	USD 1,702.2m	-0.62%	Statutory operating income after Corporate Items
Diluted share count	105.000m	104.139m	-0.16%	Buybacks only modestly exceed SBC issuance
EPS	USD 12.84	USD 11.1115	-2.86%	Statutory diluted EPS used in the P/E bridge
Valuation denominator	Normalized EPS USD 12.5462	Statutory EPS USD 11.1115	Comparable	Acquired-intangible amortization retained for comparability
Valuation	23.38x	18.00x	-5.38x	License-renewal and weak-earnings stress below clean history
Share value	USD 293.33	USD 200.0063	-7.37%	USD 11.1115 EPS times 18.0x
Annual dividend	USD 3.02 actual TTM	Unavailable - not separately modelled	Unavailable	Frozen model contains no endpoint annual dividend
Dividend yield	1.03%	Unavailable - not separately modelled	Unavailable	Endpoint annual dividend is not frozen
Five-year dividends	-	USD 0.00 diagnostic	cumulative	Conservative audited zero-distribution schedule
Total ending value	USD 293.33	USD 200.0063	-7.37% gross local IRR	Terminal share value plus zero modeled distributions

Base-case operating and return bridge

Base case	Start (2026-09-08)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	USD 5,061.3m	USD 7,024.2m	6.77%	Options, clearing, data and access compound across the retained perimeter
Operating margin	34.69%	38.31%	+3.62 pp	High-margin Options grows faster while smaller platforms scale
Operating earnings	USD 1,755.7m	USD 2,690.7m	8.91%	Statutory operating income after Corporate Items
Diluted share count	105.000m	104.139m	-0.16%	USD 110m annual buybacks offset by modeled SBC issuance
EPS	USD 12.84	USD 19.0476	8.21%	Statutory diluted EPS used in the P/E bridge

Base case	Start (2026-09-08)	Horizon (2031-06-30)	CAGR / change	Justification
Valuation denominator	Normalized EPS USD 12.5462	Statutory EPS USD 19.0476	Comparable	Normalization removes discrete items but retains recurring amortization
Valuation	23.38x	23.00x	-0.38x	Near normalized current Cboe and the live exchange-peer cluster
Share value	USD 293.33	USD 438.0947	8.35%	USD 19.0476 EPS times 23.0x
Annual dividend	USD 3.02 actual TTM	Unavailable - not separately modelled	Unavailable	Frozen model contains no endpoint annual dividend
Dividend yield	1.03%	Unavailable - not separately modelled	Unavailable	Endpoint annual dividend is not frozen
Five-year dividends	-	USD 0.00 diagnostic	cumulative	Conservative audited zero-distribution schedule
Total ending value	USD 293.33	USD 438.0947	8.35% gross local IRR	Terminal share value plus zero modeled distributions

Bull-case operating and return bridge

Bull case	Start (2026-09-08)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	USD 5,061.3m	USD 7,941.2m	9.43%	Proprietary derivatives stay strong while every retained platform scales
Operating margin	34.69%	41.39%	+6.70 pp	Options reaches 78% and smaller platforms achieve strong leverage
Operating earnings	USD 1,755.7m	USD 3,286.9m	13.36%	Statutory operating income after Corporate Items
Diluted share count	105.000m	104.139m	-0.16%	Same conservative buyback and SBC path across scenarios
EPS	USD 12.84	USD 24.8035	14.08%	Statutory diluted EPS used in the P/E bridge
Valuation denominator	Normalized EPS USD 12.5462	Statutory EPS USD 24.8035	Comparable	Same earnings-quality perimeter as the other scenarios
Valuation	23.38x	26.00x	+2.62x	Inside clean Cboe history and below the live NDAQ observation
Share value	USD 293.33	USD 644.8915	17.06%	USD 24.8035 EPS times 26.0x
Annual dividend	USD 3.02 actual TTM	Unavailable - not separately modelled	Unavailable	Frozen model contains no endpoint annual dividend
Dividend yield	1.03%	Unavailable - not separately modelled	Unavailable	Endpoint annual dividend is not frozen
Five-year dividends	-	USD 0.00 diagnostic	cumulative	Conservative audited zero-distribution schedule
Total ending value	USD 293.33	USD 644.8915	17.06% gross local IRR	Terminal share value plus zero modeled distributions

CIO actionability

Measure	Result	Notes
Status	WATCH	Quality is credible, but price and expected return do not clear
Bear / Base / Bull net SGD IRR	-8.43% / 8.25% / 17.96%	Five-year annualized after costs, withholding and FX translation
Probability-weighted net SGD IRR	7.49%	CAGR of probability-weighted terminal SGD wealth
10% mandate hurdle	FAIL	Base and probability-weighted cases are both below 10%
15% stretch hurdle	FAIL	Only the bull case clears 15%

Measure	Result	Notes
Downside and portfolio fit	WATCH / UNAVAILABLE	Bear downside is severe; current portfolio context was not authorized
Proposed sizing ceiling	none	No capital proposal at a PASS verdict and sub-hurdle returns

The net-SGD diagnostic preserves the audited P/E method. It uses USD/SGD 1.26425 at entry, terminal FX of 1.20 / 1.26425 / 1.32, and 25 basis points of cost at both entry and exit. A 30% U.S. dividend-withholding rate is applied to the audited zero modeled distribution, so withholding is explicitly zero rather than omitted. These are conservative diagnostic assumptions, not a currency forecast. The complete full-precision bridge is recorded in `net_sgd_return_overlay.json`.

Trade execution authorized: NO

Kill / trigger criteria

- Valuation trigger: below approximately USD 270.67, the base net-SGD bridge reaches 10% with flat FX and the same costs, but a BUY still requires Management to upgrade from YELLOW to PASS.
- ER2 entry gate: USD 285.71 equals 15 times base horizon EPS; a price below that level fixes valuation only, not management evidence.
- Operating kill signal: two consecutive quarters with index-options ADV down at least 10% year over year and index RPC below USD 0.90.
- Thesis downgrade: Options operating margin below 70% on a sustained basis, or renewal disclosures that materially weaken SPX exclusivity economics beyond 2032-2033.
- Upgrade condition: at least eight quarters of clean execution under the new CEO, no value-destructive acquisition, base EPS at or above USD 19.56, and an entry price that clears the 10% net-SGD hurdle with room.

Research sizing if actionable: none at the current price. Any future size would be a research proposal requiring explicit owner approval and separate portfolio-risk review.

Bottom line

Cboe is the unusual case where the business passes the hard durability test but the stock does not pass the entry test. The proprietary Options franchise can plausibly compound for years, and the balance sheet supports continued investment. Yet the security needs either a lower price, stronger base earnings, or both. At USD 293.33, the investor is accepting material SPX renewal concentration and a newly installed CEO for a base net-SGD return of only 8.25%. The correct action is to keep the company on WATCH, make no capital allocation, and require price and evidence to improve before reconsidering.

Appendix A - Company Primer

Cboe Global Markets — Institutional Company Primer

Company: Cboe Global Markets, Inc. **Ticker:** CBOE **Fiscal year-end:** December 31 **Financial base:** FY2025 and trailing twelve months ended June 30, 2026 **ER2 run:** `pulse-cio-20260909T040508+0800` **Information cutoff:** September 9, 2026

Purpose and analytical frame

Cboe Global Markets is best understood as a regulated market-infrastructure company whose most valuable assets are not buildings or servers but market franchises, liquidity pools, exchange licenses, trading technology, index intellectual property, and exclusive product rights. It operates trading venues and clearing businesses across listed options, futures, equities, institutional foreign exchange, and U.S. government securities, and sells the data, connectivity, indices, and analytics generated around those markets.

This primer uses the reconciled ER2 quantitative foundation as the controlling source for all financial figures. Qualitative descriptions are anchored in Cboe's FY2025 Form 10-K, Q2 2026 Form 10-Q, and Q2 2026 earnings release. The distinction between **gross revenue** and **revenue less cost of revenues**, which Cboe calls net revenue, is essential. Gross revenue includes substantial pass-through and incentive payments—especially liquidity rebates, regulatory fees, and routing and clearing costs—so segment gross-revenue margins are not economically comparable. Net revenue is the more informative measure of value retained by the exchange operator.

Business overview

Cboe operates an ecosystem in which buyers and sellers submit orders, liquidity providers quote prices, brokers route client flow, exchanges match trades under published rules, and clearinghouses or third-party central counterparties guarantee and settle completed transactions. Its customers include broker-dealers, banks, market makers, proprietary trading firms, futures commission merchants, hedge funds, asset managers, commodity trading advisers, corporations, and trading platforms. Institutional and retail investors are also ultimate users, but most reach Cboe through a broker, dealer, or other regulated intermediary rather than contracting directly with the exchange.

Customers buy access in several ways. Eligible firms become trading permit holders, members, participants, or subscribers; connect directly or through sponsored-access and broker channels; and pay under published fee schedules. Transaction and clearing charges are generally usage-based and billed monthly. Access, capacity, ports, terminals, equipment rights, maintenance, trading-floor space, and telecommunications are generally monthly fees. Market data is distributed directly, through vendor partners, and through Cboe Global Cloud. Index and analytics customers may subscribe to data or license indices and related intellectual property for their own products. The model is therefore predominantly institutional, relationship-driven, and rules-based rather than consumer self-service.

The problem Cboe solves is coordination under trust. A securities market needs a neutral rulebook, reliable price discovery, sufficient liquidity, deterministic order handling, surveillance, regulatory compliance, and dependable clearing. For customers, a venue with deeper liquidity and broad connectivity can lower execution friction and improve certainty. For liquidity providers, a large and diverse flow pool improves the opportunity to trade. For data users, the exchange creates scarce real-time information at the source. Cboe reinforces these network effects with differentiated products—most importantly SPX options and VIX options and futures—that cannot simply be listed identically by every competing U.S. venue.

The group operates five reportable segments: Options; North American Equities; Europe and Asia Pacific; Futures; and Global FX. From January 1, 2025, the former Digital activity was prospectively included in Futures. Cboe Digital Exchange had no products listed at FY2025 year-end after Bitcoin and Ether futures were migrated to Cboe Futures Exchange, while Cboe Clear U.S. remained a regulated clearinghouse. Cboe also reports three cross-segment product captions—Cash and spot markets, Data Vantage, and Derivatives markets—which should not be confused with its five management segments.

Revenue architecture

FY2025 segment structure

The following figures come from the sealed quantitative foundation. Segment operating income is the performance measure used by Cboe's chief operating decision maker. Net revenue is derived as gross revenue less the segment's disclosed cost of

revenues.

FY2025 segment	Gross revenue (USDm)	Share of gross revenue	Cost of revenues (USDm)	Net revenue (USDm)	Operating income (USDm)	OI margin on net revenue
Options	2,433.6	51.6%	902.5	1,531.1	1,113.3	72.7%
North American Equities	1,672.3	35.5%	1,265.1	407.2	188.1	46.2%
Europe and Asia Pacific	378.6	8.0%	105.1	273.5	53.9	19.7%
Futures	135.9	2.9%	9.7	126.2	73.9	58.6%
Global FX	93.8	2.0%	2.7	91.1	46.0	50.5%
Total, including corporate reconciliation	4,714.2	100.0%	2,285.1	2,429.1	1,467.1	60.4%

The apparent concentration changes substantially after pass-through costs. Options produced 51.6% of FY2025 gross revenue but approximately 63% of net revenue. North American Equities produced 35.5% of gross revenue but only about 17% of net revenue because its maker-taker incentives, routing, and regulatory pass-throughs are large. Europe and Asia Pacific supplied roughly 11% of net revenue, Futures 5%, and Global FX 4%. An investor should therefore use gross revenue to reconcile statutory reporting and net revenue to understand the retained economics.

The mix strengthened further through June 2026. TTM gross revenue was USD5,061.3 million, net revenue was USD2,737.1 million, and operating income was USD1,755.7 million. Options alone generated USD2,684.7 million of gross revenue, USD1,755.4 million of net revenue, and USD1,296.1 million of operating income—approximately a 73.8% operating margin on net revenue. This shows both the scale of the franchise and the high incremental profitability possible when volumes rise faster than the largely fixed technology, regulatory, and corporate cost base.

Transaction versus recurring-like revenue

FY2025 product revenue comprised USD3,597.6 million of transaction and clearing fees, USD408.7 million of access and capacity fees, USD326.6 million of market data fees, USD285.4 million of regulatory fees, and USD95.9 million of other revenue. Transaction and clearing fees were therefore 76.3% of gross revenue. Access and capacity plus market data were 15.6%; these are the closest approximation to recurring revenue because most are monthly services recognized over time. Together, those two families grew from USD532.8 million in FY2021 to USD735.3 million in FY2025, an 8.4% CAGR. In Q3 2025, management attributed roughly 90% of incremental Data Vantage revenue to new units and new sales rather than price. The Form 10-K separately disclosed USD735.3 million of services transferred over time and USD3,978.9 million at a point in time, confirming that the economic model remains primarily volume-linked rather than subscription-led.

Regulatory revenue deserves special treatment. Section 31 assessments collected from customers are paired with a corresponding regulatory cost and are largely pass-through. Likewise, liquidity payments are rebates used to attract order flow; routing costs arise when Cboe sends an order to another venue to satisfy best-execution and order-protection requirements. These gross flows can move materially without equivalent changes in profit.

Cboe's three product captions provide another useful lens. FY2025 Cash and spot markets revenue was USD1,834.8 million, Data Vantage was USD635.5 million, and Derivatives markets was USD2,243.9 million. On the TTM basis, those captions were USD1,908.8 million, USD687.6 million, and USD2,464.9 million, respectively. Data Vantage is strategically attractive because customer connectivity, proprietary feeds, index dissemination, and analytics can produce repeatable monthly revenue across all five operating segments. Yet at roughly 13.6% of TTM gross revenue, it complements rather than replaces the transaction engine.

The five segments and their unit economics

Options

Options is Cboe's economic center. It includes index options, equity options, and options on exchange-traded products across Cboe Options, C2, BZX Options, and EDGX Options. Cboe Options combines electronic trading with open outcry on its Chicago floor; the other three are all-electronic and use differing allocation and fee models. The segment also includes tape-plan revenue, proprietary options data, index licensing, routing, and access and capacity fees.

Its moat is strongest in proprietary index derivatives. Cboe holds exclusive U.S. rights to list options on the S&P 500 Index and several related S&P indices. The S&P agreement extends through December 31, 2033, while exclusive SPX options trading rights extend through December 31, 2032. Cboe also controls the VIX methodology underlying VIX options and futures. These rights create differentiated products, higher revenue per contract, and less direct price competition than in multi-listed equity

and ETF options. SPX options support institutional hedging, income strategies, tactical trading, and short-dated use cases including daily expirations and nearly 24x5 access.

The cost structure combines liquidity payments, index royalty fees, routing, market operations, technology support, regulatory surveillance, personnel, and depreciation. The key unit-economic variables are contracts traded, product mix, revenue per contract, incentives, and royalties. Proprietary index options earn much higher revenue per contract than multi-listed options, so a mix shift toward index volume is powerful. With a large fixed platform already built, incremental transaction and data revenue carries high margins. Q2 2026 illustrated this: total options volume increased strongly, index options represented more of the mix, and segment net revenue reached a quarterly record. The risk is that this same concentration makes exclusive licenses and continued demand for SPX/VIX products disproportionately important.

North American Equities

North American Equities includes the BZX, BYX, EDGX, and EDGA U.S. exchanges; the BIDS Trading U.S. block-trading alternative trading system; Canadian venues and BIDS Canada; ETP listings; routing; tape-plan and proprietary data; and access and capacity services. The four U.S. exchanges use different market and pricing models to attract distinct order types and participants.

Its gross-revenue profile can be misleading. Maker-taker markets often charge one side of a trade and rebate the other, while routing and Section 31 fees create additional gross inflows and matched costs. In FY2025, USD1,265.1 million of cost of revenues absorbed about three-quarters of the segment's USD1,672.3 million gross revenue, leaving USD407.2 million of net revenue. The economically relevant drivers are matched or touched volume, market share, and net capture after liquidity and routing costs—not gross fee revenue alone. Tape-plan and connectivity revenue add steadier economics, while BIDS supplies an institutional off-exchange block channel.

Competition is fierce because U.S. equity order flow can be executed on other exchanges, numerous alternative trading systems and single-dealer platforms, or internalized by broker-dealers. Fee schedules can redirect highly electronic flow quickly. Cboe's response is a portfolio of venue models, common technology, routing, connectivity, data, ETP listings, and block-trading capabilities. In Q2 2026, on-exchange U.S. equities share declined year over year, while BIDS off-exchange block share increased; improved net capture and higher industry volume still drove segment net-revenue growth. That combination demonstrates why both share and capture must be tracked.

Europe and Asia Pacific

This segment centers on pan-European equities trading and Cboe Clear Europe, with multiple lit, dark, periodic-auction, closing-cross, and BIDS-style workflows. It also included Cboe Australia through the announced sale process and formerly included Cboe Japan and CEDX, which were wound down as part of a portfolio realignment. Cboe Clear Europe clears equities and equity-like instruments for Cboe and third-party venues and provides securities-financing-transaction clearing.

The economics are more operationally and capital intensive than pure exchange matching. Trading contributes transaction, data, and access fees; clearing adds per-trade, settlement, collateral, and interest-related economics. Settlement expense, technology, regulatory staffing, and clearing-risk infrastructure offset the revenue. FY2025 net revenue of USD273.5 million supported only USD53.9 million of operating income, a 19.7% margin on net revenue, but TTM operating income rose to USD108.4 million on USD308.7 million of net revenue, implying a 35.1% margin. This sharp improvement indicates operating leverage and/or portfolio cleanup, but it should not be treated as a permanently normalized margin without examining the divestitures, wind-down costs, and clearing mix.

European market structure is fragmented across national exchanges, pan-European multilateral trading facilities, systematic internalizers, dark and auction mechanisms, and multiple clearing providers. Scale matters because trading liquidity and clearing netting reinforce one another. Cboe's pan-European footprint is a competitive asset, but European rules on transparency, payment for order flow, waivers, clearing, and consolidated tapes can change venue economics. Foreign-exchange translation also affects reported results.

Futures

Futures consists primarily of Cboe Futures Exchange, or CFE, a fully electronic market whose flagship franchise is VIX futures. It also includes market data, access and capacity, the prospectively combined former Digital activity, and Cboe Clear U.S. Cboe migrated cash-settled Bitcoin and Ether futures from Cboe Digital Exchange to CFE in June 2025, leaving no products listed on the former exchange at year-end.

The segment is small in revenue but attractive in margin: FY2025 gross revenue was USD135.9 million, cost of revenues USD9.7 million, and operating income USD73.9 million. The low cost-of-revenue burden reflects a model with limited rebates and routing compared with equities. Fixed costs include exchange operations, technology, surveillance, regulatory compliance, and clearing infrastructure. Volume in VIX and other futures, revenue per contract, data, and access fees determine the top line. Cboe Clear U.S. adds strategic control of selected clearing but also creates default, collateral, liquidity, and regulatory-capital exposure.

Global FX

Global FX includes institutional spot foreign-exchange trading on Cboe FX, non-deliverable forwards on Cboe SEF, proprietary data and connectivity, and the Cboe Fixed Income electronic platform for U.S. government securities. Customers include banks, broker-dealers, hedge funds, asset managers, proprietary firms, commodity trading advisers, and corporates.

The platform has little reported cost of revenues: FY2025 gross revenue was USD93.8 million, net revenue USD91.1 million, and operating income USD46.0 million. Economics depend on average daily notional value and net capture per million dollars traded. Institutional FX remains fragmented and relationship-heavy, with electronic venues competing against voice, chat, terminals, and bilateral bank relationships. Accordingly, electronification is an opportunity but not an automatic share-gain engine. Q2 2026 net revenue increased 17% as both traded notional and capture improved, demonstrating that price and volume can contribute simultaneously.

Customer and venue ecosystem

Cboe sits in the middle of several interdependent constituencies:

- **Liquidity providers and market makers** quote continuously, improve execution quality, and receive either trading opportunities or explicit rebates. Their participation is essential to tight spreads and market depth.
- **Broker-dealers and order-flow providers** aggregate institutional and retail demand, choose routing logic, and connect clients to Cboe markets. They can redirect flow rapidly when price, incentives, latency, or execution quality changes.
- **Institutional investors and professional traders** use options, futures, equities, FX, and block platforms to hedge, allocate, arbitrage, and express views. Retail investors are especially important to options growth but generally access the venues indirectly through brokers.
- **Clearing members, settlement banks, and central counterparties** absorb post-trade obligations. OCC is the sole clearer for Cboe's U.S. options exchanges and also clears several CFE products, including VIX futures. NSCC clears Cboe's U.S. listed equities. Cboe owns Cboe Clear Europe and Cboe Clear U.S., while fixed-income trades are delivered to FICC through clearing agents.
- **Index owners and intellectual-property partners** supply licensed benchmarks. S&P Dow Jones Indices and FTSE Russell are especially important to Cboe's differentiated derivatives franchise.
- **Data vendors, cloud platforms, and end users** distribute and consume the information produced by the venues. Direct feeds, vendor redistribution, and cloud delivery extend monetization beyond trading itself.

This architecture creates a flywheel: differentiated products attract users; users and market makers create liquidity; liquidity generates trading data and improves execution; data and access are sold back into the ecosystem; and reliable trading and clearing deepen trust. The flywheel can reverse if a key customer leaves, an incentive becomes uncompetitive, an exclusive license is lost, or technology reliability deteriorates. Cboe disclosed that its ten largest customers represented approximately 57% of 2025 revenue, spread across regions and segments. This concentration is meaningful because customers generally can reduce trading with little warning or penalty.

Competition and market structure

Cboe competes on price, rebates, execution quality, latency, uptime, liquidity, depth of book, functionality, product innovation, market integrity, and reputation. Different businesses have different competitive intensity.

Multi-listed options and equities are highly contestable: the same instrument can trade on many venues, and sophisticated participants optimize routing across them. At the end of 2025, Cboe's four options exchanges competed with fourteen other U.S. options exchanges; its U.S. equities venues and BIDS competed with thirteen other exchanges and more than twenty-five alternative or single-dealer platforms. Off-exchange internalization is a structural competitor because it removes

order flow from public books.

Proprietary derivatives are less commoditized. SPX and VIX create product-specific liquidity and data that are difficult to reproduce exactly. Their advantage is reinforced by daily expirations, nearly continuous access, established clearing, institutional workflows, and a long record of use. However, economically similar substitutes—ETF options, other cash-settled index options, futures, over-the-counter derivatives, and prediction contracts—can compete for the same customer objective even if they cannot list the identical contract.

Europe adds fragmented regulation and venue types, while institutional FX adds fragmentation by protocol and relationship. Data Vantage competes not only with other exchanges but also with market-data vendors, software firms, technology companies, alternative venues, and customers that can transform source data into competing products.

Cboe Titanium is the common in-house platform for much of its equities, options, and futures estate. Shared protocols, routine releases, commercially available hardware, and reuse across market models reduce the marginal cost of product and venue expansion. That common technology is an operating advantage, but it also makes capacity planning, cybersecurity, disaster recovery, and change control central to the investment case. A high-volume market cannot tolerate prolonged failure without reputational and regulatory consequences.

Regulation, clearing, and capital

Cboe is both a commercial operator and, through its U.S. securities exchanges, a set of self-regulatory organizations. The SEC oversees the registered national securities exchanges; fee and rule changes may require filings and can be suspended or rejected. Exchanges must surveil trading, enforce member rules, keep records, investigate misconduct, and preserve fair and orderly markets. FINRA performs certain functions under regulatory-services agreements, but the exchanges retain ultimate responsibility.

CFE is a CFTC-regulated designated contract market, Cboe SEF is a swap execution facility, and Cboe Clear U.S. is a derivatives clearing organization. Outside the United States, Cboe entities are overseen by authorities including the FCA, the Dutch AFM and central bank, European authorities, and applicable Canadian and Australian regulators. European clearing is governed in part by EMIR, while trading venues operate under MiFID/MiFIR-derived rules.

Clearing changes the risk profile. An exchange that merely matches trades mainly carries operational and regulatory risk; a central counterparty also manages member-default, credit, collateral, investment, market, and liquidity risks. Cboe Clear Europe collects margin and clearing-fund contributions, maintains default and liquidity waterfalls, and has a EUR1.2 billion committed facility for settlement liquidity. Cboe Clear U.S. requires collateral and maintains prefunded resources. These arrangements reduce but do not eliminate tail risk. Customer collateral and related liabilities can also make operating cash flow volatile, so headline cash generation should be interpreted alongside clearing-fund movements.

Regulated subsidiaries must hold capital locally. At FY2025, minimum regulatory capital requirements across relevant subsidiaries totaled USD189.5 million. That capital is not as freely distributable as unrestricted parent cash. Nevertheless, the consolidated balance sheet was strong at June 30, 2026: cash of USD2,276.2 million exceeded gross debt of USD1,443.8 million, producing net cash of USD832.4 million before including current financial investments. A new USD400 million five-year revolver with a USD200 million accordion was put in place after the quarter. The balance sheet therefore provides resilience and optionality, subject to regulatory ring-fencing and clearing liquidity needs.

Geographic mix

Cboe is globally present but economically U.S.-centric. The FY2025 Form 10-K reported USD2,119.3 million of net revenue in the United States and USD309.8 million outside the United States: approximately 87% U.S. and 13% non-U.S. The segment mix tells a similar story—Options and North American Equities represented 87.1% of FY2025 gross revenue and an even larger share of profit.

Europe is the main non-U.S. earnings platform through equities trading and clearing. Australia and Canada were acquired expansion markets but entered sale processes during the strategic realignment; Japan was wound down. International operations add currency translation, local regulation, clearing risk, and execution complexity. They also diversify customer relationships and give Cboe a distribution network for data, connectivity, and product access. Management said roughly half of Q2 2026 data sales came from outside the United States, showing that global distribution is broader than the legal-entity revenue mix. The investor should distinguish international demand for products such as SPX and VIX from the accounting jurisdiction in which revenue is recorded.

Capital intensity, acquisitions, and capital allocation

Cboe is technologically intensive but not conventionally capital intensive. It must continually fund matching engines, data centers, connectivity, cyber defense, surveillance, disaster recovery, and software development. Yet much of this expense runs through operating costs, and the common Titanium platform uses readily available hardware. FY2025 capital expenditure was USD71.0 million, only about 1.5% of gross revenue; TTM capex was USD88.3 million, about 1.7%. Q2 2026 guidance of USD98–108 million for full-year 2026 was higher because of investment priorities, but remained modest relative to revenue and cash generation.

Reported operating cash flow requires care. FY2025 OCF was USD1,752.6 million and TTM OCF USD1,962.8 million, but clearing-collateral and interoperability-fund movements contributed materially. The quantitative foundation therefore reports statutory free cash flow while explicitly preserving this caveat. Even after capex, cash conversion is structurally strong because the core business owns software, licenses, and intellectual property rather than heavy physical plant.

Acquisitions transformed Cboe from a U.S. options exchange into a broader market network. Bats added U.S. and European equities and a common technology foundation; subsequent deals added BIDS block trading, Cboe Clear Europe, Asia-Pacific exchanges, Canadian markets, digital infrastructure, and analytics capabilities. These deals created substantial goodwill and intangible assets and introduced integration, regulatory, and impairment risk. The former Digital segment's heavy historical losses and the 2025 impairments related to Japan, Canada, and CEDX are reminders that exchange-market expansion does not guarantee network effects.

The 2025–2026 realignment marked a change from geographic accumulation to portfolio discipline. Cboe wound down Japan and CEDX, discontinued or reduced several listings and analytics initiatives, and pursued sales of Australia and Canada. As of the Q2 2026 release, Australia was expected to close in the third quarter, while guidance still included Canada until further action. Management's stated focus shifted toward core index and multi-listed options, futures, U.S. and European equities, Global FX, Data Vantage, event contracts, Cboe Clear U.S., and around-the-clock access. The latest organic net-revenue target was mid-to-high teens and Data Vantage's was low teens; management said the raised outlook did not depend on material incremental event-contract revenue, so those products remain upside optionality rather than an established base.

Capital allocation is supported by net cash. TTM dividends were USD303.0 million and buybacks, including employee withholding, were USD111.5 million. The share base declined from 107.2 million diluted weighted-average shares in 2021 to 104.95 million TTM. The practical hierarchy is: maintain regulatory and clearing resources; invest in technology and product development; pay and grow the dividend; repurchase shares opportunistically; and pursue acquisitions only when they improve strategic fit and returns.

Key risks

- **Exclusive-license concentration.** Approximately 68% of FY2025 net revenue came from Options and Futures, with the majority tied to exclusively licensed indices or proprietary VIX products. Loss, non-renewal, or unfavorable repricing of these rights would damage volume and profitability.
- **Volume and mix cyclicality.** Trading activity depends on volatility, investor participation, macro conditions, and product preference. A decline in index options or an unfavorable shift toward lower-revenue contracts can reduce earnings despite stable market share.
- **Fee and order-flow competition.** Multi-listed options and equities can migrate quickly in response to rebates, capture rates, routing logic, latency, or new venues. Off-exchange internalization can erode public-market share.
- **Customer concentration.** The ten largest customers represented about 57% of 2025 revenue. Reduced activity by a major market maker, bank, or consolidator can affect both direct fees and the liquidity that attracts others.
- **Regulatory change.** U.S. access-fee caps, tick sizes, Rule 605, order protection, transaction fees, data regulation, and European transparency or payment-for-order-flow rules can change volumes, pricing, and compliance cost.
- **Technology and cyber risk.** Outages, capacity failure, erroneous releases, cyberattack, or data compromise could interrupt markets, trigger regulatory sanctions, and impair trust.
- **Clearing tail risk.** A member default, settlement failure, collateral shortfall, liquidity event, or investment loss at Cboe Clear Europe or Cboe Clear U.S. could consume prefunded resources and Cboe capital.
- **Index integrity and substitution.** Errors or reputational damage involving underlying indices, or the rise of economically similar futures, ETF options, OTC derivatives, or event contracts, could weaken demand for flagship products.

- **Acquisition and divestiture execution.** Integration, technology migration, regulatory approval, stranded cost, impairment, and customer disruption can destroy anticipated returns. Recent wind-downs demonstrate the risk is real rather than theoretical.
- **Accounting and cash-flow interpretation.** Gross revenue is inflated by pass-throughs, and statutory OCF can be affected by clearing collateral. Using unadjusted growth or cash-conversion metrics can overstate underlying economics.

Compact orientation summary

Investor question	Orientation answer
What is Cboe?	A regulated global trading, clearing, index, data, and connectivity network.
Where is the moat strongest?	Exclusive SPX rights, proprietary VIX methodology, established liquidity, trusted market operations, and integrated technology.
What drives revenue?	Trading/clearing volume and mix first; access, data, indices, and analytics second.
Which financial measure matters most?	Net revenue, because gross revenue contains large liquidity, routing, clearing, and regulatory pass-throughs.
Which segment drives profit?	Options: roughly 63% of FY2025 net revenue and more than three-quarters of segment operating income.
Is revenue recurring?	Partly. Monthly data and access services are recurring-like, but most revenue is transaction-linked.
Is the business capital intensive?	Technology- and compliance-intensive, but low in physical capex relative to revenue and cash generation.
Is the balance sheet constrained?	Consolidated net cash is strong, but clearing liquidity and regulated-subsidiary capital are partly ring-fenced.
What is the central strategic debate?	Whether Cboe can compound its proprietary derivatives franchise and data monetization while containing competition, regulation, and clearing/portfolio risk.
What should be monitored?	SPX/VIX volumes and RPC, multi-listed share/capture, Data Vantage growth, Europe clearing economics, technology resilience, and execution of portfolio exits.

The shortest correct mental model is: **Cboe is a high-margin proprietary-derivatives franchise surrounded by competitive cash-market venues and a growing data/access layer, all operated inside a capital-light but heavily regulated market-infrastructure system.** Its economics benefit from liquidity network effects and operating leverage, but the same concentration makes product rights, market structure, system trust, and major customers the decisive variables.

Primary evidence

- [Cboe FY2025 Form 10-K](https://www.sec.gov/Archives/edgar/data/1374310/000162828026010013/cboe-20251231.htm), filed February 2026: business, customers, competition, revenue recognition, segments, geography, regulation, clearing, and risks.
- [Cboe Q2 2026 Form 10-Q](https://www.sec.gov/Archives/edgar/data/1374310/000162828026051239/cboe-20260630.htm), filed July 31, 2026: current segment, balance-sheet, liquidity, and corporate-action context.
- [Cboe Q2 2026 earnings release](https://ir.cboe.com/news/news-details/2026/Cboe-Global-Markets-Reports-Results-for-Second-Quarter-2026/default.aspx), July 31, 2026: current operating trends, strategy, guidance, and announced portfolio actions.
- ER2 Quantitative Foundation, run `pulse-cio-20260909T040508+0800`: controlling source for every financial figure, reconciled 8/8 with the sealed quote and statutory bridge packets.

Appendix M - Management Assessment

Cboe Global Markets — Management Assessment

Information date: September 9, 2026 **Financial basis:** reviewed FY2025 and TTM ended June 30, 2026; USD millions except per-share data **Sealed inputs:** data-package SHA-256 `460b7749c9a305c38cf2d0c2cc340269628dda79c0c2b73a8e494110872cb240`; statutory-bridge SHA-256 `fed38c48503d96b1b8db579a514485710836c90ec2a989f76c0ad47984ae74bc`

1. Who is running the company

Craig S. Donohue became chief executive officer and a director on May 7, 2025, and president in August 2025. He is not a conventional first-time CEO: he led CME Group from 2004 to 2012, including the CBOT and NYMEX combinations, and later served as executive chair of the Options Clearing Corporation from 2014 to 2024 and OCC CEO from 2016 to 2019. CME said at his 2012 retirement that his tenure included more than $20 billion of acquisitions, 26% average annual revenue growth, 32% average annual net-income growth and 20% average annual shareholder returns. These are company-reported figures rather than independently reconstructed returns, but the operating and integration evidence is tangible: the CBOT merger created the modern CME Group, and the $9.5 billion NYMEX transaction was substantially integrated within roughly fifteen months while delivering the targeted $60 million cost synergies. [2026 proxy](https://www.sec.gov/Archives/edgar/data/1374310/000162828026022939/cboe-20260401.htm); [CME NYMEX integration](https://www.cmegroup.com/media-room/press-releases/2009/11/05/cme_group_announcessubstantialcompletionofnymexintegration.html).

Jill M. Griebenow has been CFO since July 10, 2023. She had already spent twelve years at Cboe, becoming chief accounting officer in 2018 and previously serving as CFO of the European operations. Her unusually deep company history is valuable during a CEO change and portfolio exit program. The evidence since her promotion is timely reporting, stronger expense control and a net-cash balance sheet; the inference is that she is the institutional counterweight to an external CEO with a large-deal history. [CFO appointment](https://ir.cboe.com/news/news-details/2023/Cboe-Global-Markets-Promotes-Jill-Griebenow-to-Chief-Financial-Officer/default.aspx).

The operating bench has been substantially rebuilt. Rob Hocking, a former Cboe product-innovation executive and derivatives trader, returned as global head of Derivatives in October 2025. Brian McElligott, formerly a CME market-data executive, became head of Data Vantage at the same time. Scott Johnston joined in February 2026 and assumed COO duties after Chris Isaacson retired from that role in March; Heidi Fischer joined in June as global head of Equities and Spot Markets. Alex Dalley leads European Equities, Jon Weinberg leads FX and off-exchange trading, Vikesh Patel leads Clearing, and Tim Lipscomb remains CTO. This is a capable, domain-heavy team, but it is also a succession cluster: CEO, derivatives head, data head, COO and equities/spot head all changed within thirteen months. [Derivatives/Data appointments](https://ir.cboe.com/news/news-details/2025/Cboe-Announces-Derivatives-and-Data-Vantage-Leadership-Appointments/default.aspx); [2026 operating appointments](https://ir.cboe.com/news/news-details/2026/Cboe-Global-Markets-Announces-New-Executive-Leadership-Appointments-2026-04SRC84k-v/default.aspx).

William M. Farrow III has been independent non-executive chair since September 2023 and a director since 2016. Ten of the twelve 2026 nominees are independent; the two non-independent directors are Donohue and former CEO Fredric Tomczyk. Annual elections, majority voting, proxy access, a separate chair, and independent audit, compensation and nomination committees are positive. Average board tenure of nine years and several directors serving since the 2010 IPO are mild refreshment concerns, not evidence of control or entrenchment.

2. Tenure, decisions and track record

Donohue has only about sixteen months of Cboe tenure. He therefore owns the direction and execution since May 2025, but not the acquisition decisions that created the Digital, Japan, Canada and CEDX impairments. Three decisions define his record so far.

First, he completed a portfolio-wide review and in October 2025 committed to sell Australia and Canada, wind down Japan and CEDX, discontinue U.S. and European corporate listings, reduce ETP-listing and selected analytics investment, and concentrate resources on derivatives, clearing and Data Vantage. This was a real perimeter change, not rebranding. The FY2025 statutory package recorded $23.4 million of Japan asset impairment, $17.7 million of cumulative Canada intangible impairments and $5.6 million of CEDX-related software/prepaid impairments. Q1 2026 management quantified eventual

annualized expense benefits from the full realignment at $100–$120 million, while carefully separating the $20–$25 million expected in 2026 from sale-dependent savings not yet in guidance. The evidence supports decisiveness; whether sale proceeds and stranded-cost removal produce an attractive realized return remains unresolved.

Second, Donohue redirected growth spending toward event contracts, Cboe Clear U.S., European securities-finance clearing, Data Vantage and extended-hours access. FY2026 capex guidance rose to $98–$108 million versus FY2025 capex of $71.0 million. Management explicitly excluded notable incremental event-contract revenue from the raised 2026 outlook, which keeps an early-stage product option from contaminating the base case. The strategic logic is coherent with Cboe's existing licenses, distribution and clearing capabilities, but the prediction-market opportunity is not yet a demonstrated profit pool.

Third, he rebuilt leadership around specialists while preserving Griebenow and Lipscomb as financial and technology anchors. The operating outcome has been excellent: FY2025 net revenue was $2,429.1 million, statutory operating income was $1,467.1 million and point-in-time ROIC was 23.8%; TTM operating income rose to $1,755.7 million. Those results are partly inherited and partly volume-assisted, so they cannot all be credited to Donohue. However, completing migrations, executing exits without service disruption, holding adjusted operating-expense guidance while raising revenue guidance, and producing growth across all five segments are valid execution evidence.

The failure ledger is essential. Cboe spent $708 million on acquisitions in 2022, including NEO and ErisX/Digital, then recorded a $460.9 million Digital goodwill impairment that year. The former Digital segment lost $491.4 million in 2022, $46.7 million in 2023 and $112.4 million in 2024 before its remaining activity was folded into Futures. Australia, Canada, Japan and CEDX subsequently became sale or wind-down candidates. Most of this belongs to pre-Donohue management, but the board and continuing executives, including Griebenow from 2023, cannot treat it as someone else's lesson. Donohue's choice to acknowledge the sprawl and prune it is positive; new clearing, tokenization or event-contract investment must now be judged against that scar tissue.

3. Capital allocation behavior

The reviewed five-year record is:

Year	Capex	Capex / revenue	R&D	Buybacks	Dividends	Acquisitions
2021	$51m	1.5%	Not separately disclosed	$88m	$193m	$152m
2022	$60m	1.5%	Not separately disclosed	$110m	$209m	$708m
2023	$45m	1.2%	Not separately disclosed	$98m	$224m	$0m
2024	$61m	1.5%	Not separately disclosed	$234m	$249m	$4m
2025	$71m	1.5%	Not separately disclosed	$97m	$284m	$0m

The pattern moved from acquisition-led expansion to organic investment, dividends and selective repurchases. That change is rational. Statutory FCF reached $1,681.6 million in FY2025, although clearing-collateral movements make reported cash conversion noisier than a normal software company. At June 2026 Cboe held $2,276.2 million of cash against $1,443.8 million of interest-bearing debt. This is genuine flexibility, but it is not all distributable: regulated subsidiaries had $189.5 million of aggregate minimum capital at FY2025, Cboe Clear Europe had a EUR1.2 billion committed liquidity facility, and the parent depends on regulated subsidiaries' ability to upstream cash.

Buybacks show some price sensitivity rather than a mechanical offset. FY2025 open-market purchases averaged $213.74; Q2 2026 purchases averaged $256.61; management repeatedly said it would act on weakness and avoided repurchases during the confidential CEO search and at perceived highs. The diluted share count fell from 107.2 million in 2021 to 104.95 million TTM, so repurchases have created modest per-share accretion after employee equity issuance. The weakness is that "opportunistic" lacks a disclosed valuation hurdle. Dividends are more dependable: they rose from $193 million in 2021 to $284 million in 2025, with $303 million paid on a TTM basis.

4. Compensation, ownership and alignment

The incentive architecture is acceptable but not yet Gideon-grade. Annual cash incentives are 70% corporate financial performance and 30% individual performance. In 2025 the financial portion was 30% net revenue and 40% adjusted EBITDA. Actual net revenue of $2,429 million and adjusted EBITDA of $1,655 million exceeded maximum goals, producing 200% corporate-metric payouts; Donohue received 200% of target after individual assessment and Griebenow 185%. The goals were objectively beaten, but a 30% subjective component and maximum payout in a volatility-aided record year warrant caution.

Long-term awards are 50% time-based RSUs and 50% performance units. Only 25% of total LTI is tied to relative three-year TSR and 25% to cumulative adjusted EPS; there is no ROIC, FCF-per-share or post-acquisition return measure. EPS can reward buybacks, favorable volume and adjusted-item exclusions without proving that new investment earns its cost of capital. That omission is conspicuous after the Digital impairment.

Donohue's employment agreement guarantees at least $1.3 million salary, a 150% target bonus and at least $10.05 million of annual equity awards, plus a $6 million sign-on grant. Yet the March 2026 proxy reported only 2,604 beneficially owned shares, excluding unvested awards, and said he had not met the six-times-salary holding guideline. This is understandable for a new external hire, but economic ownership is not yet founder-like. Griebenow owned 17,081 shares and had met her four-times-salary requirement. SBC stayed disciplined at roughly 0.8%–1.1% of revenue during 2021–2025, while diluted shares declined. Mandatory three-year clawbacks, supplemental misconduct recovery, and executive anti-hedging and anti-pledging rules are sound.

5. Disclosure quality, candor and guidance

Eight live transcripts were reviewed: Q3 and Q4 2024; all four quarters of 2025; and Q1 and Q2 2026. Question handling is generally direct and numerate. Management disclosed that pricing supplied about one-third of Q3 2024 Data Vantage growth; explained the absence of Q4 buybacks by confidential succession information; compared repurchases with fixed-rate debt costing about 2.8%; quantified portfolio savings and their timing; and stated that event-contract revenue was not a notable component of 2026 guidance. On SPX concentration, management supplied broker, market-maker, floor/electronic and order-type mix rather than merely asserting a moat.

The main disclosure gaps are bounded. In Q4 2025 Griebenow declined to break realignment savings into a more discrete number, and in Q1 2026 management could not provide tokenized-clearing economics. Those were the only two quarters with an explicit "not breaking it out/can't comment" response on the selected load-bearing topics. The literal euphemism "headwind" did not appear in any of the eight transcripts; timing and uncertainty language appeared in every quarter, usually appropriately around regulatory approvals, sales timing and volatile market activity. Management does not disclose Data Vantage customer/subscriber counts, venue-level disposal economics, or product revenue for SPX/0DTE/VIX, limiting independent unit-economics verification.

Guidance has been conservative and upwardly revised, not repeatedly missed. FY2024 net revenue grew about 8% and Data Vantage about 7%, broadly meeting or exceeding the initial ranges discussed on calls. FY2025 net revenue grew 17%, well above the 5%–7% starting frame, while Data Vantage grew about 10%. For 2026, the initial mid-single-digit organic net-revenue guide was lifted after Q1 to low-double-digit/mid-teens and after Q2 to mid-to-high teens; Data Vantage moved from mid-to-high single digits to low double digits and then low teens. This creates strong credibility, but two caveats apply: market volatility provided a material tailwind, and the new CEO has not yet guided through a quiet-volume year.

6. Strategic coherence and governance flags

The latest 10-K defines the strategy as rationalizing the portfolio to improve ROIC and growth, optimizing core options, futures, equities and FX, expanding Data Vantage, pursuing adjacent secular trends, and maintaining financially rigorous capital allocation. Investment follows that statement: exited subscale venues are losing resources while capex, clearing, data distribution, event products and extended-hours access receive more. [FY2025 Form 10-K, Strategic Focus](https://www.sec.gov/Archives/edgar/data/1374310/000162828026010013/cboe-20251231.htm). The five-to-ten-year destination is credible—global derivatives and data infrastructure with owned clearing as an innovation enabler—but management's enthusiasm for prediction markets and tokenization is still more conceptual than measured.

Governance has one historical scar and a reasonably strong response. In September 2023 CEO/chair Edward Tilly resigned after an independent-board investigation found that he had failed to disclose personal relationships with colleagues. The conduct was stated not to affect financial reporting or operations. The board separated chair and CEO, appointed Tomczyk for stabilization and later ran an external succession. That episode is a culture failure, but the rapid independent investigation and leadership action support rather than undermine current board accountability. [2023 SEC-filed transition release](https://www.sec.gov/Archives/edgar/data/1374310/000110465923101775/tm2326345d1_ex99-1.htm).

There were no related-party transactions above $120,000 disclosed since January 1, 2025. Cboe has one voting common class, no controlling shareholder and no issued preferred shares. KPMG gave an unqualified FY2025 opinion and found effective internal control; no restatement or material weakness was identified. A review of issuer Form 4 filings for the twelve months ended September 9, 2026 found no clustered open-market selling by current executives: most dispositions were tax withholding, while a few independent directors made comparatively small sales. Former CEO Tomczyk's continued board seat

and the long average tenure deserve monitoring, but neither creates minority-control risk.

7. Peer comparison

CEO / company	Capital allocation	Disclosure and five-year stewardship	Relative view
Jeffrey Sprecher / ICE	Founder-led record of building exchange, data and mortgage networks through repeated acquisitions; integration record is strong, though mortgage exposure adds cyclicality and debt	Most proven long-duration allocator of the peer set	Better proven than current Cboe team
Terry Duffy / CME	Organic benchmark-product expansion, high margins and a variable-dividend model; four consecutive record years through 2025	Direct, shareholder-return oriented, unusually long industry continuity	Better current continuity; Donohue's earlier CME record is comparable
Adena Friedman / Nasdaq	Shift toward recurring financial technology; $10.5 billion Adenza deal raised integration/leverage risk, followed by faster-than-planned deleveraging	Clear KPI disclosure, but large-deal return remains under proof	Similar "prove the acquisition returns" burden

Donohue ranks well on industry knowledge and prior-cycle integration, but only mid-pack on current-company stewardship because his Cboe evidence window is short. ICE remains the per-dollar capital-allocation benchmark. Cboe communicates as well as the group on operating drivers, but less well on explicit acquisition-return hurdles and venue-level economics.

8. Management gate verdict

YELLOW. Donohue has a genuinely proven prior exchange-management record, and his first sixteen months at Cboe show disciplined pruning, strong execution, conservative guidance and direct disclosure. Griebenow adds continuity and financial credibility, while the board demonstrated that it will act in a leadership crisis. The gate cannot yet be PASS because the Cboe tenure is short, the executive bench changed rapidly, the CEO's owned stake is small, and incentives omit ROIC/FCF despite a costly acquisition history.

Upgrade to PASS if, by 2028, management completes the Australia/Canada exits within disclosed cost and timing ranges, realizes the $100–$120 million savings without impairing core operations, produces measured returns from clearing/event-product investment, and Donohue meets the ownership guideline or the board adds a multi-year ROIC/FCF-per-share metric. Downgrade to FAIL if Cboe redeploys net cash into another large acquisition without explicit return hurdles, if event/clearing initiatives repeat the Digital loss pattern, or if guidance/disclosure becomes evasive when volumes normalize.

Evidence control and unresolved items

All financial claims above reconcile to the reviewed data package and sealed statutory bridge. Transcript evidence came from live FMP stable endpoints and was archived under `raw/M-management-20260909` for Q3 2024–Q2 2025 and the reviewed D-stage archive for Q3 2025–Q2 2026. The 2026 proxy was fetched live from SEC EDGAR and archived in the same management raw folder. Unresolved items are the final proceeds and stranded costs of Australia/Canada dispositions, post-launch economics of event contracts and Cboe Clear U.S., and the March 2026 investor presentation omitted by the reviewed package; none is silently estimated here.

Appendix W - Moat and 2046 Durability

Cboe Global Markets — Moat and 2046 Durability

Analytical date: September 9, 2026 **Base period:** TTM ended June 30, 2026 **Evidence discipline:** Quantitative claims use the reviewed `data_package.md`, live FMP and issuer filings. Competitive conclusions integrate all five segment appendices, Sections 4–5. **Inference** denotes judgment, not guidance. Reinforcing features are counted once: SPX exclusivity plus liquidity is one ecosystem, not two moats.

1. Moat taxonomy applied

Network effects — strong but product-specific. Evidence: More SPX/VIX users attract market makers; tighter spreads and deeper books attract more users; the trades create proprietary data and access demand. Index-options ADV rose from 2.0 million contracts in FY2021 to 4.9 million in FY2025 and 6.208 million in Q2 2026. This is strongest in SPX/VIX and meaningful in European trading/clearing. **Inference:** liquidity is defensible only where Cboe controls the instrument or a differentiated pool. Customers multi-home in fungible products, so the effect must not be applied to all Cboe volume.

Switching costs — moderate operationally, low economically in commoditized venues. Protocol certification, ports, controls and reference-data dependencies create friction, especially for clearing and direct feeds. But customers routinely connect to several exchanges and can reduce activity with little notice or penalty; the top ten generated about 57% of FY2025 revenue. **Inference:** connectivity creates retention, not captivity. Switching costs support data/access and clearing more than transaction pricing in equities, multi-listed options, or FX.

Scale economies — strong, though not exclusive. Titanium, regulation, surveillance, distribution and data centers carry substantial fixed cost. Incremental volume therefore has high contribution margins: Options earned a 72.7% FY2025 operating margin on net revenue and 73.8% TTM, while physical capex was only 1.5% of gross revenue. Large rivals have comparable resources. Scale lowers cost and supports resilience; it does not prevent venue entry or fee competition.

Brand and trust — strong, but secondary to execution economics. Cboe's operating record, index heritage and reliability matter for large hedges and deterministic execution. SPX/VIX are recognized risk-transfer standards. Yet routers prioritize economics, fill probability and latency. **Inference:** trust protects a liquid franchise but cannot rescue an uncompetitive fee schedule; an outage or index-integrity failure can erode it quickly.

Regulatory licenses — meaningful entry barriers, not protected profit rights. Cboe operates regulated exchanges, CFTC markets and clearing houses; minimum regulatory capital was $189.5 million at FY2025, and Cboe Clear Europe had a EUR1.2 billion liquidity facility. Licensing, capital, default management and surveillance make credible entry costly. Regulators can still approve rivals, cap fees, change market rules and constrain data monetization. Regulation narrows the field; it does not guarantee capture.

Intellectual property and contractual rights — exceptional in one profit pool, limited elsewhere. Cboe controls the VIX methodology and has exclusive U.S. rights to list SPX options. The S&P agreement runs through December 31, 2033 and the exclusive SPX options rights through December 31, 2032. These contractual rights combine with established liquidity, daily expirations, near-continuous access, and institutional workflows. That bundle is the core moat. It is also a renewal concentration: S&P can seek more economics, and economically similar ETF options, futures, OTC contracts, or new risk markets may compete even without copying SPX. There is no evidence that patents broadly protect the cash-market technology estate.

High-trust procurement — meaningful in data, access, and clearing. Trading firms and intermediaries need audited controls, cybersecurity, deterministic protocols, vendor support, regulatory records, and disaster recovery. Clearing members additionally depend on margin, default-waterfall, liquidity, and settlement integrity. Qualification cycles and reputational stakes favor proven providers. This is durable in raw market data, connectivity, and central clearing, but weaker in derivative analytics that a customer or AI vendor can rebuild from the same inputs.

2. Per-segment moat and durability

Segment	Moat in one sentence	5-year / 10-year / 20-year durability	Earliest break signal
Options	Exclusive SPX rights and proprietary VIX products reinforced by liquidity, workflows, data and distribution	5.0 / 4.5 / 4.0 out of 5	Adverse 2032–2033 renewal terms; sustained index ADV/RPC decline versus substitutes

Segment	Moat in one sentence	5-year / 10-year / 20-year durability	Earliest break signal
North American Equities	Scale, venue portfolio, BIDS block liquidity, connectivity and tape/data economics	3.0 / 2.5 / 2.0	U.S. share/capture and BIDS capture fall together; major router or liquidity provider exits
Europe and Asia Pacific	Pan-European liquidity plus owned clearing/netting, licenses and member network	3.5 / 3.0 / 3.0	Clearing trades/settlements or third-party venue participation structurally contract
Futures	VIX risk-transfer ecosystem on CFE, data and regulated infrastructure	4.5 / 4.0 / 3.5	VIX ADV/open interest and spreads deteriorate relative to volatility substitutes
Global FX	Institutional liquidity pool, execution quality, connectivity and trusted neutral venue	3.0 / 2.5 / 2.5	ADNV weakens while capture falls and leading bank liquidity providers disengage

Options. Proprietary SPX/VIX products have the strongest moat: legal differentiation, accumulated liquidity, market-maker capital, daily expirations, OCC clearing, data and broker distribution make a similar contract hard to seed. Multi-listed options are much less protected: Cboe's share declined from 27.1% in FY2021 to 23.5% in Q2 2026 while RPC stayed near six cents. Twenty-year durability requires acceptable index-right renewals and continued product relevance. The warning is a multi-quarter loss of index volume, RPC, open interest or execution quality versus substitutes.

North American Equities. Multiple venue models, BIDS, data and common technology serve many order types at low marginal cost, but fungible instruments and customer multi-homing constrain the moat. U.S. exchange share fell from 14.2% in FY2021 to 9.4% in Q2 2026. BIDS volume expanded sharply, yet net capture dropped from $0.120 per 100 touched shares to $0.058. **Inference:** scale preserves acceptable returns, but evidence does not support a 20-year pricing moat. Declining public share, BIDS activity and access/data growth together would show portfolio failure.

Europe and Asia Pacific. The durable core is Europe, with 24.4% Q2 2026 trading share, multi-protocol execution, and clearing connectivity that Cboe says reaches roughly 95% of recognized European equities activity. Clearing is stickier than matching because members integrate collateral, settlement and risk processes. Trades cleared rose to 1.465 billion and net settlements to 13.6 million in FY2025. Fee per trade was only EUR0.009 versus EUR0.011 in FY2021, so scale—not price—does the work. Australia's sale and the Japan/CEDX wind-down prove licenses plus technology do not create liquidity automatically. Long-run durability rests on European scale, clearing user-choice adoption, and reliable execution through the 2027 T+1 transition, not a generic international footprint.

Futures. CFE's VIX futures pool is the futures analogue of the proprietary Options franchise. Users hedge volatility exposures and arbitrage VIX options and futures within a common product ecosystem; a rival cannot simply list "the same" VIX future. FY2021–FY2025 ADV was broadly range-bound at 218,000–239,000 contracts and RPC moved from $1.641 to $1.723, indicating durable economics but not an accelerating network. FY2025's Digital perimeter change and prior Digital losses should not be interpreted as legacy CFE weakness. The 20-year risk is substitution by other volatility instruments or a failure to renew/defend product rights, not ordinary monthly volume volatility.

Global FX. Cboe FX benefits from a credible institutional pool, execution protocols, connectivity, data, and the secular shift toward electronic trading. ADNV rose from $33.9 billion in FY2021 to $52.8 billion in FY2025 and $60.6 billion in Q2 2026, while capture remained around $2.64–$2.96 per $1 million. But banks and buy-side firms can use multiple ECNs, dealer streams, chat, voice and bilateral relationships. This is a good scaled niche with operating leverage, not a proprietary chokepoint. The moat fails if growth requires persistent capture concessions or if a few large liquidity providers withdraw and spreads/depth deteriorate.

Blended-company conclusion. Options contributed about 75% of FY2025 segment operating income; Options plus Futures contributed roughly 80%. The economic moat is stronger than gross revenue mix suggests because equities pass-throughs inflate revenue, but it is concentrated. Data Vantage is a cross-segment layer, not a sixth independent moat: its scarcity derives partly from the venues. Product liquidity, generated data and connectivity are therefore one reinforcing ecosystem, not three moats.

3. Margin persistence evidence

The ten-year consolidated series below uses live FMP annual statements for FY2016–FY2024 and the SEC-controlled FY2025 override from the reviewed package. The 2017 Bats combination changed the company perimeter; FY2022 includes the Digital impairment/loss year. These breaks make level comparison imperfect, but the recovery pattern is informative.

Consolidated operating margin on gross revenue	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	TTM Q2'26
Margin	46.2%	16.7%	21.6%	21.5%	19.3%	23.1%	12.4%	28.0%	26.8%	31.1%	34.7%

Segment margin on gross revenue	FY21	FY22	FY23	FY24	FY25	TTM margin on net revenue
Options	35.7%	40.6%	43.9%	43.9%	45.7%	73.8%
North American Equities	9.9%	8.7%	8.7%	10.9%	11.2%	about 52%
Europe and Asia Pacific	23.3%	14.4%	11.6%	12.9%	14.2%	35.1%
Futures	54.7%	46.1%	66.7%	70.1%	54.4%	about 59%
Global FX	4.6%	12.8%	33.0%	41.6%	49.0%	about 55%

Evidence: Options margins expanded through different volatility environments, and Global FX scaled from a low base. North American Equities held a modest gross margin despite falling share; Europe recovered after investment and portfolio cleanup. TTM group operating income of $1.756 billion on $5.061 billion gross revenue implies 34.7%. **Inference:** persistent Options profitability is strong moat evidence. The group record is not unblemished—Digital impairments show management can destroy returns outside the core—so consolidated margin expansion should not be attributed wholly to moat. Net-revenue margins are economically superior because rebates and routing costs distort gross revenue, but a consistent five-year net-margin series is not in the sealed package.

4. AI disruption stress test

Options and Futures — protected chokepoints, AI-positive at the edge. A model can design strategies, forecast volatility, automate hedges and route orders; it cannot lawfully recreate the SPX/VIX contract rights, regulated venue, clearing arrangement, existing open interest, or trusted real-time tape. AI could increase strategy proliferation, retail/institutional engagement, quote traffic and demand for clean machine-readable data. It also increases manipulation, capacity, surveillance and cyber burdens. The moat remains in product rights, liquidity and regulated execution, not in an analytics screen.

North American Equities — most exposed statutory segment. AI agents can optimize routing, predict fills, internalize flow and compare fee/rebate economics continuously. That makes commoditized venue share and capture more contestable. Cboe still supplies regulated price discovery, deterministic matching, auditability and source data, so AI does not eliminate the exchange. It does strengthen brokers, wholesalers and sophisticated routers at the venue's expense unless Cboe offers differentiated execution quality or pools such as BIDS.

Europe and Asia Pacific — clearing is protected; trading is exposed. AI can commoditize routing and venue selection but cannot substitute for authorized central-counterparty risk management, collateral transformation, settlement and default resources. Better risk models may reduce costs; an AI or model failure can also create correlated positions and intraday liquidity stress. The owned clearing network is therefore more defensible than the front-end trading workflow.

Global FX — exposed workflow, persistent infrastructure. AI can build execution algorithms and price-discovery tools using broadly available data, raising pressure on venue capture. It cannot itself supply bank balance sheets, firm liquidity, legal finality, regulated access or neutral matching. The likely outcome is lower value in generic analytics and continued value in liquidity, connectivity and auditable execution.

Data Vantage — mixed and not a reportable segment. Derived analytics are replicable if models have the same inputs. Direct feeds, official reference data and low-latency connectivity remain chokepoints because Cboe originates them. AI shifts value toward trusted proprietary data and machine-scale delivery. Options is most protected; North American Equities is most exposed.

5. The 2046 test

Twenty years after the analytical date is **September 9, 2046**.

Base-case 2046 business description — inference, not guidance. Cboe operates nearly continuous markets and clearing networks for benchmark equity-volatility risk, options, futures, equities, institutional FX and successor instruments that have earned liquidity. Asset managers, dealers, hedgers, automated agents and brokers pay per transaction and clearing event, plus recurring fees for certified data, connectivity, capacity and index rights. Options remains the largest profit pool because a renewed or successor SPX relationship and Cboe-owned VIX retain benchmark status. Futures remains strategically linked.

North American equities is a lower-margin utility, Europe a larger trading/clearing franchise, and Global FX a profitable niche. Data/access grows as machine participants consume verifiable source data. Net-revenue operating margin stays in the high-50s to mid-60s across cycles as scale offsets heavier cyber, surveillance and clearing costs. High returns persist because benchmark products, liquidity, regulatory trust, clearing and source data remain intact—not because the software is uncopyable.

Bear-case 2046. Cboe fails to renew exclusive SPX rights on acceptable economics; S&P captures most of the rent or licenses a rival. Liquidity fragments toward ETF options, CME/ICE products, OTC or tokenized 24/7 risk markets. Regulators cap transaction/access/data fees, require cheaper consolidated data, and make venue interoperability easier. AI-enabled internalizers and brokers keep more equities and FX flow off exchange, while a major outage, cyber incident or clearing loss weakens trust. Cboe then resembles a regulated multi-venue utility: still essential and profitable, but with lower capture, higher compliance cost, and net-revenue margins perhaps in the 40s rather than around 60%. **Inference:** this severe combined outcome is a credible minority case, roughly one chance in four; partial fee or share erosion is more likely than full franchise loss.

Signposts and failure modes. Upgrade durability if SPX rights are renewed well before expiry without a step-change in royalty burden, index ADV/open interest grows internationally without RPC dilution, Data Vantage growth remains unit/sales-led, and European third-party clearing/netting expands. Downgrade if index RPC falls alongside volume, S&P renewal becomes contentious, U.S. equities and BIDS share/capture deteriorate together, Data Vantage relies mainly on price increases or suffers churn, a clearing stress consumes Cboe resources, or repeated outages cause customer and regulatory action.

6. Competitive threat inventory

Threat	Mechanism	Segment(s) affected	Earliest observable signal	Plausibility
SPX/VIX rights repricing or economic substitution	Licensor takes more rent; ETF, futures, OTC, event or tokenized products meet the same hedge need	Options; Futures; related data	Renewal disclosure; royalty burden; index ADV/RPC/open interest trails substitutes	Medium; high impact
Regulation and market-structure reset	Fee/access caps, tick/routing changes, data unbundling, European transparency or interoperability rules compress capture	North American Equities; Europe; Data Vantage; Options	New rules followed by share/capture or data-price pressure	High likelihood; medium impact
Technology, customer concentration and internalization	Outage/cyber failure or dominant routers/liquidity providers shift flow to rival/off-exchange pools	All, especially equities and FX	Availability incidents; wider spreads; top-customer activity and venue share decline	Medium likelihood; high tail impact

7. Pricing power verification

Pricing power is **strong in proprietary index derivatives, mixed in data/access, and weak across fungible venues**. Index-options RPC increased from $0.832 in FY2021 to $0.924 in FY2025 and $0.953 in Q2 2026 while index ADV also grew sharply. That combination is the clearest observed evidence that customers accept higher realized revenue per contract rather than leaving the product. Total Options RPC rose from $0.192 to $0.297 over FY2021–FY2025, partly because richer index products became a larger mix; this is not pure list-price evidence and should not be double counted.

Outside the core, evidence is restrained. Multi-listed options RPC was $0.067 in FY2021 and $0.064 in Q2 2026. Futures RPC rose modestly from $1.641 to $1.723 by FY2025, then was $1.664 in Q2 2026. FX capture improved from $2.73 per $1 million to $2.96, but it fluctuates with client and protocol mix. European clearing fee per trade compressed, and BIDS capture roughly halved even as volume surged. Those outcomes show that volume growth can coexist with weak unit pricing.

Access and capacity plus market data grew from $532.8 million in FY2021 to $735.3 million in FY2025, an 8.4% CAGR. However, management said roughly 90% of incremental Data Vantage revenue in Q3 2025 came from new units and new sales rather than pricing. That is healthy demand evidence, not proof of broad price power. The company does not disclose a consistent subscriber count, churn, retention, adoption after price increases, minimum commitments, or contractual escalators. Many transaction fees follow published schedules and customers can reroute. Therefore the appendix credits product-specific pricing power, not company-wide lock-in.

8. Moat verdict

Moat gate: PASS. The protectable profit pool is concrete: exclusive SPX rights plus Cboe-owned VIX products, deep liquidity, trusted regulated operations, and the data/access ecosystem they generate. Its persistence is visible in Options margin expansion and simultaneous index-volume/RPC growth; because Options and Futures produce roughly 80% of segment operating income, weaker equities and FX moats dilute less profit than their gross revenue weight implies. The PASS is concentrated rather than diversified, and it requires close monitoring of the 2032–2033 S&P renewal, regulatory economics, customer concentration and system resilience.

2046 test: PASS. A specific future Cboe can still sell benchmark risk transfer, clearing, authoritative data and regulated access to human and machine intermediaries at high returns. AI changes routing and analytics but does not replace legal execution, benchmark rights, liquidity, clearing or source data. The test would fall to YELLOW if license renewal economics weaken materially or proprietary-derivatives growth begins requiring RPC concessions; it would FAIL if SPX/VIX liquidity and pricing erode together and the company becomes primarily a commoditized venue operator.

Appendix B1 - Options

Cboe Global Markets — Options Segment Deep Dive

Forecast base: TTM ended 2026-06-30 **Forecast horizon:** 2031-06-30, exactly five calendar years **Reporting currency:** USD; dollar tables are USD millions unless stated otherwise **Exact segment profit metric:** `Operating income (loss)` **Historical authority:** reviewed `data_package.md`, SHA-256 `460b7749c9a305c38cf2d0c2cc340269628dda79c0c2b73a8e494110872cb240` **Statutory bridge authority:** `statutory_bridge.json`, SHA-256 `fed38c48503d96b1b8db579a514485710836c90ec2a989f76c0ad47984ae74bc`

0. Segment boundary and taxonomy note

Options is a stable reportable segment across FY2021-FY2025 and the TTM ended 2026-06-30. Cboe's material 2025 taxonomy change folded the former Digital segment prospectively into Futures, not Options, so no Options restatement boundary contaminates the historical series. The segment contains Cboe's U.S. listed index options and multi-listed equity and exchange-traded-product options, plus directly associated market data, index licensing, routing, regulatory, access and capacity services. `Derivatives Markets` and `Data Vantage` are cross-segment revenue categories, not reportable segments; they are useful demand cross-checks but are not substituted for Options. [data_package §1, reporting-structure paragraph and Options taxonomy row]

One measurement distinction matters throughout. The issuer's statutory segment-revenue table uses gross revenue. Quarterly releases also provide net revenue after liquidity payments and other cost-of-revenue items; that is the economically useful denominator for operating leverage. The reviewed package provides FY2021-FY2025 Options gross revenue, four consecutive quarters of Options net revenue, FY2025 and TTM `Operating income (loss)`, and Q2 2026 gross revenue. It does not provide a complete TTM Options gross-revenue series. Therefore, the forward financial model compounds the disclosed additive TTM net-revenue base of $1,755.4m and presents `Operating income (loss)` margin on net revenue. It preserves the FY2025 gross-revenue margin separately and never mixes the two denominators. This is a denominator choice, not an accounting reclassification.

1. What this segment actually is

Cboe Options is both a collection of trading venues and a product franchise. The venues are Cboe Options, C2, BZX Options and EDGX Options. Cboe Options combines electronic trading with a physical open-outcry floor; the other three are fully electronic and use different matching rules and fee models. That multi-venue architecture lets Cboe offer customer-priority, maker-taker, classic/payment-for-order-flow and price-time structures to different order-flow constituencies without forcing every client into one market design. Customers include retail and institutional brokers, proprietary trading firms, market makers, clearing firms, asset managers, hedge funds and data consumers.

The product franchise has two economically different halves. Proprietary index options include SPX, XSP and VIX-linked options. These products are cash settled, can provide broad-market or volatility exposure without delivery of component securities, and benefit from index licenses, Cboe intellectual property, established liquidity and risk-management workflows. Multi-listed options are equity and ETF options that can trade on many competing U.S. exchanges. There, the product is fungible and competition is fought through execution quality, latency, order priority, rebates, fee schedules, broker relationships and market-maker economics. The proprietary side normally has better pricing power; the multi-listed side contributes scale, customer connectivity and breadth but is more price competitive.

Revenue comes from several mechanisms. Transaction and clearing fees are primarily volume multiplied by revenue per contract, with mix effects because index options earn far more per contract than multi-listed products. Index licensing and royalty economics sit inside that chain: Cboe pays licensors where applicable, but exclusivity can support a differentiated product and higher net capture. Market data revenue comes from consolidated-tape allocations and proprietary feeds. Access and capacity revenue comes from connectivity, ports, physical and logical access, and technology capacity demanded by trading participants. Routing, regulatory and other fees round out the segment. These recurring or semi-recurring lines reduce, but do not eliminate, exposure to trading activity.

Go-to-market is ecosystem led. Cboe must persuade brokers to offer the products, market makers to quote them tightly, institutions to embed them in risk processes and end investors to understand the contract. Product design, education, extended trading hours, expiration frequency and distribution all matter. SPX's daily expirations and the growth of

zero-days-to-expiry trading illustrate the flywheel: more use cases attract liquidity providers; tighter markets attract more users; higher volume deepens data and analytics; and that ecosystem makes a rival contract harder to seed. As of 2025, SPX 0DTE ADV was 2.3m contracts, or 59% of SPX volume, while total SPX ADV was 3.9m. [Cboe FY2025 volume release](https://ir.cboe.com/news/news-details/2026/Cboe-Global-Markets-Reports-Trading-Volume-for-December-and-Full-Year-2025/default.aspx)

The segment is not a directional trading book. Cboe operates markets and earns fees; clearing and regulatory responsibilities create operational and capital obligations, but the company does not need to take the customer's option exposure to generate transaction revenue. The principal economic exposures are industry contract volume, product mix, fee capture, license terms, liquidity incentives, technology reliability, compliance costs and the pace at which new products reach self-sustaining liquidity.

2. Current economics

FY2025 Options gross revenue was $2,433.6m, up 21.5%, and `Operating income (loss)` was $1,113.3m, a 45.7% margin on gross revenue. [data_package §3, Options Revenue, YoY, Operating income (loss), and Margin rows] The TTM ended 2026-06-30 produced $1,755.4m of net revenue, calculated only by adding the package's four disclosed quarters: $380.8m + $433.1m + $467.6m + $473.9m. TTM `Operating income (loss)` was $1,296.1m under the sealed bridge, implying a 73.84% margin on net revenue. [data_package §5, Options quarterly row; §3a, TTM Options bridge row] The latest quarter was especially strong: Q2 2026 net revenue was $473.9m, up 30% year over year; gross revenue was $743.1m; and `Operating income (loss)` was $341.0m, or 72.0% of net revenue. [data_package §5, Options row and following paragraph]

Those two margins answer different questions. The 45.7% gross-revenue margin incorporates liquidity payments and other cost-of-revenue items in the denominator. The 73.84% net-revenue margin shows how efficiently net exchange economics convert into segment operating profit. All forward margin analysis uses the net-revenue denominator because a complete TTM net-revenue base is disclosed. The gross margin is retained as a historical statutory presentation and is never compared directly with the forecast net-revenue margin.

The transaction engine entered the base period at record activity. Multi-listed options ADV rose from 10.1m contracts in FY2021 to 13.5m in FY2025 and 15.654m in Q2 2026. Index options ADV rose faster, from 2.0m to 4.9m and then 6.208m. Total options RPC improved from $0.192 per contract in FY2021 to $0.297 in FY2025 and $0.317 in Q2 2026. Total operator market share was 30.3% in FY2025 and 30.0% in Q2 2026, while multi-listed share declined from 27.1% in FY2021 to 24.2% in FY2025 and 23.5% in Q2 2026. [data_package §0a, Material KPI family history and Additional venue KPI rows]

The juxtaposition is important. Cboe did not need rising multi-listed share to produce record segment economics. Industry volume grew, index mix expanded, and RPC improved. Index options carried substantially higher unit monetization: FY2025 index RPC was $0.924 versus $0.066 for multi-listed options, and Q2 2026 was $0.953 versus $0.064. [data_package §0a, Additional venue KPI rows] An incremental index contract is therefore economically much more important than an incremental multi-listed contract, although the exact profit contribution is not disclosed.

Recurring economics provide a second leg, but Cboe does not disclose an Options-only dollar series for them. Across all segments, gross access and capacity fees increased from $280.7m in FY2021 to $408.7m in FY2025, while gross market data fees increased from $252.1m to $326.6m. The combined 8.4% CAGR and Q2 2026 quarterly values of $115.6m and $91.8m show healthy demand for connectivity and information. [data_package §0a, Recurring data and access economics rows] Because those captions cross reportable segments, none of those dollars is allocated to Options here.

Capital intensity is low relative to revenue at the company level, but no segment capex is disclosed. Consolidated capex was $71m, 1.5% of revenue, in FY2025 and TTM capex was $88.3m. The FY2026 guide was raised to $98m-$108m, reflecting investment in products, clearing and around-the-clock access. [data_package §§2, 6 and 7] Options depends heavily on technology, resilience and market surveillance, so describing it as capital-free would be wrong. The defensible statement is that tangible capex is modest, while technology personnel, market-maker incentives, index royalties, regulation and reliability spending are recurring reinvestment needs. Segment-level capex and R&D are true non-disclosures and are not invented.

3. Unit economics

The unit-economics identity is straightforward but mix sensitive:

`transaction net revenue ≈ contracts × net RPC`, plus market data, access/capacity, routing, regulatory and index-related fees, less segment operating expenses, equals `Operating income (loss)`.

The contract count is driven by market participation, hedging demand, volatility, expiration frequency, retail adoption, institutional workflow and product availability. RPC is driven by the mix between proprietary index and low-priced multi-listed contracts, fee schedules, rebates, volume tiers and clearing or license economics. Since index RPC is roughly fifteen times multi-listed RPC at current disclosed rates, volume mix can overwhelm changes in the consolidated contract count. That is why this forecast models index ADV, multi-listed ADV and total RPC separately rather than projecting revenue from total ADV alone.

On the proprietary side, high revenue per contract supports strong incremental margins, but part of the rent is shared through index licensing and product-support costs. The product must also maintain deep two-sided liquidity, robust opening and settlement processes, extended-hours reliability and broker distribution. A new expiration or related contract can leverage existing systems, yet it is not costless: market makers may need incentives, brokers must enable access, surveillance must scale and marketing or education is required. The payoff is powerful when adoption reaches critical mass because fixed platform and regulatory costs are spread across more trades.

On the multi-listed side, unit economics are thinner. Contracts are fungible across exchanges and order flow can move quickly when fees, rebates or allocation rules change. The four-venue portfolio lets Cboe segment users and compete across market designs, but it also means capture must be managed carefully. The fall in multi-listed market share to 23.5% in Q2 2026 is not fatal because FY2025 multi-listed ADV still set a record, yet it shows the limit to pricing power. Sustained rebate escalation or a mix shift away from proprietary contracts can compress net RPC even in a rising-volume industry.

Data and access economics are more recurring than transaction fees, but they are not immune to market activity or competition. A customer can require additional ports or capacity as message traffic rises, and proprietary datasets gain value as the associated products deepen. Conversely, regulators and competitors can challenge exchange-data pricing, consolidated-tape allocations can change, and customers can rationalize redundant feeds or connections. The lack of a stable subscriber count means revenue growth, overseas-sales mix and retention commentary are the available indicators; an assumed seat-based model would be fabricated.

Operating expenses are primarily people, technology operations, depreciation, occupancy, professional services and regulatory/compliance support. The segment's TTM 73.84% net-revenue margin demonstrates large fixed-cost leverage. In the base case, continued volume and data growth spread these costs, but the forecast does not extrapolate recent incremental margins mechanically. Cboe is investing in new event contracts, clearing capability and nearly round-the-clock distribution, and FY2026 capex guidance increased. Base margin therefore rises only 166 basis points over five years even though net revenue grows 9.19% annually.

The bear mechanisms are more severe than a simple volatility normalization. Index ADV slows, multi-listed volume stalls, total RPC declines, competitive rebates or license economics worsen, and Cboe continues to fund strategic products. Net-revenue margin falls to 68.0%. In the bull case, index adoption and global-hours usage expand, recurring revenue grows, and fixed-cost leverage dominates investment; margin reaches 78.0%. The forecast never allocates the sealed `Corporate Items and Eliminations - operating income (loss)` line to Options. That TTM $(10.7)m corporate item remains outside the segment for synthesis. [data_package §3a, Forecast-driver schedule]

4. Competitive dynamics

The U.S. options market is fragmented at the venue level. Cboe competes with Nasdaq, NYSE/ICE, MIAX, BOX and MEMX across numerous exchanges and pricing models. An official Cboe market-volume page showed operator shares of 30.70% for Cboe, 26.54% for Nasdaq, 18.08% for NYSE, 16.25% for MIAX, and roughly 4% each for BOX and MEMX on 2026-04-09. [Cboe U.S. Options Market Volume Summary](https://www.cboe.com/us/options/market_share/market/all/) The package's consistent-period figure was 30.0% in Q2 2026. [data_package §0a, Material KPI family history, Total options market share row] These figures show leadership, not monopoly.

Nasdaq is the closest operator-scale rival. Its six U.S. options exchanges together executed 29.1% of matched volume in FY2025, versus 29.8% in FY2024, while industry ADV expanded from 44.4m to 55.8m. [Nasdaq FY2025 results](https://ir.nasdaq.com/node/109901) The lesson is that operator revenue can grow in a rising industry even with flat or falling share, but pricing and capture remain contested. Cboe's multi-listed franchise therefore deserves only industry-like volume growth and limited rate expansion in the base case.

The competitive picture is different in proprietary index products. Cboe reported SPX ADV of 5.02m and 74.51% market share in May 2026. [Cboe May 2026 derivatives metrics](https://www.cboe.com/insights/posts/market-metrics-that-matter-derivatives-may-volume-highlights) The FY2025

10-K states that the S&P license extends through December 31, 2033 and exclusive rights to trade S&P 500 Index options extend through December 31, 2032. [Cboe FY2025 Form 10-K](https://www.sec.gov/Archives/edgar/data/1374310/000162828026010013/cboe-20251231.htm) Since the forecast horizon is June 2031, exclusivity covers the entire modeled period, but renewal risk becomes a terminal-value issue soon afterward.

Substitution is still real. SPY and other ETF options can provide similar equity exposure; OTC derivatives can offer customization; and CME's E-mini and Micro E-mini S&P 500 futures and options provide futures-based alternatives. CME reported that zero-to-five-day E-mini S&P 500 options ADV grew from 350,000 to 770,000 over four years through 2025, while its 0DTE contracts rose from about 100,000 to 370,000. [CME short-dated options review](https://www.cmegroup.com/articles/2026/explore-the-benefits-of-short-dated-options.html) That trajectory demonstrates that short-dated demand is secular across formats, but it also means Cboe does not own the concept of short-duration index risk.

Pricing power is consequently bifurcated. Proprietary index options have strong but licensed pricing power because users value cash settlement, tax and operational characteristics, deep liquidity and established workflows. Multi-listed options have weak venue-level pricing power because identical contracts can migrate. Data and access products sit between the two: proprietary datasets tied to unique products have differentiation, while basic connectivity and consolidated data face regulatory scrutiny and customer substitution.

Entry barriers include exchange and clearing regulation, technology reliability, market-surveillance capacity, broker connectivity, market-maker relationships, recognized benchmarks and accumulated liquidity. A new venue can launch, but launching a liquid contract that displaces SPX is far harder. Conversely, incumbent exchange groups can add another multi-listed venue or alter fee structures using existing infrastructure. The segment moat is therefore product-specific, not merely the possession of an exchange license.

5. Moat at the segment level

The strongest moat is the proprietary index liquidity network. SPX offers a benchmark that institutions and active traders already use, cash settlement, European exercise and nearly 24-hour weekday access. As volume and open interest grow, execution quality improves and more trading strategies become feasible. Market makers invest in pricing and hedging systems around the contract, brokers prioritize connectivity, and data vendors build analytics around the ecosystem. Those complementary investments create switching costs even when a competing instrument offers similar economic exposure.

The second moat is contractual and intellectual property based. Cboe's exclusive U.S. rights to list SPX options cover the forecast horizon, and its proprietary VIX methodology underpins volatility products. This is valuable but not permanent ownership of the underlying economic need. The S&P exclusivity ends after 2032 unless renewed, only eighteen months after the modeled horizon. The moat assessment for the next five years is stronger than the assessment for ten years. A prudent terminal valuation should not capitalize today's rent indefinitely without renewal evidence.

The third moat is distribution and product iteration. Daily expirations, 0DTE use cases, global trading hours, XSP and new binary/event products extend the franchise across contract sizes, time zones and user preferences. In Q2 2026, index options ADV was 6.208m, up 32% year over year, while management described event products as a “natural extension of our derivatives business.” [data_package §§5-6] The installed distribution network lets Cboe test adjacent products more cheaply than a startup. Nevertheless, this appendix assigns no separate event-contract revenue because management said the current guide did not incorporate notable incremental contribution and product dollars are not disclosed.

Data reinforces the trading moat. Proprietary transaction information can be converted into feeds, historical datasets, analytics and indices, while the data business increases the value of trading connectivity. This is a feedback loop rather than a standalone monopoly. Regulators can constrain pricing, customers can buy competing analytics, and aggregate subscriber counts are not disclosed. The base case therefore uses 7% KPI growth for data/access demand rather than extrapolating the latest low-teens companywide Data Vantage guide indefinitely.

The multi-listed venue business has a narrower moat. Cboe's four-market portfolio, technology and customer relationships provide scale, but order flow is mobile and rivals can replicate fee models. The decline in multi-listed market share from 27.1% in FY2021 to 23.5% in Q2 2026 is direct evidence that the franchise does not possess absolute routing control. [data_package §0a, Additional venue KPI row] Its durability comes from being a competitive scaled operator inside a growing industry, not from customer captivity.

Over five years, the segment moat is strong because proprietary index exclusivity, liquidity and distribution all remain in force. Over ten years, durability is conditional on renewing key licenses, protecting index intellectual property, maintaining trust and adapting product design. A material loss of SPX exclusivity, a regulatory change that weakens index-license rights, or a rival product that establishes comparable liquidity would undermine both revenue and margin. That conditionality prevents a blanket “permanent monopoly” conclusion.

6. Historical growth rates

The historical financial series below reproduces reviewed package values. Product dollars are not separately disclosed, so the single financial row is the finest additive dollar series available. The KPI table then shows the disclosed product drivers without converting them into invented revenue.

Product / sub-segment	FY2023 rev	FY2024 rev	FY2025 rev	FY2023-FY2025 CAGR	Most recent YoY	Data package cite
Options segment gross revenue	$1.940bn [data_package §3, Options Revenue row]	$2.003bn [data_package §3, Options Revenue row]	$2.434bn [data_package §3, Options Revenue row]	12.0% [calculated from same row]	21.5% [data_package §3, Options YoY row]	SEC23 and SEC25 as preserved in reviewed package

The fully elapsed three-year CAGR from FY2022 to FY2025 is 10.1%, calculated from $1.823bn and $2.434bn. That is the historical CAGR used in the forecast comparison tables because it spans three compounding intervals. The displayed FY2023-FY2025 CAGR is 12.0% over two intervals and is labeled explicitly to avoid an off-by-one error.

Product / KPI	FY2023	FY2024	FY2025	FY2022-FY2025 CAGR	Latest observation	Data package cite
Multi-listed options ADV	10.8m [data_package §0a, Options multi-listed ADV row]	10.9m [data_package §0a, same row]	13.5m [data_package §0a, same row]	7.7% [calculated from FY2022 10.8m, same row]	15.654m in Q2 2026 [data_package §0a, same row]	Reviewed official operating-statistics series
Index options ADV	3.8m [data_package §0a, Options index ADV row]	4.1m [data_package §0a, same row]	4.9m [data_package §0a, same row]	20.5% [calculated from FY2022 2.8m, same row]	6.208m in Q2 2026, +32% YoY [data_package §§0a and 5]	Reviewed official operating-statistics series
Total options RPC	$0.276 [data_package §0a, Total options RPC row]	$0.293 [data_package §0a, same row]	$0.297 [data_package §0a, same row]	8.3% [calculated from FY2022 $0.234, same row]	$0.317 in Q2 2026 [data_package §0a, same row]	Reviewed official operating-statistics series
Multi-listed RPC	$0.060 [data_package §0a, Multi-listed options RPC row]	$0.063 [data_package §0a, same row]	$0.066 [data_package §0a, same row]	1.6% [calculated from FY2022 $0.063, same row]	$0.064 in Q2 2026 [data_package §0a, same row]	Reviewed official operating-statistics series
Index RPC	$0.893 [data_package §0a, Index options RPC row]	$0.902 [data_package §0a, same row]	$0.924 [data_package §0a, same row]	1.7% [calculated from FY2022 $0.879, same row]	$0.953 in Q2 2026 [data_package §0a, same row]	Reviewed official operating-statistics series
Access and capacity plus market data, all segments	$641.2m [data_package §0a, recurring-fee rows]	$664.6m [data_package §0a, same rows]	$735.3m [data_package §0a, same rows]	6.6% [calculated from FY2022 $606.4m, same rows]	$207.4m in Q2 2026 [data_package §0a, same rows]	Cross-segment check only; no Options allocation

Arithmetic tie-outs: $1.823bn × 1.064 = $1.940bn ✓; $1.940bn × 1.033 = $2.004bn versus disclosed $2.003bn, a 0.05% rounding difference ✓; $2.003bn × 1.215 = $2.434bn ✓. TTM net-revenue tie-out: $380.8m + $433.1m + $467.6m + $473.9m = $1,755.4m ✓. TTM margin tie-out: $1,296.1m / $1,755.4m = 73.84% ✓. No historical product dollar was back-solved.

7. Management guidance

Every Options-relevant forward statement preserved in reviewed Section 6 is reproduced below. The quotes are intentionally short because the package has already verified them against the live transcript or SEC-filed release.

- **Q3 2025, CEO Craig Donohue — “global derivatives leader.”** [data_package §6, Options and derivatives, row 1] Interpretation: portfolio pruning concentrates capital and management attention on Options and adjacent derivatives. It is strategic direction, not a numeric growth commitment.
- **Q4 2025, CFO Jill Griebenow — “highest returns on organic investments.”** [data_package §6, Options and derivatives, row 2] Interpretation: the near-term hurdle is organic product/distribution productivity rather than acquisition-driven scale. The base case assumes continued spending and does not credit a margin-free growth option.
- **Q1 2026 management guidance — “low double-digit to mid-teens.”** [data_package §6, Options and derivatives, row 3] Interpretation: this was total-company organic net-revenue guidance, not an Options-only target, but it anchors the transition year.
- **Q2 2026 CFO Jill Griebenow — “mid-to-high teens.”** [data_package §6, Options and derivatives, row 4] Interpretation: the upgraded FY2026 company guide was supported by the existing product base. The first forecast year uses 12%

Options growth, below both current Options growth and the company guide range, because the TTM already includes two very strong 2026 quarters.

- **Q2 2026 Global Head of Derivatives Rob Hocking — “natural extension of our derivatives business.”** [data_package §6, Options and derivatives, row 5] Interpretation: prediction/event products may leverage existing infrastructure and distribution. No incremental event-contract revenue is added because the product is early stage.
- **Q2 2026 management — “doesn't incorporate anything incremental.”** [data_package §6, Futures and Global FX, row 3] Interpretation: management explicitly cautioned that the latest guide should not be read as a forecast for unproven products. This is applied to Options event contracts as well as other derivatives initiatives.
- **Q2 2026 Data Vantage guide — “low teens.”** [data_package §6, Data Vantage and company guidance, row 4] Interpretation: this is a cross-segment category target, not an Options-segment guide. It supports near-term data demand, while the model uses 7% base five-year growth for the Options-related data/access driver.
- **Q2 2026 CEO Craig Donohue — “We’re investing in opportunities that will define Cboe’s future.”** [data_package §6, Data Vantage and company guidance, row 5] Interpretation: named priorities included event contracts, Cboe Clear U.S. and around-the-clock access. These initiatives support duration but restrain near-term margin expansion.

The complete current control set is FY2026 organic total net-revenue growth in the mid-to-high teens, Data Vantage organic net-revenue growth in the low teens, adjusted operating expense of $838m-$853m, adjusted effective tax rate of 27.5%-29.5%, D&A excluding acquired-intangible amortization of $54m-$58m, and capex of $98m-$108m. [data_package §6, guidance-control paragraph] Only the revenue and investment signals inform this segment appendix; consolidated expense, tax and corporate items remain for synthesis.

8. Forward growth assumptions

Because product dollars are a true non-disclosure, the financial line remains Options segment net revenue. Product-level assumptions are expressed through disclosed KPIs. The KPI growth rates are not additive dollar CAGRs; they constrain and explain the one financial-line forecast. TTM+5 means 2031-06-30 in every table.

Base case

Product / driver	3-year historical CAGR	Latest YoY / level	Mgmt FY+1 guide	Base CAGR TTM→TTM+5y	Justification
Options segment net revenue	10.1% gross-revenue CAGR FY2022-FY2025	Q2 2026 net revenue +30%	Company organic net revenue mid-to-high teens	9.19%	Decelerates through 12%, 10%, 9%, 8%, 7% as record 2026 activity normalizes; index growth and data offset mature multi-listed share.
Multi-listed ADV	7.7%	15.654m Q2 2026	No product guide	4.0%	Industry participation grows, but Cboe share fell to 23.5%; base assumes no structural share recovery.
Index ADV	20.5%	6.208m Q2 2026; +32% YoY	No product guide	9.0%	0DTE, hedging and global access remain secular, but a 20%+ rate is implausible at a larger base and CME alternatives are growing.
Total RPC	8.3%	$0.317 Q2 2026	No product guide	1.5%	Positive index mix and modest pricing outweigh mature multi-listed capture; Q1-to-Q2 decline warns against extrapolating $0.343.
Options-related data/access demand	6.6% FY2022-FY2025 all-segment proxy	$207.4m Q2 2026 all segments	Data Vantage low teens	7.0%	Connectivity, capacity and proprietary data compound, but no Options-only dollars or subscriber series supports a higher rate.
Event/prediction contracts	No history	Early launch; three market makers, but no disclosed volume or revenue	Not notable in guide	0% separate revenue	Upside remains inside total segment CAGR; launch participation is not treated as demand proof, and no standalone dollars are credited before liquidity and distribution prove durable.

The base financial cadence is deliberate: $1,755.4m × 1.12 × 1.10 × 1.09 × 1.08 × 1.07 = $2,724.1m. The resulting 9.19% CAGR sits below the FY2022-FY2025 gross-revenue CAGR of 10.1% and far below Q2's 30% net-revenue growth. This is not

an abrupt comparable-free deceleration. Nasdaq's FY2025 options data show industry ADV rising roughly 26% while the operator's combined matched share fell, and CME's short-dated options expanded rapidly. The base assumes the industry continues growing but competition and scale pull growth toward high single digits.

The different TTM and point-in-time KPI anchors require an explicit consistency check. Q2 2026 net revenue annualized is $1,895.6m ($473.9m × 4), already 8.0% above the $1,755.4m four-quarter average. From that Q2 run-rate, the $2,724.1m base endpoint compounds at 7.51%, not 9.19%. The disclosed Q2 ADV components total 21.862m contracts; the base endpoints total 28.597m, a 5.5% CAGR, and applying the 1.5% total-RPC CAGR implies roughly 7.1% annualized transaction-fee growth before non-transaction mix. The 7.0% data/access proxy is consistent with that rate. This does not create a product-dollar rollup, but it prevents the 9.19% TTM-based financial CAGR from being mistaken for a rate mechanically unsupported by the elevated Q2 run-rate.

Bear case

Product / driver	3-year historical CAGR	Latest YoY / level	Mgmt FY+1 guide	Bear CAGR TTM→TTM+5y	Justification
Options segment net revenue	10.1% gross-revenue CAGR FY2022-FY2025	Q2 2026 net revenue +30%	Company organic net revenue mid-to-high teens	2.40%	Growth falls to 3%, 3%, 2%, 2%, 2% as volatility normalizes, 0DTE penetration matures and capture weakens; this is stagnation, not a volume collapse.
Multi-listed ADV	7.7%	15.654m Q2 2026	No product guide	0.0%	Industry growth is offset by further Cboe share loss and routing competition.
Index ADV	20.5%	6.208m Q2 2026; +32% YoY	No product guide	3.0%	Short-dated adoption saturates and futures/ETF/OTC substitutes take incremental demand; existing liquidity prevents outright contraction.
Total RPC	8.3%	$0.317 Q2 2026	No product guide	(1.0%)	Rebates, fee pressure and mix normalization outweigh index pricing; $0.317 declines to about $0.301.
Options-related data/access demand	6.6% FY2022-FY2025 all-segment proxy	$207.4m Q2 2026 all segments	Data Vantage low teens	3.0%	Customer optimization and regulatory pricing pressure reduce growth, while mission-critical connectivity prevents a severe decline.
Event/prediction contracts	No history	Early launch	Not notable in guide	0% separate revenue	Launches fail to reach scale and remain an expense; no revenue is credited.

The bear case is intentionally harsher on economics than on contracts. Total contract activity can remain resilient while adverse mix and capture compress monetization. It also recognizes that the SPX license remains exclusive through the horizon, making a sudden loss of all proprietary volume inconsistent with known contract terms. A true license-loss case belongs in terminal risk and a separate stress, not the probability-weighted five-year operating forecast.

Bull case

Product / driver	3-year historical CAGR	Latest YoY / level	Mgmt FY+1 guide	Bull CAGR TTM→TTM+5y	Justification
Options segment net revenue	10.1% gross-revenue CAGR FY2022-FY2025	Q2 2026 net revenue +30%	Company organic net revenue mid-to-high teens	12.17%	Growth remains 16%, 14%, 12%, 10%, 9% as global access, daily expiries and institutional/retail adoption broaden without assuming 30% persists.
Multi-listed ADV	7.7%	15.654m Q2 2026	No product guide	7.0%	Industry records continue and the four-venue portfolio stabilizes share; no heroic share gain is required.
Index ADV	20.5%	6.208m Q2 2026; +32% YoY	No product guide	13.0%	SPX/0DTE, XSP, global-hours and new index products sustain double-digit adoption, still materially below history and latest YoY.
Total RPC	8.3%	$0.317 Q2 2026	No product guide	2.5%	Higher index mix, pricing and proprietary-data value raise RPC to about $0.359 without repeating the historical mix surge.

Product / driver	3-year historical CAGR	Latest YoY / level	Mgmt FY+1 guide	Bull CAGR TTM→TTM+5y	Justification
Options-related data/access demand	6.6% FY2022-FY2025 all-segment proxy	$207.4m Q2 2026 all segments	Data Vantage low teens	9.0%	International distribution and capacity demand sustain high-single-digit growth, below the current low-teens guide.
Event/prediction contracts	No history	Early launch	Not notable in guide	Included in total upside	Products achieve distribution and positive contribution, but lack of disclosed dollars prevents a separate revenue line.

The bull path is not a continuation of Q2's 30%. It is a staged deceleration to 9% by year five. Index ADV reaches roughly 11.44m from Q2 2026's 6.208m, compared with 20.5% historical CAGR, while multi-listed ADV reaches about 21.96m. That requires continued options-industry growth and franchise execution, but not the impossible assumption that recent record growth never normalizes.

Year-by-year thesis-consistency bridge

Case	2027-06-30 growth	2028-06-30 growth	2029-06-30 growth	2030-06-30 growth	2031-06-30 growth	Five-year CAGR
Bear	3.0%	3.0%	2.0%	2.0%	2.0%	2.40%
Base	12.0%	10.0%	9.0%	8.0%	7.0%	9.19%
Bull	16.0%	14.0%	12.0%	10.0%	9.0%	12.17%

9. Forward `Operating income (loss)` margin assumptions

The current reference is the TTM 73.84% `Operating income (loss)` margin on net revenue. Product-level profit margins are not disclosed, so manufacturing a margin for SPX, multi-listed or data/access would create false precision. The forecast instead uses an auditable segment margin bridge tied to the product drivers above. Corporate and statutory-bridge lines remain outside Options.

Case	TTM net revenue	TTM `Operating income (loss)`	Current margin	TTM+5 margin	Change	Specific mechanism
Bear	$1,755.4m	$1,296.1m	73.84%	68.0%	(584) bps	Weaker index mix/RPC, rebate and license pressure, and continued product/regulatory spending overwhelm modest recurring growth.
Base	$1,755.4m	$1,296.1m	73.84%	75.5%	+166 bps	Index and data mix plus fixed-cost leverage more than fund 24/5 access, event products, technology and compliance.
Bull	$1,755.4m	$1,296.1m	73.84%	78.0%	+416 bps	High proprietary-product growth and data/access scale create strong leverage while launch spending becomes productive.

The basis-point bridge reconciles exactly from the unrounded current margin:

Margin mechanism	Bear bps	Base bps	Bull bps	Economic interpretation
Proprietary-index mix and RPC	(250)	+80	+180	Index contracts monetize far above multi-listed contracts; mix is the largest lever.
Rebates, royalties and transaction pricing	(120)	0	0	Bear assumes competitive and contractual leakage; base/bull net this within product mix.
Data/access mix	+45	+45	+70	Recurring demand adds stability and generally better incremental economics.
Platform scale leverage	0	+135	+210	Fixed technology, venue and regulatory costs spread over more net revenue.

Margin mechanism	Bear bps	Base bps	Bull bps	Economic interpretation
Growth investment and compensation	(170)	(80)	(30)	Event products, clearing adjacency and global access require sustained spending.
Other operating/regulatory effects	(89)	(14)	(14)	Conservatism for compliance, resilience and unallocated segment cost variability.
Total change from 73.84%	(584)	+166	+416	Reconciles to 68.0%, 75.5% and 78.0%, respectively.

The base expansion exceeds 100 basis points, so the mechanism must be tangible. At $2,724.1m of horizon net revenue, a 73.84% unchanged margin would produce about $2,011.5m of `Operating income (loss)`. The 75.5% assumption produces $2,056.7m, only $45.2m more. Thus almost all base profit growth comes from revenue, not aggressive margin expansion. The bull case needs greater operating leverage, while the bear explicitly captures negative incremental economics despite positive revenue.

10. Segment rollup

Product-level dollar revenue cannot be summed because the issuer does not disclose it. The one-line financial rollup is therefore the Options segment itself, and every sub-product appears as a KPI constraint. This is the only method that is both bottom-up in drivers and non-fabricated in dollars. The disclosed four-quarter net-revenue base is additive and reconciles exactly.

Case	TTM net revenue	2031-06-30 net revenue	Five-year CAGR	2031 `Operating income (loss)` margin	2031 `Operating income (loss)`
Bear	$1,755.4m	$1,976.3m	2.40%	68.0%	$1,343.9m
Base	$1,755.4m	$2,724.1m	9.19%	75.5%	$2,056.7m
Bull	$1,755.4m	$3,117.3m	12.17%	78.0%	$2,431.5m

Case	2027-06-30	2028-06-30	2029-06-30	2030-06-30	2031-06-30
Bear net revenue	$1,808.1m	$1,862.3m	$1,899.5m	$1,937.5m	$1,976.3m
Base net revenue	$1,966.0m	$2,162.7m	$2,357.3m	$2,545.9m	$2,724.1m
Bull net revenue	$2,036.3m	$2,321.3m	$2,599.9m	$2,859.9m	$3,117.3m

KPI constraint at 2031-06-30	Bear	Base	Bull	TTM/Q2 anchor
Multi-listed options ADV	15.654m	19.045m	21.956m	15.654m in Q2 2026
Index options ADV	7.197m	9.552m	11.438m	6.208m in Q2 2026
Total options RPC	$0.301	$0.341	$0.359	$0.317 in Q2 2026
Options-related data/access demand CAGR	3.0%	7.0%	9.0%	All-segment proxy only

Arithmetic checks: Bear $1,755.4m compounded at the explicit annual cadence equals $1,976.3m; $1,976.3m × 68.0% = $1,343.9m. Base equals $2,724.1m; $2,724.1m × 75.5% = $2,056.7m. Bull equals $3,117.3m; $3,117.3m × 78.0% = $2,431.5m. All differences are below $0.1m after rounding. The Options segment begins and ends as one additive financial line, so rollup residual is zero. The TTM segment profit remains positive and uses the issuer's exact sign convention.

The product-driver endpoints are also internally coherent. In base, multi-listed ADV grows 4.0% and index ADV 9.0%, yielding combined ADV growth around 5.5% from the Q2 snapshot; total RPC grows 1.5%, and data/access grows 7.0%. These ingredients support, but do not mechanically multiply into, 9.19% net-revenue growth because consolidated RPC already embeds mix and the non-transaction revenue weight is undisclosed. In bull, stronger index mix and recurring growth justify 12.17%; in bear, weak RPC offsets contract and data growth.

Sensitivity is concentrated in two variables. Holding the base $2,724.1m revenue constant, each 100 basis points of horizon margin changes `Operating income (loss)` by $27.2m. Holding the 75.5% margin constant, each 1% change in horizon revenue changes profit by about $20.6m. A sustained one-point change in annual revenue CAGR around the exact 9.1865% base changes horizon revenue by roughly 4.5%-4.7%, or approximately $122.1m-$127.5m, and changes `Operating income (loss)` at a 75.5% margin by approximately $92.2m-$96.3m. Index volume and RPC therefore matter far more than small corporate-cost changes, which remain outside the segment anyway.

11. Key risks and wildcards

- **SPX license renewal and exclusivity — Bear / terminal risk.** The exclusive SPX right extends through 2032, after the forecast horizon but near enough to dominate terminal economics. Non-renewal, non-exclusive renewal or worse royalty terms could reduce market share, pricing and margin. The five-year operating bear does not pretend the license disappears early; valuation should separately reflect the approaching renewal.
- **0DTE saturation or adverse rule change — Bear.** 0DTE already represented 59% of SPX volume in 2025. Continued penetration can slow, and regulators or brokers could impose suitability, margin or access changes. The base decelerates index ADV to a 9% CAGR; the bear uses 3%.
- **Substitution by ETF, futures and OTC products — Bear.** SPY options, CME equity-index derivatives and customized OTC exposures can satisfy similar hedging or speculation needs. Cboe's liquidity remains a defense, not an absolute barrier.
- **Multi-listed share and rebate pressure — Bear.** Cboe's multi-listed share fell to 23.5% in Q2 2026 despite record activity. A more aggressive Nasdaq, MIAX, NYSE or new-venue fee model could shift order flow and lower RPC. Bear multi-listed ADV is flat and total RPC declines 1% annually.
- **Volatility and market-activity normalization — Bear / base.** Contract volume benefits from market engagement and episodic volatility. A quiet market can reduce transactions, though structural retail participation and daily expirations may cushion the decline. The forecast uses a stepped cadence rather than annualizing Q2 2026.
- **Operational or cyber outage — Bear.** Options are time-sensitive, highly electronic markets. A major outage or erroneous settlement can damage trust, invite regulatory sanctions and move flow to substitutes. Reliability spending is therefore recurring, not discretionary.
- **Regulatory treatment of exchange data and access fees — Bear.** Regulatory or court decisions can limit pricing, alter consolidated-tape economics or force fee changes. The bear assumes only 3% data/access growth and embeds additional margin pressure.
- **Index methodology or benchmark challenge — Bear.** Cboe depends on licensors and on confidence in benchmark calculation. Changes to license rights, benchmark regulation or customer preference could weaken proprietary economics even without a contract termination.
- **Global-hours and international distribution — Bull.** Nearly 24-hour weekday access can grow non-U.S. participation and smooth dependence on U.S. cash hours. The bull credits faster index and data/access growth, not a separate speculative revenue line.
- **Event and prediction products — Bull / bear.** These products could use existing infrastructure and attract new retail or institutional engagement, but they can also fail to achieve liquidity or face regulatory limits. No standalone revenue is included, so success is upside inside the bull and failure is expense pressure inside the bear.
- **Product concentration — Bear.** The franchise's economics depend heavily on SPX and VIX-related products. A product-specific demand shock can matter more than operator-wide contract share implies. Because the reviewed package does not disclose SPX-, VIX- or 0DTE-specific revenue or profit, the concentration cannot be converted into a defensible dollar share; that missing split lowers forecast confidence and is not replaced with an analyst estimate.
- **Margin extrapolation — Base discipline.** TTM net-revenue margin is already 73.84%. The base assumes only 166 basis points of expansion, and the bull 416 basis points. If investment, compensation and regulation scale with revenue, the bull margin will not be achieved even if the revenue case does.

Rollup-ready summary

Case	Segment TTM+5y Revenue	Exact profit metric	Segment TTM+5y Profit Margin	Segment TTM+5y Profit	Probability
Bear	$1,976.3m net revenue	`Operating income (loss)`	68.0% of net revenue	$1,343.9m	20%
Base	$2,724.1m net revenue	`Operating income (loss)`	75.5% of net revenue	$2,056.7m	60%
Bull	$3,117.3m net revenue	`Operating income (loss)`	78.0% of net revenue	$2,431.5m	20%

The 20% / 60% / 20% probabilities sum to 100%. The 60% base weight reflects record Q2 activity and raised company guidance but also the observed decline in multi-listed share and a deliberate five-year deceleration. The 20% bear weight captures 0DTE maturation, adverse mix/RPC and regulatory or fee pressure while respecting SPX exclusivity through the forecast horizon. The 20% bull weight requires sustained double-digit index adoption, global-hours distribution and productive operating leverage; it does not receive a higher weight because product-level SPX/VIX/event-contract dollars are undisclosed. The probability-weighted arithmetic ties to $2,653.2m of 2031 net revenue and $1,989.1m of `Operating income (loss)`, implying a 74.97% weighted margin; these are expected-value checks, not a fourth operating scenario.

Unresolved items. `[DATA GAP: A complete TTM Options gross-revenue figure is not present in reviewed data_package.md; the model therefore uses the disclosed additive TTM net-revenue series and labels the denominator throughout.]` `[DATA GAP: SPX, 0DTE, XSP, VIX, multi-listed and Options-only data/access revenue and product margins are not separately disclosed; no product dollar or margin split is fabricated.]` `[DATA GAP: Options segment capex, R&D and customer/subscriber counts are not separately disclosed.]` These gaps do not prevent a segment `Operating income (loss)` forecast because the TTM profit value is sealed, the TTM net-revenue base is additive, and product KPIs provide explicit scenario constraints. They do require synthesis to preserve the net-revenue denominator and to keep Corporate Items and Eliminations outside the segment.

Appendix B2 - North American Equities

North American Equities — Segment Deep Dive

Company: Cboe Global Markets **Forecast base:** TTM ended 2026-06-30 **Forecast horizon:** 2031-06-30, exactly five calendar years **Reporting currency:** USD millions unless stated otherwise **Exact segment profit metric:** `Operating income (loss)` **Evidence control:** Historical Cboe financials, KPIs, and management quotations come from the DR-reviewed `data_package.md` and QFR-sealed `statutory_bridge.json`. Competitive and regulatory context is separately identified.

0. Segment boundary and taxonomy note

North American Equities contains Cboe's four U.S. equities exchanges—BZX, BYX, EDGX, and EDGA—the BIDS U.S. off-exchange institutional block-trading business, Cboe Canada, and related access, capacity, market-data, and regulatory-fee economics. The reportable-segment taxonomy was stable through the TTM period ended 2026-06-30; the 2025 Digital-to-Futures boundary change did not affect this segment. The economic perimeter is nevertheless changing. Cboe agreed to sell Cboe Canada, which was classified as held for sale but remained in the reported TTM numbers. The horizon model therefore removes Canada rather than silently comparing a continuing U.S. business with a historical U.S.-plus-Canada perimeter. Venue-level revenue is not consistently disclosed, so the model does not fabricate U.S., BIDS, or Canada historical dollars. It uses the disclosed segment total, the disclosed accounting bridge, and venue KPIs to set explicit scenario growth and perimeter adjustments.

1. What this segment actually is

The segment is an electronic market-infrastructure business serving broker-dealers, market makers, institutional investors, retail-routing firms, listed-product sponsors, and data consumers. Its basic service is matching, routing, reporting, and disseminating orders and trades in North American cash equities. It earns gross transaction and clearing fees when shares trade, pays substantial liquidity and routing rebates that are reported as cost of revenues, and retains the spread between gross fees and those pass-through costs as net transaction economics. It also charges for physical and logical connectivity, ports and capacity, proprietary data, consolidated tape-plan participation, and certain regulatory services.

The four U.S. exchanges are not one homogeneous venue. Their order-priority rules, order types, fee schedules, maker-taker or taker-maker economics, and participant mixes differ. That portfolio lets Cboe offer customers several routing outcomes on one technology and connectivity estate. The exchanges compete for displayed and non-displayed order flow with Nasdaq, NYSE, MEMX, IEX, and other registered exchanges. They also compete indirectly with broker-dealer internalizers and alternative trading systems because every share executed away from a Cboe exchange is unavailable to its on-exchange fee pool.

BIDS is a separate economic proposition inside the segment. It is an off-exchange alternative trading system aimed principally at anonymous institutional block execution. Its volume is measured in touched shares rather than the market-share measure used for the four exchanges. BIDS expands Cboe's addressable pool into institutional dark liquidity, but its history shows that volume alone is not value: BIDS ADV nearly doubled in FY2025 and rose again by Q2 2026 while net capture declined sharply. A durable BIDS thesis therefore requires both engagement and monetization, not just a volume headline.

Cboe Canada historically added Canadian exchange and ATS-style order books, distinct local regulation, and a fast-growing matched-share base. Cboe's sale process means that business is not assumed to remain at the 2031 horizon. The reviewed data package confirms the Canada/Australia sales process but does not provide an agreed buyer, transaction consideration, Canada-specific proceeds, closing date, disposal gain, or tax effect. None is invented here. The forecast excludes Canada from the horizon operating perimeter and leaves every sale-related cash or accounting item to the consolidated model once sourced terms exist [data_package §9, 2025-10-31 action; §10 venue-level revenue gap].

The pricing model has four economically different layers. First, gross transaction fees and liquidity rebates scale with industry share volume and participant mix. Second, net capture moves with fee schedules, routing economics, competitive response, and the mix of adding versus removing liquidity. Third, access and capacity revenue is driven by ports, bandwidth, redundancy, co-location demand, and customer infrastructure rather than only by daily market volume. Fourth, market-data economics reflect proprietary feeds, analytics, and consolidated-tape participation. These layers explain why revenue can rise when exchange market share falls, or why volume can surge while profit conversion disappoints.

2. Current economics: TTM ended 2026-06-30

The sealed TTM base is $1,706.1 million of gross segment revenue and $229.0 million of `Operating income (loss)`, a 13.4% margin on gross revenue. The four quarterly net-revenue observations in the reviewed data package—$103.5 million, $110.7 million, $111.2 million, and $114.7 million—sum to $440.1 million. Cost of revenues is therefore the exact derived residual of $1,266.0 million, and combined segment operating expense below net revenue is the exact derived residual of $211.1 million. The bridge is $1,706.1 million − $1,266.0 million = $440.1 million of net revenue, and $440.1 million − $211.1 million = $229.0 million of `Operating income (loss)`. The reviewed package does not reproduce a TTM split of that $211.1 million between D&A and other operating expense, so this appendix does not invent or rely on one [data_package §5, EX25Q3–EX26Q2; §3a, QF_TTM_ARITHMETIC].

The segment's accounting optics require discipline. Gross revenue is the reportable segment-revenue basis used in the five-segment statutory rollup. Net revenue is the more useful operating denominator because liquidity payments and routing costs pass through cost of revenues. On the TTM base, cost of revenues consumed 74.2% of gross revenue; net revenue was 25.8% of gross revenue. `Operating income (loss)` was 13.4% of gross revenue but 52.0% of net revenue. Combined segment operating expense below net revenue was 12.4% of gross revenue and 48.0% of net revenue. Both margin views are shown throughout, but the official segment-profit margin remains `Operating income (loss)` divided by gross segment revenue.

Recent momentum was strong. Quarterly net revenue was $103.5 million, $110.7 million, $111.2 million, and $114.7 million from Q3 2025 through Q2 2026, summing exactly to the $440.1 million TTM net-revenue base. Q2 2026 net revenue increased 17% year over year and the Q2 `Operating income (loss)` margin on net revenue was 57.6% [data_package §5; SEC-filed EX25Q3–EX26Q2]. This should not be extrapolated mechanically: industry U.S. equity ADV was 20.2 billion shares in Q2 versus 17.6 billion in FY2025, Cboe exchange share was only 9.4%, and BIDS volume came with lower capture. The quarter demonstrates operating leverage under high activity, not a guaranteed steady-state growth rate.

The most important live drivers are mixed. U.S. industry ADV rose from 11.4 billion shares in FY2021 to 17.6 billion in FY2025 and reached 20.2 billion in Q2 2026. Yet Cboe's exchange share fell from 14.2% to 10.0% over FY2021–FY2025 and to 9.4% in Q2 2026. On-exchange net capture declined from $0.020 per 100 touched shares in FY2021 to $0.015 in FY2025, then improved to $0.019 in Q2 2026. BIDS U.S. off-exchange ADV rose from 83.0 million touched shares in FY2021 to 155.1 million in FY2025 and 237.5 million in Q2 2026, but capture compressed from $0.120 to $0.075 and then $0.058 per 100 touched shares. Canada ADV rose from 49.4 million matched shares in FY2021 to 167.5 million in FY2025 and 185.8 million in Q2 2026; its capture fell from CAD7.822 to CAD4.133 and then recovered to CAD4.355 per 10,000 touched shares [data_package §0a; SEC21–SEC25 and SEC-filed EX26Q2].

Capital intensity is low in physical terms but not costless. Company capex was only 1.5% of revenue in FY2025, while FY2026 capex guidance was raised to $98–$108 million [data_package §7, SEC25 cash-flow statement; §6, Q2 2026 guidance]. Assigning consolidated capex or D&A to North American Equities would create false precision. The segment requires continuous software development, cybersecurity, surveillance, regulatory compliance, network capacity, disaster recovery, and customer connectivity. Those costs are embedded in operating expenses; Cboe does not separately disclose R&D, so no analyst-created R&D amount is used.

3. Unit economics

The unit-economics engine begins with matched or touched share volume. For the lit exchanges, volume equals industry ADV multiplied by Cboe market share, with trading days translating daily volume into annual touched shares. Gross fee schedules and liquidity rebates then determine gross revenue and cost of revenues. Net capture is the compact realized output of fee level, order type, customer tier, liquidity mix, and rebates. A one-basis-point change in exchange share or a small capture change can matter even when industry volume is unchanged, which makes a simple market-volume forecast incomplete.

High gross revenue does not automatically mean high economic revenue. In the TTM, $1,266.0 million of the $1,706.1 million gross revenue was cost of revenues. Much of this is mechanically linked to trading activity and routing or liquidity payments. This is why gross-revenue growth can overstate value creation when the rebate burden grows at the same rate. The segment creates shareholder value when net revenue expands faster than technology, regulatory, and support expense, and when that expansion survives competitive repricing.

The BIDS model has a similar volume-times-capture structure but a different customer need. Institutions value information-leakage control, conditional order interaction, and block execution. A larger participant network can improve match probability and thus attract more flow. Yet customers and brokers can multi-home across ATSs, so the network effect

does not give BIDS unconstrained pricing. FY2021–FY2025 BIDS ADV compounded at 16.9%, while capture declined at roughly 11.1% annually. In Q2 2026, touched-share ADV was 53% above FY2025 but capture was 23% below the FY2025 rate. The result is a classic exchange trade-off: lower price can seed liquidity, but the profit thesis needs eventual stabilization in realized monetization.

Access, capacity, and proprietary data provide a steadier layer. Across Cboe, access and capacity plus market-data gross revenue grew from $532.8 million in FY2021 to $735.3 million in FY2025, an 8.4% CAGR. Data Vantage net revenue rose from $419.3 million to $622.9 million and reached $177.8 million in Q2 2026 [data_package §0a; SEC21–SEC25 and SEC-filed EX26Q2]. These figures are company-wide, not North American Equities-only, and are not allocated to this segment. They nevertheless establish a relevant base rate because the equities venues sell ports, feeds, and infrastructure into the same client estate. Customer or subscriber counts are not disclosed; the model therefore uses revenue-growth scenarios rather than an invented seat count.

The profit bridge clarifies fixed versus variable costs. Net revenue of $440.1 million funded $211.1 million of combined segment operating expense below net revenue. A meaningful portion of venue technology and regulation is fixed or step-fixed, so incremental net revenue can carry high contribution margins during a volume upcycle. The reverse also holds: if Canada leaves and on-exchange share or capture erodes, personnel, surveillance, connectivity, and platform expense cannot disappear immediately. The bear case explicitly models this stranded-cost risk, with net revenue below the TTM level but combined segment operating expense above the TTM level at the horizon.

Reinvestment has three forms. Maintenance investment keeps matching engines, market data, and controls resilient. Growth investment adds order types, session coverage, bandwidth, analytics, and distribution. Regulatory investment responds to SEC rule changes, CAT requirements, market-data obligations, and execution-quality disclosure. The asset-light capex ratio is attractive, but software and compliance costs run through expense and should not be mistaken for zero reinvestment. A segment that lets latency, reliability, or surveillance deteriorate can lose order flow faster than a physical infrastructure business loses customers.

4. Competitive dynamics

Competition is structural, continuous, and unusually transparent. U.S. equities trade across registered exchanges, ATSs, single-dealer platforms, wholesalers, and broker-dealer internalizers. Cboe's 2025 annual report said its U.S. exchanges and BIDS competed against 13 other equities exchanges and more than 25 ATSs and single-dealer platforms. That breadth makes the segment more contestable than Cboe's proprietary index-options franchise. Cboe's own four-exchange portfolio is a meaningful platform, but customers can change routing logic quickly and can connect to multiple venues simultaneously. The [2025 Cboe 10-K](https://www.sec.gov/Archives/edgar/data/1374310/000162828026010013/cboe-20251231.htm) describes the venue portfolio and competing market models.

The direct exchange competitors are Nasdaq, NYSE's multiple exchange licenses, MEMX, and IEX, alongside smaller venues. They compete on displayed liquidity, execution quality, queue priority, rebates, access fees, order types, opening and closing mechanisms, and technology performance. Cboe can use BZX, BYX, EDGX, and EDGA to address different participant incentives, but rivals can revise price schedules and order types too. The evidence is market share: Cboe's exchange share declined from 14.2% in FY2021 to 9.4% in Q2 2026 despite the platform remaining functional and industry volume rising.

Off-exchange trading is both a threat and an opportunity. Wholesalers such as Citadel Securities and Virtu internalize large quantities of retail flow; institutional ATSs compete for block liquidity; and broker-owned or bank-operated dark venues compete for agency orders. The SEC's 2026 Rule 611 proposal noted that off-exchange trading had regularly exceeded 50% of overall volume since late 2024, while hidden executions also increased on exchanges. That trend shrinks the lit-exchange share of the industry pool, but BIDS lets Cboe participate in a part of the off-exchange channel. The [SEC proposal](https://www.sec.gov/files/rules/proposed/2026/34-105655.pdf) is useful context, not an assumption that the proposed rule will be adopted unchanged.

BIDS competes with institutional block and conditional-order networks, including broker ATSs and platforms such as Liquidnet and Instinet, as well as algorithms that source liquidity across many venues. Its strengths are a recognized institutional brand, sponsored-access distribution, anonymous matching, and integration with Cboe's broader technology and market-operator relationships. Its weakness is price elasticity and multi-homing: high BIDS volume has not prevented capture compression. In the base case, BIDS ADV grows modestly and capture recovers only gradually. The bull case requires both broader participation and better monetization; the bear case assumes institutional flow migrates or must be priced more aggressively.

Regulation shapes the competitive field. Regulation NMS links venues through protected quotations and routing obligations, but regulators continually revisit tick sizes, access-fee caps, execution-quality reporting, order competition, market-data governance, and the trade-through rule. The SEC's Rule 605 amendments expanded execution-quality reporting and were scheduled for an August 2026 compliance date, increasing transparency for market centers and large brokers. Better disclosure can reward strong execution quality, but it can also make routing performance easier to compare and intensify price competition. The official [Rule 605 overview](https://www.sec.gov/rules-regulations/2025/09/disclosure-order-execution-information) describes the reporting changes.

Pricing power is therefore split. Transaction pricing power is weak to moderate because routing is portable and rivals can respond. Access and capacity pricing is better because customers require resilient connectivity across venues and incur operational switching costs, though fee increases can attract regulatory and customer opposition. Proprietary data pricing is attractive where the data is unique or latency-sensitive, but core equity market data has public-interest scrutiny and consolidated-feed alternatives. Tape revenue is partly regulatory-plan economics rather than a purely proprietary product. The base case assigns most durable growth to access and data, not to persistent improvement in transaction capture.

Canada's prospective divestiture changes both competition and reported growth. For Cboe, an eventual sale removes a growing venue and may simplify management attention, but it also eliminates a source of diversification and a potential cross-border network. The reviewed evidence supplies neither a buyer nor consideration, a Canada revenue multiple, closing timing, or a basis for allocating sale proceeds to this segment. The forecast represents the assumed exit only as a one-time operating-perimeter haircut followed by continuing-business growth. A reported-growth analysis that ignored the haircut would overstate core deceleration; a model that retained Canada to 2031 would overstate the intended horizon perimeter.

5. Moat at the segment level

North American Equities has a real but narrower moat than Cboe's Options segment. Its defenses are exchange and broker-dealer regulatory licenses, audited and resilient technology, established connectivity, customer certification, surveillance infrastructure, market-data distribution, brand trust, and liquidity accumulated across multiple order books. These are meaningful barriers to a greenfield entrant. A new venue must obtain approvals, build high-availability systems, connect major market participants, demonstrate execution quality, and subsidize liquidity before it has a useful network.

The moat is not a monopoly moat. Regulation deliberately promotes interconnected competition; broker routers can use many venues; market makers can reallocate liquidity; and fee schedules are observable. The SEC has historically described the national market system as balancing competition among venues with competition among orders. That structure gives an incumbent relevance but limits price control. The [SEC market-structure discussion](https://www.sec.gov/newsroom/speeches-statements/us-equity-market-structure) explains how protected quotes weave venues together while also creating complexity and routing competition.

Cboe's multi-venue architecture is the strongest segment-specific defense. Four exchange licenses let it offer distinct priority and rebate designs, while BIDS supplies institutional off-exchange reach. Customers can purchase connectivity and data across a broader platform, and Cboe can spread technology and compliance costs across venues. This creates economies of scope and reduces dependence on any one order book. However, Cboe's on-exchange market-share decline proves that the architecture does not guarantee liquidity leadership.

BIDS offers a partial network effect: more institutional conditional interest can improve match rates, which can attract more interest. Yet the collapse in capture alongside volume growth shows that the network has not translated into robust pricing power. The moat should be judged on net revenue and operating contribution, not touched shares. Stabilizing capture near the Q2 2026 rate while growing participation would be acceptable; further capture erosion would suggest that the network is being purchased through price.

Access and data are the most durable earnings layer. Connectivity is operationally embedded, latency-sensitive, and costly for customers to reconfigure. Proprietary feeds and analytics benefit from Cboe's venue data. These products can grow even with flat exchange share if customers need redundancy, higher capacity, or richer information. Still, the absence of a disclosed subscriber series limits proof of retention and unit expansion. The company-wide 8.4% FY2021–FY2025 access-plus-market-data CAGR and management's upgraded Data Vantage outlook support the direction, but they do not prove the exact North American Equities contribution.

The five-to-ten-year moat verdict is **NARROW / MODERATE, not wide**. The licenses, technology, and embedded connectivity should preserve relevance and attractive cash conversion. They do not support a forecast of sustained

double-digit transaction growth or unbounded margin expansion. The base case therefore assumes Cboe remains a material U.S. venue despite share settling below its historical level, BIDS grows at a lower rate after its volume step-up, and recurring access/data outgrows trading. The bull case requires improved execution relevance and capture stability. The bear case does not assume technological obsolescence; it assumes that a functioning venue can still earn less because flow and pricing are contestable.

6. Historical growth rates reproduced from the reviewed data package

Five years are available for the reportable segment. Venue dollars are not disclosed on a consistent basis, so the historical table uses the segment total plus the finest disclosed volume/share/capture drivers. No back-solved venue revenue is used. Every Cboe historical cell below identifies its controlling data-package row.

Product / sub-segment driver	FY2021	FY2022	FY2023	FY2024	FY2025	FY2021–FY2025 CAGR / change	Latest disclosed observation	Data-package cite
North American Equities gross revenue, USD m	1,570.5	1,681.7	1,353.0	1,546.8	1,672.3	1.6% CAGR	TTM $1,706.1m	data_package §3; SEC23 and SEC25; sealed TTM base
`Operating income (loss)`, USD m	156.1	146.6	118.0	168.6	188.1	4.8% CAGR	TTM $229.0m	data_package §3; SEC23 and SEC25; §3a QF_TTM_ARITHMETIC
Margin on gross revenue	9.9%	8.7%	8.7%	10.9%	11.2%	+130 bps	TTM 13.4%	Calculated from the preceding two rows; sealed TTM base
U.S. equities industry ADV, bn shares	11.4	11.9	11.0	12.2	17.6	11.5% CAGR	Q2 2026 20.2	data_package §0a; SEC21–SEC25 and EX26Q2
Cboe U.S. exchange market share	14.2%	13.6%	12.8%	11.4%	10.0%	(420) bps	Q2 2026 9.4%	data_package §0a; SEC21–SEC25 and EX26Q2
U.S. exchange capture, USD/100 touched shares	0.020	0.021	0.018	0.022	0.015	(6.9%) CAGR	Q2 2026 0.019	data_package §0a; SEC21–SEC25 and EX26Q2
BIDS U.S. ADV, m touched shares	83.0	90.4	79.5	79.0	155.1	16.9% CAGR	Q2 2026 237.5	data_package §0a; SEC21–SEC25 and EX26Q2
BIDS capture, USD/100 touched shares	0.120	0.113	0.124	0.132	0.075	(11.1%) CAGR	Q2 2026 0.058	data_package §0a; SEC21–SEC25 and EX26Q2
Canada matched ADV, m shares	49.4	91.8	136.1	147.6	167.5	35.7% CAGR	Q2 2026 185.8	data_package §0a; SEC21–SEC25 and EX26Q2
Canada capture, CAD/10,000 touched shares	7.822	4.966	3.994	4.069	4.133	(14.7%) CAGR	Q2 2026 4.355	data_package §0a; SEC21–SEC25 and EX26Q2

The segment-revenue YoY arithmetic ties within the required 2% tolerance. $1,570.5m × 1.071 = $1,682.0m versus $1,681.7m reported; $1,681.7m × 0.805 = $1,353.8m versus $1,353.0m; $1,353.0m × 1.143 = $1,546.5m versus $1,546.8m; and $1,546.8m × 1.081 = $1,672.1m versus $1,672.3m. All differences are rounding. No historical row is back-solved.

The history has three lessons. First, industry volume is a strong tailwind but Cboe has not retained a constant share. Second, high growth in BIDS or Canada shares has been accompanied by lower capture, so share-volume growth is not equivalent to profit growth. Third, the segment's gross revenue CAGR was only 1.6% over FY2021–FY2025 despite an 11.5% industry-ADV CAGR, while `Operating income (loss)` grew faster because net capture mix, recurring fees, and cost discipline matter more than gross volume alone.

7. Management guidance from data-package Section 6

Management has not provided a standalone five-year revenue or margin target for North American Equities. The relevant guidance is strategic and company/category-level. The absence of a segment numeric target is treated as a data gap rather than filled with company guidance.

- **2025-10-31 Q3 2025 call, Craig Donohue:** “better opportunities to drive meaningful growth for Cboe in other areas.” [data_package §6; live FMP transcript TR25Q3] This explains the Canada sales process as capital prioritization. It does not demonstrate that the continuing U.S. business can replace the removed revenue immediately.
- **2026-02-06 Q4 2025 call, management:** Management described the contemplated FY2026 contribution from early prediction/event contracts as small [data_package §6; live FMP transcript TR25Q4]. The reviewed package does not identify the speaker for this excerpt, so it is paraphrased rather than presented as a speaker-specific quotation. The segment forecast assigns no distinct event-contract revenue line.
- **2026-07-31 Q2 2026 call, management:** Management described broader retail engagement while average order sizes declined [data_package §6; live FMP transcript TR26Q2]. The reviewed package does not identify the speaker for this excerpt, so it is paraphrased. The observation supports customer breadth but cautions against equating order growth with matched-share or revenue growth.
- **2025-10-31 Q3 2025 call, Craig Donohue:** “nearly 90% ... new unit and new sales.” [data_package §6; live FMP transcript TR25Q3] Company-wide Data Vantage growth was predominantly unit and new-sales driven rather than price. This is constructive for durability but is not a North American Equities segment allocation.
- **2026-02-06 Q4 2025 call, management:** The initial FY2026 Data Vantage organic target was mid- to high-single-digit growth [data_package §6; live FMP transcript TR25Q4]. The reviewed package does not identify the speaker for this excerpt; the company-level target supplies a conservative recurring-revenue base rate, not a segment guide.
- **2026-05-01 Q1 2026 call, management:** Management upgraded the Data Vantage target to low-double-digit growth [data_package §6; live FMP transcript TR26Q1]. The reviewed package does not identify the speaker for this excerpt. The model fades the stronger sales momentum rather than extending that rate for five years.
- **2026-07-31 Q2 2026 call, management:** Management upgraded the company-wide Data Vantage target again, to low-teens growth [data_package §6; live FMP transcript TR26Q2]. The reviewed package does not identify the speaker for this excerpt. This anchors the near-term bull range for access/data, subject to the undisclosed segment mix.
- **2026-07-31 Q2 2026 SEC release, Craig Donohue:** “We’re investing in opportunities that will define Cboe’s future.” [data_package §6; SEC-filed EX26Q2] Around-the-clock access and clearing expansion support reinvestment, but there is no quantified North American Equities revenue commitment.

[DATA GAP: No standalone North American Equities FY2026 or five-year organic revenue, venue-revenue, or `Operating income (loss)` margin guidance is disclosed in data_package §6.] Company organic net-revenue guidance of mid-to-high teens and Data Vantage low-teens guidance are cross-segment and cannot be copied directly into this segment.

8. Forward growth assumptions

The forecast compounds from the exact TTM gross-revenue base of $1,706.1 million, not FY2025. Venue-level historical dollars are a true non-disclosure, so the driver tables show observable volume/share/capture paths and use them to set a reconciled segment-level accounting build. The first forecast year includes a scenario-specific Canada perimeter haircut; subsequent growth represents the continuing U.S. exchanges, BIDS, and related access/data economics. The haircut is an analyst assumption, not a statement of historical Canada revenue.

Base-case product and venue drivers

Product / driver	FY2021–FY2025 history	Latest observation	Management FY+1 guide	Base CAGR / 2031 endpoint	Modeling implication
U.S. equities industry ADV	11.5% CAGR	20.2bn shares Q2 2026	None by segment	1.7% to 22.0bn	Normalize from elevated activity, then grow with market participation
Cboe U.S. exchange share	14.2% to 10.0%	9.4% Q2 2026	None	8.7% endpoint	Further modest loss, then stabilization; no heroic share recovery

Product / driver	FY2021–FY2025 history	Latest observation	Management FY+1 guide	Base CAGR / 2031 endpoint	Modeling implication
U.S. exchange capture	0.020 to 0.015	0.019 Q2 2026	None	0.019 endpoint	Q2 recovery holds but does not expand beyond the latest rate
BIDS U.S. ADV	16.9% CAGR	237.5m Q2 2026	Broader engagement, qualitative	1.8% to 260m	Volume consolidates after the step-up and grows modestly
BIDS capture	(11.1%) CAGR	0.058 Q2 2026	None	1.7% to 0.063	Monetization recovers slowly, remaining far below FY2021
Access/data exposure	Company-wide 8.4% access/data CAGR	Data Vantage +15% in Q2 context	Low-teens company category	6–7% continuing-book growth	Fade company guide toward mid-single digits; no segment allocation invented
Canada perimeter	ADV 35.7% CAGR	185.8m Q2 2026	Sales process announced	6% first-year gross-revenue haircut	Remove Canada; no disposal proceeds in segment revenue
North American Equities gross revenue	1.6% FY2021–FY2025 CAGR	TTM $1,706.1m	No segment guide	3.05% TTM-to-2031 CAGR	2031 gross revenue $1,983.0m

The base case assumes U.S. industry ADV drops to 19.6 billion in the first forecast year, then rises through 20.2, 20.8, 21.4, and 22.0 billion. Cboe share moves from 9.4% to 9.0%, 8.9%, 8.8%, 8.7%, and 8.7%. Capture moves from $0.019 to $0.018, then returns to $0.019. BIDS ADV steps down to 220 million after the Q2 activity spike and then reaches 230 million, 240 million, 250 million, and 260 million; capture progresses from $0.058 to $0.059, $0.060, $0.061, $0.062, and $0.063. Continuing access/data grows roughly 7% initially and fades toward 6%. Because venue-level revenue weights are not disclosed, these drivers calibrate rather than mathematically produce the segment revenue forecast. The accounting path applies a 6% modeled first-year gross perimeter reduction and then 5.45% annual continuing-business gross growth for four years.

Bull-case product and venue drivers

Product / driver	FY2021–FY2025 history	Latest observation	Management FY+1 guide	Bull CAGR / 2031 endpoint	Modeling implication
U.S. equities industry ADV	11.5% CAGR	20.2bn Q2 2026	None by segment	3.9% to 24.5bn	High participation and volatility persist without a crash assumption
Cboe U.S. exchange share	14.2% to 10.0%	9.4% Q2 2026	None	9.8% endpoint	Product and execution improvements restore about 40 bps
U.S. exchange capture	0.020 to 0.015	0.019 Q2 2026	None	0.021 endpoint	Mix and fee design improve realized capture modestly
BIDS U.S. ADV	16.9% CAGR	237.5m Q2 2026	Broader engagement, qualitative	7.4% to 340m	Conditional network adds brokers and institutional liquidity
BIDS capture	(11.1%) CAGR	0.058 Q2 2026	None	3.8% to 0.070	Monetization partially recovers, still well below FY2021
Access/data exposure	Company-wide 8.4% access/data CAGR	Data Vantage +15% in Q2 context	Low-teens company category	9–10% continuing-book growth	New units and international distribution remain strong
Canada perimeter	ADV 35.7% CAGR	185.8m Q2 2026	Sales process announced	4% first-year gross-revenue haircut	Later close or lower historical contribution limits near-term loss
North American Equities gross revenue	1.6% FY2021–FY2025 CAGR	TTM $1,706.1m	No segment guide	5.50% TTM-to-2031 CAGR	2031 gross revenue $2,230.0m

The bull case is not simply the Q2 2026 growth rate carried forward. Industry ADV reaches 24.5 billion, Cboe exchange share recovers to 9.8%, and on-exchange capture reaches $0.021 per 100 touched shares. BIDS ADV reaches 340 million with capture of $0.070, while access/data holds high-single-digit growth. Gross revenue falls slightly in the first year because Canada exits, then compounds about 8.0% for the remaining four years. This produces 5.50% growth over the entire five-year TTM-to-horizon window.

Bear-case product and venue drivers

Product / driver	FY2021–FY2025 history	Latest observation	Management FY+1 guide	Bear CAGR / 2031 endpoint	Modeling implication
U.S. equities industry ADV	11.5% CAGR	20.2bn Q2 2026	None by segment	(1.2%) to 19.0bn	Post-volatility normalization and weaker turnover reduce the pool

Product / driver	FY2021–FY2025 history	Latest observation	Management FY+1 guide	Bear CAGR / 2031 endpoint	Modeling implication
Cboe U.S. exchange share	14.2% to 10.0%	9.4% Q2 2026	None	8.2% endpoint	Routing and fee competition continue the historical loss
U.S. exchange capture	0.020 to 0.015	0.019 Q2 2026	None	0.015 endpoint	Access-fee pressure and adverse mix reverse the Q2 recovery
BIDS U.S. ADV	16.9% CAGR	237.5m Q2 2026	Broader engagement, qualitative	(7.6%) to 160m	Q2 spike fades and rival ATSs win conditional flow
BIDS capture	(11.1%) CAGR	0.058 Q2 2026	None	0.050 endpoint	Further discounting is required to sustain liquidity
Access/data exposure	Company-wide 8.4% access/data CAGR	Data Vantage +15% in Q2 context	Low-teens company category	2–3% continuing-book growth	Customer optimization and regulatory scrutiny slow monetization
Canada perimeter	ADV 35.7% CAGR	185.8m Q2 2026	Sales process announced	8% first-year gross-revenue haircut	Faster close and greater revenue contribution create a larger step-down
North American Equities gross revenue	1.6% FY2021–FY2025 CAGR	TTM $1,706.1m	No segment guide	(1.30%) TTM-to-2031 CAGR	2031 gross revenue $1,598.0m

The bear case takes management's strategic rationale seriously but assumes execution friction. Canada leaves quickly, expense removal lags, industry ADV normalizes, Cboe share continues down, and BIDS capture falls. Recurring access/data remains positive rather than collapsing, reflecting embedded connectivity, but it is insufficient to offset transaction pressure. The first-year gross-revenue haircut is 8%; continuing gross revenue thereafter grows only about 0.45% annually, leaving the horizon below the TTM base.

The venue assumptions can be audited without inventing venue dollars by converting them into activity-times-capture indices. Each factor below is the 2031 endpoint divided by the Q2 2026 observation; the composite index is the product of its factors. This is a volume/rate bridge, not a claim about segment dollar mix.

Case	Industry ADV factor	Cboe share factor	Exchange capture factor	U.S. on-exchange net-fee index	BIDS ADV factor	BIDS capture factor	BIDS net-fee index
Bear	0.941×	0.872×	0.789×	0.648×	0.674×	0.862×	0.581×
Base	1.089×	0.926×	1.000×	1.008×	1.095×	1.086×	1.189×
Bull	1.213×	1.043×	1.105×	1.398×	1.432×	1.207×	1.728×

The base U.S. exchange bridge is deliberately flat: 8.9% more industry volume is almost entirely offset by a 7.4% share decline, while capture merely holds the latest quarterly rate. The base BIDS bridge requires a 19% net-fee increase despite a four-year FY2021–FY2025 pattern in which volume growth was accompanied by capture compression. The bull bridge is demanding: it requires simultaneous industry growth, share recovery, capture improvement, and a 73% BIDS net-fee-index increase. The bear bridge recognizes that volume and price can deteriorate together. These indices also expose the evidence limit: without disclosed U.S.-exchange, BIDS, Canada, and access/data revenue weights, none can be converted into a sourced dollar contribution.

Canada is handled separately as a scenario perimeter stress. The percentage haircuts are analyst assumptions applied directly to the disclosed TTM gross-revenue base; they are not inferred Canada revenue. First-year net-revenue changes are deliberately larger than the gross haircuts in bear and base because share/capture normalization occurs at the same time.

Case	Assumed Canada gross haircut	Gross dollars removed from TTM base	2027 gross revenue	First-year net-revenue change	2027 net revenue	Four-year continuing gross CAGR	Four-year continuing net CAGR
Bear	8%	$136.5m	$1,569.6m	(10%)	$396.1m	0.45%	1.35%
Base	6%	$102.4m	$1,603.7m	(8%)	$404.9m	5.45%	7.36%
Bull	4%	$68.2m	$1,637.9m	(5%)	$418.1m	8.02%	10.35%

The 4%–8% range is not a valuation of Canada and does not imply transaction proceeds. It is only a bounded operating-perimeter test. The range may prove too narrow because no Canada revenue or cost allocation is disclosed; the aggregate ±5% revenue sensitivity in Section 10 is therefore the more reliable dollar stress. A later closing would keep Canada in reported revenue longer but would not change the 2031 continuing perimeter assumed here.

Year-by-year gross and net revenue path

Case and metric	TTM 2026-06-30	2027-06-30	2028-06-30	2029-06-30	2030-06-30	2031-06-30	Five-year CAGR
Bear gross revenue	1,706.1	1,569.6	1,576.7	1,583.8	1,590.9	1,598.0	(1.30%)
Bear net revenue	440.1	396.1	401.4	406.8	412.3	418.0	(1.03%)
Base gross revenue	1,706.1	1,603.7	1,691.1	1,783.3	1,880.5	1,983.0	3.05%
Base net revenue	440.1	404.9	434.7	466.8	501.2	538.0	4.10%
Bull gross revenue	1,706.1	1,637.9	1,769.3	1,911.2	2,064.5	2,230.0	5.50%
Bull net revenue	440.1	418.1	461.6	509.6	562.6	620.0	7.09%

The sharp difference between first-year and later growth is intentional. Canada is removed in the first forecast year; the continuing U.S. perimeter then grows. Net revenue grows faster than gross revenue in base and bull because recurring fees and improved mix carry little or no liquidity-payment pass-through. The bear case keeps gross and net revenue below the TTM base because weaker share and capture offset recurring growth.

9. Forward `Operating income (loss)` margin assumptions

The exact profit metric is `Operating income (loss)`. No corporate expense, investment gain, interest, tax, or disposal proceeds are allocated here. Corporate Items and Eliminations remain outside the segment and are forecast once in synthesis. The current sealed margin is 13.4% on gross revenue and 52.0% on net revenue.

Case	TTM gross margin	2031 gross margin	Change	2031 net-revenue margin	Specific mechanism
Bear	13.4%	10.5%	(290) bps	40.1%	Canada removal, weaker capture, lower net revenue and stranded fixed costs
Base	13.4%	14.5%	+110 bps	53.4%	Access/data mix, modest scale leverage and stable capture offset perimeter loss
Bull	13.4%	16.5%	+310 bps	59.3%	Higher net revenue, BIDS monetization and fixed-platform leverage

The bear margin decline exceeds 100 basis points because the model assumes an unfavorable numerator-and-denominator interaction. Gross revenue loses Canada and transaction share, while combined segment operating expense cannot be removed proportionately. Net revenue is $418.0 million at the horizon, below the $440.1 million TTM base, but combined operating expense rises to $250.2 million from the derived $211.1 million TTM base. The resulting `Operating income (loss)` is $167.8 million, or 10.5% of gross and 40.1% of net revenue.

The base margin rises 110 basis points. Net revenue reaches $538.0 million as continuing access/data and U.S. venue economics outgrow cost-of-revenue pass-through. Combined segment operating expense reaches $250.5 million, leaving $287.5 million of `Operating income (loss)`. Combined operating expense grows at 3.5% annually, below the 4.1% net-revenue CAGR but above inflation-free stasis. The margin assumption is therefore operating leverage, not an expense freeze.

The bull margin rises 310 basis points because net revenue reaches $620.0 million while combined segment operating expense totals $252.1 million. Gross cost of revenues is larger, but it is already deducted to arrive at net revenue. The model assumes Cboe can serve higher share volume, BIDS interactions, and access/data demand on substantially the same platform estate. A 59.3% margin on net revenue is above the TTM 52.0% and slightly above Q2's 57.6%, representing sustained favorable mix plus additional leverage rather than an entirely new cost structure.

Case	2031 net revenue	Combined segment operating expense	Expense CAGR from $211.1m TTM	2031 `Operating income (loss)`	Arithmetic tie
Bear	418.0	(250.2)	3.45%	167.8	418.0 – 250.2 = 167.8
Base	538.0	(250.5)	3.49%	287.5	538.0 – 250.5 = 287.5
Bull	620.0	(252.1)	3.61%	367.9	620.0 – 252.1 = 367.9

The near-equality of horizon operating-expense dollars across scenarios is deliberate, not a typo. Exchange technology, regulation, cybersecurity, and core staffing are step-fixed. The cases differ primarily in how much net revenue that cost base supports. Bear includes stranded costs; bull includes scale leverage. The table intentionally keeps the expense line combined because the reviewed package does not provide a TTM D&A-versus-other-expense split for this segment. If later disclosure shows that Canada carried a much larger dedicated cost base than assumed, base and bull margin would be conservative. If

shared costs cannot be removed after the sale, bear becomes more likely.

10. Segment rollup and arithmetic reconciliation

Because venue revenue is not separately disclosed, the rollup uses the exact accounting identity of cost of revenues plus revenue less cost of revenues. This is an accounting reconstruction, not a venue-level bottom-up revenue sum. It is fully reproducible without inventing U.S.-exchange, BIDS, access/data, or Canada dollars, and it prevents pass-through liquidity payments from being confused with economic revenue. The indexed venue bridge in Section 8 supplies the operating calibration; it is not presented as a disclosed dollar allocation.

Case	Cost of revenues / pass-through	Revenue less cost / net revenue	Segment gross revenue	Sum check	`Operating income (loss)` **margin**	`Operating income (loss)`
Bear	1,180.0	418.0	1,598.0	1,180.0 + 418.0 = 1,598.0	10.5%	167.8
Base	1,445.0	538.0	1,983.0	1,445.0 + 538.0 = 1,983.0	14.5%	287.5
Bull	1,610.0	620.0	2,230.0	1,610.0 + 620.0 = 2,230.0	16.5%	367.9

All three gross-revenue rows tie exactly. Profit also ties through the operating-expense bridge in Section 9. The base horizon revenue of $1,983.0 million is 16.2% above the TTM base, or a 3.05% five-year CAGR. Base `Operating income (loss)` is 25.6% above the TTM base, or a 4.66% CAGR. Bull revenue and profit CAGRs are 5.50% and 9.95%; bear revenue and profit CAGRs are negative 1.30% and negative 6.03%.

The rollup does not include any Canada/Australia sale consideration, transition-services revenue, disposal tax, or gain; none of those amounts is supplied by the reviewed data package. It does not include Corporate Items and Eliminations, which were a $10.7 million loss in the sealed TTM bridge. It does not include investment income, interest, or tax. Those items are preserved for the consolidated synthesis, consistent with the statutory bridge.

Base-case sensitivity: 2031 gross revenue and margin

2031 gross revenue	13.5% margin	14.5% margin	15.5% margin
$1,883.9m, 5% below base	254.3	273.2	292.0
$1,983.0m, base	267.7	287.5	307.4
$2,082.2m, 5% above base	281.1	301.9	322.7

A one-percentage-point gross-margin change moves horizon `Operating income (loss)` by about $19.8 million at base revenue. A 5% revenue change at a fixed 14.5% margin moves profit by about $14.4 million. Margin is the more powerful single variable because gross revenue includes large pass-through costs; the analysis should therefore monitor net revenue and operating expenses, not just reported gross growth.

Driver sensitivity around the base case

Driver change versus base	Exact effect on the relevant driver index / first-year gross revenue	Dollar-profit effect
U.S. industry ADV 10% lower / higher	U.S. on-exchange net-fee index (10%) / +10%	Not determinable without venue revenue weight
Cboe exchange share 100 bps lower / higher around 8.7%	U.S. on-exchange net-fee index (11.5%) / +11.5%	Not determinable without venue revenue weight
Exchange capture $0.003 lower / higher around $0.019	U.S. on-exchange net-fee index (15.8%) / +15.8%	Not determinable without venue revenue weight
BIDS ADV 20% and capture 15% lower / higher together	BIDS net-fee index (32.0%) / +38.0%	Not determinable without BIDS revenue weight
Access/data CAGR 300 bps lower / higher for four continuing years	Access/data endpoint index about (10.8%) / +11.8%	Not determinable without segment access/data revenue weight
Canada first-year gross haircut 2 points larger / smaller	First-year gross revenue ($34.1m) / +$34.1m	Profit conversion not disclosed

These sensitivities are model diagnostics, not disclosed guidance. The percentage and index effects above are mechanically reproducible; a dollar `Operating income (loss)` effect is not, because Cboe does not disclose venue-level or North American Equities access/data revenue and cost weights. The earlier temptation to assign an arbitrary profit conversion to

those drivers would create false precision. The aggregate revenue/margin grid above is therefore the controlling dollar sensitivity, while the driver table identifies which operating observations could move the case.

11. Key risks and wildcards

[Bear] Continued on-exchange share erosion. Cboe share declined from 14.2% in FY2021 to 9.4% in Q2 2026. Stabilization at 8.7% is a base assumption, not a proven floor. Losses driven by routing economics or execution quality could continue even with healthy industry volume.

[Bear] Capture compression and fee competition. BIDS capture fell from $0.120 to $0.058 per 100 touched shares between FY2021 and Q2 2026. On-exchange capture is also volatile. A venue can report high volume while creating little incremental net revenue if rebates and incentives absorb the gross fee pool.

[Bear/Base] Canada disposal execution and stranded costs. The sale is subject to approvals and separate closing conditions. Closing timing, transition services, cost removal, and tax are not yet fully reflected in a segment guide. A delayed closing raises reported revenue temporarily but prolongs distraction; a fast closing creates a sharper revenue step-down. Shared technology or corporate costs may not leave with the business.

[Bear/Base/Bull] Equity market-structure reform. Changes to tick sizes, access-fee caps, order-protection rules, market-data infrastructure, CAT funding, or retail order competition can redistribute economics among exchanges, wholesalers, and brokers. Regulatory changes can help displayed venues, but the direction is not one-way; lower fee caps or altered protected-quote rules can pressure capture.

[Bear] Off-exchange substitution. Off-exchange share has exceeded half of U.S. equity volume in recent periods according to the SEC's 2026 proposal. BIDS is a hedge, but wholesalers and rival ATSs can capture flow outside Cboe's venues. If BIDS volume also requires lower prices, the hedge protects relevance more than profit.

[Base/Bull] BIDS network monetization. The upside wildcard is conversion of the recent institutional-volume step-up into stable capture and cross-venue distribution. Evidence would be sustained ADV above 225–250 million touched shares with capture stabilizing or rising. Volume growth with capture below $0.055 would not qualify.

[Base/Bull] Access/data durability. Company-wide access, capacity, and market-data revenue has compounded at a high-single-digit rate, and Data Vantage guidance was raised. North American Equities can benefit from higher capacity, new feeds, and global distribution even without market-share recovery. The key limitation is the lack of a segment subscriber or revenue split.

[Bear/Base] Technology and operational resilience. Exchanges have very low tolerance for outages, latency degradation, erroneous market data, or cyber incidents. A serious disruption can cause immediate routing changes, regulatory scrutiny, customer remediation, and reputational damage. Redundant infrastructure is a moat only while it works.

[Bear] Customer bargaining power. Large market makers, retail brokers, and agency routers are sophisticated, price-sensitive, and multi-venue. Concentrated order-flow providers can demand economics that improve their own routing outcomes. Cboe's license portfolio reduces dependence on one venue but not on the largest liquidity providers.

[Bull] Retail participation and extended sessions. Broader retail engagement, around-the-clock access, and new order designs could expand the addressable pool. The model includes only gradual industry growth and no explicit event-contract revenue, leaving upside if new sessions create incremental rather than shifted volume.

[Bear/Base] Data-fee scrutiny. Access and proprietary data are the highest-quality growth layer, but customers and regulators dispute exchange connectivity and data costs. Price-led growth without measurable unit expansion could face resistance. Management's statement that most recent growth came from new units and sales is constructive; continued disclosure is needed.

[Base/Bull] Leadership execution. Heidi Fischer became Global Head of Equities and Spot Markets in June 2026. The management task is to stabilize U.S. exchange relevance, improve BIDS monetization, remove Canada-related costs, and protect customer trust simultaneously. A clean disposal with stable U.S. net revenue would validate the base case; another two years of share and capture decline would challenge it.

Management implications and monitoring dashboard

Management should be judged on four segment outcomes rather than headline market volume. First, continuing U.S. net revenue should grow after the Canada perimeter is removed. Second, Cboe exchange share should stabilize near 9% without

buying flow through structurally worse capture. Third, BIDS capture should stop falling while ADV remains above its pre-2025 level. Fourth, access/data should continue to expand through units and sales rather than price alone.

The most informative quarterly scorecard is therefore: U.S. industry ADV; Cboe exchange share; on-exchange capture; BIDS ADV and capture; North American Equities net revenue; `Operating income (loss)` margin on both gross and net revenue; and any disclosure on Canada closing or cost removal. Gross revenue alone is a poor dashboard because it is dominated by pass-through liquidity expense. A base-case validation over the next four quarters would be continuing net revenue at or above the roughly $105–115 million quarterly range despite the perimeter change, exchange share around 9%, capture near $0.018–$0.019, and BIDS capture no lower than the Q2 2026 rate.

The strategic decision to exit Canada is reasonable if management can redeploy attention and capital to higher-return derivatives, clearing, and data, but this appendix does not credit those benefits to North American Equities. Nor does it punish the segment for a disposal loss or reward it for sale proceeds. Its forecast is a continuing-business operating test. That separation allows the combined synthesis to evaluate capital allocation and consolidated earnings without double counting.

Scenario summary

Case	Segment TTM+5y Revenue	Exact profit metric	Segment TTM+5y Profit Margin	Segment TTM+5y Profit	Probability
Bear	$1,598.0m	`Operating income (loss)`	10.5%	$167.8m	25%
Base	$1,983.0m	`Operating income (loss)`	14.5%	$287.5m	55%
Bull	$2,230.0m	`Operating income (loss)`	16.5%	$367.9m	20%

The 25% / 55% / 20% weights are intentionally non-uniform. Base receives the majority because recent quarterly net revenue and profit conversion are strong, but it is capped at 55% because the Canada perimeter and venue revenue weights are undisclosed. Bear exceeds bull because the disclosed record already contains persistent U.S. exchange-share erosion and BIDS capture compression. Bull is lowest because it requires four favorable developments together: sustained industry activity, share recovery, exchange capture improvement, and BIDS monetization, plus durable access/data growth whose segment allocation is not disclosed.

The probability-weighted horizon output is $1,936.2 million of segment revenue and $273.7 million of `Operating income (loss)`, before any corporate, disposal, interest, investment, or tax item. The arithmetic is $1,598.0m × 25% + $1,983.0m × 55% + $2,230.0m × 20% = $1,936.2m, and $167.8m × 25% + $287.5m × 55% + $367.9m × 20% = $273.7m after rounding. This is a scenario-weighted diagnostic, not a fourth forecast case. The core conclusion is restrained: North American Equities should remain relevant and profitable, but its market-share and capture history do not justify treating it as a wide-moat compounder. Most credible upside comes from access/data mix, BIDS monetization, and fixed-platform leverage; most credible downside comes from continued flow competition plus incomplete cost removal after Canada exits.

Data gaps and model boundaries

- **[DATA GAP]** Consistent venue-level revenue and `Operating income (loss)` for the four U.S. exchanges, BIDS, and Canada are not disclosed. The appendix does not allocate historical dollars among them.
- **[DATA GAP]** North American Equities-only access, capacity, market-data, subscriber, customer, and port counts are not disclosed. Company-wide figures are used only as qualitative and growth-rate anchors.
- **[DATA GAP]** There is no segment-specific FY2026 or five-year organic revenue or margin guide.
- **[DATA GAP]** The reviewed package gives no buyer, agreed consideration, Canada-specific sale proceeds, closing date, segment disposal gain, or tax effect for the Canada/Australia sales process. None is assumed in segment profit.
- **[MODEL BOUNDARY]** Canada first-year gross-revenue haircuts of 8%, 6%, and 4% in bear, base, and bull are explicit analyst assumptions, tested by sensitivity and not represented as historical revenue.
- **[MODEL BOUNDARY]** Corporate Items and Eliminations remain outside the segment. The sealed TTM corporate loss of $10.7 million is preserved for synthesis.

Appendix B3 - Europe and Asia Pacific

Europe and Asia Pacific — Segment Deep Dive

Company: Cboe Global Markets (CBOE) **Forecast base:** TTM ended 2026-06-30 **Forecast horizon:** 2031-06-30, exactly five calendar years **Reporting currency:** USD millions unless stated otherwise **Exact segment profit metric:** `Operating income (loss)` **Primary operating view:** gross segment revenue, net revenue after transaction-based expenses, and `Operating income (loss)` shown together **Source controls:** reviewed `data_package.md` SHA-256 `460b7749c9a305c38cf2d0c2cc340269628dda79c0c2b73a8e494110872cb240`; sealed `statutory_bridge.json` SHA-256 `fed38c48503d96b1b8db579a514485710836c90ec2a989f76c0ad47984ae74bc`

This appendix forecasts the Europe and Asia Pacific segment as it was legally reported at the TTM anchor and as it is likely to exist at the 2031 horizon. The distinction matters. The TTM contains a shrinking contribution from businesses that Cboe has closed or agreed to sell, while the durable earning engine is increasingly European equities, European clearing, and related data/access services. The model therefore does not extrapolate the segment's recent 20% quarterly net-revenue growth or its reported perimeter mechanically.

0. Segment boundary and taxonomy note

Cboe's reportable-segment taxonomy remained stable through Q2 2026: Europe and Asia Pacific contained European equities, Cboe Clear Europe, Australia, and the then-existing Japan platform [data package §1, lines 117–131]. The economic perimeter did not remain stable. The reviewed package records the Japanese-equities and CEDX wind-down effects and the announced Australia/Canada sales process, but it does not provide venue-level revenue, closing dates, or transaction consideration [data package §§9–10]. Canada belongs to North American Equities and is never removed from, or assigned to, this segment. The horizon forecast excludes Japan, CEDX, and Australia from owned recurring operations as an explicit perimeter assumption. It assigns no disposal proceeds, gain, or buyback benefit to Europe and Asia Pacific because none is disclosed in the reviewed package. Corporate items remain outside this segment exactly as required by the sealed bridge.

The FY2021–FY2025 historical series is comparable at the reportable-segment level, but the TTM-to-horizon bridge is a continuing-operations forecast rather than a like-for-like extrapolation. In practical terms, the segment is becoming “Europe” faster than its statutory name is changing. Any synthesis that simply compounds the FY2025 or TTM segment total without a perimeter adjustment will overstate owned 2031 revenue. Conversely, treating every exit as pure lost profit would assume away any cost removal. Because the package does not disclose venue dollars or stranded costs, both the exit share and cost removal below remain analyst scenarios rather than historical facts.

1. What this segment actually is

The core customer is an institutional market participant that needs to trade, clear, settle, connect to, or consume data from European securities markets. Customers include broker-dealers, electronic liquidity providers, agency brokers, banks, asset managers, custodians, clearing members, retail intermediaries, and vendors that redistribute exchange data. Cboe provides multiple execution mechanisms rather than one monolithic order book: lit continuous trading, dark books, periodic auctions, block execution through BIDS Europe, closing-cross functionality, trade reporting, and pan-European routing/access. This breadth lets a customer address different order sizes and best-execution needs through a common technology and commercial relationship.

European equities revenue is driven by addressable industry notional, Cboe's share of that notional, and net capture. The reviewed data package shows FY2025 European matched ADNV of €12.8 billion, 25.0% market share, and €0.269 basis points of net capture. Q2 2026 market share was 24.4%, demonstrating that recent revenue strength was primarily an industry-volume and capture story rather than an unchecked share-gain story [data package §0a, Material KPI family history and Additional venue KPI tables; §5 lines 302–315]. Pricing is schedule-based and highly competitive. Explicit trading fees can be low because liquidity rebates, tiering, and market-maker incentives are part of the product. The effective monetization variable is therefore net capture, not a headline tariff.

Cboe Clear Europe is the post-trade engine. It novates transactions, nets obligations, manages default resources, and connects to national settlement systems. Revenue depends on trades cleared, net settlements, clearing prices, membership/service usage, and newer services such as securities-financing transaction clearing. The data package records 1,464.6 million trades cleared and 13.6 million net settlements in FY2025, versus 1,244.2 million and 9.9 million in FY2021. It also records a €1.2 billion committed liquidity facility and a default waterfall beginning with dedicated Cboe resources,

followed by member funds and capped assessments [data package §0a, lines 49–115]. Clearing is thus not a capital-free software royalty: the risk infrastructure, regulatory capital, liquidity, and operational resilience are part of what customers buy.

Data and access services monetize market-data feeds, connectivity, ports, capacity, and analytics associated with Cboe's venues. The issuer does not disclose a stable subscriber count or segment-specific data/access dollars. At company level, access and capacity plus market data grew from $532.8 million in FY2021 to $735.3 million in FY2025, an 8.4% CAGR, and roughly half of Q2 2026 data sales came from outside the United States [data package §0a, Recurring data and access economics]. This is a useful base rate, not a license to assign companywide data growth entirely to Europe and Asia Pacific.

The go-to-market is infrastructure-led and relationship-intensive. A new venue can publish a competitive fee schedule quickly, but it cannot quickly reproduce deep liquidity, member certifications, surveillance, regulatory permissions, clearing interoperability, CSD links, and the workflow embedded in broker smart-order routers. Cboe's distribution also compounds across services: execution generates market data; clearing can lower customer balance-sheet usage; connectivity supports multiple products; and new mechanisms can be introduced to an existing network. The same interdependence creates regulatory exposure because authorities determine transparency, market-access, clearing, and settlement rules.

2. Current economics

FY2025 gross segment revenue was $378.6 million, equal to 8.0% of Cboe's consolidated gross revenue. FY2025 `Operating income (loss)` was $53.9 million, or 14.2% of gross revenue [data package §1 line 125; §3 lines 171–178]. For the TTM ended 2026-06-30, the repaired reviewed package and sealed statutory bridge report `Operating income (loss)` of $108.4 million with a positive sign [data package §3 lines 180–187; §3a lines 234–255]. The four disclosed quarterly net-revenue observations—$69.1 million, $69.9 million, $84.9 million, and $84.8 million—sum to $308.7 million [data package §5 line 304]. That produces a TTM `Operating income (loss)` margin of 35.1% on net revenue.

The repaired reviewed package now supplies the complete TTM bridge with SEC/QF provenance: $423.7 million of gross revenue plus signed transaction-based expenses of $(115.0) million equals $308.7 million of net revenue, and the exact issuer metric `Operating income (loss)` is $108.4 million [data package §3 lines 180–187]. The resulting margins are 25.6% on gross revenue and 35.1% on net revenue. No residual or analyst-created revenue bridge remains.

The three denominator views reconcile:

TTM ended 2026-06-30	USD m	Arithmetic	Source status
Gross segment revenue	423.7	QF_TTM_ARITHMETIC: FY2025 less H1 2025 plus H1 2026	Data package §3 rows 180–187
Transaction-based expenses	(115.0)	Exact signed segment cost-of-revenue value	Data package §3 rows 182–186
Net revenue	308.7	423.7 – 115.0 = 308.7; also 69.1 + 69.9 + 84.9 + 84.8	Data package §§3 and 5
`Operating income (loss)`	108.4	Sealed bridge segment line	Data package §§3 and 3a
Margin on gross revenue	25.6%	108.4 / 423.7	Calculated
Margin on net revenue	35.1%	108.4 / 308.7	Calculated

The sharp improvement from FY2025's 14.2% gross margin to the TTM's 25.6% should not be treated as a simple steady-state jump. The TTM contains real volume and capture strength, but it also spans closures, restructuring, asset classification changes, and cost removal. Q2 2026 alone produced $84.8 million of net revenue, 20% year-over-year growth, and a 49.1% margin on net revenue [data package §5 row 293]. That quarter is evidence of operating leverage, not proof that a 49% margin is already normalized across a full volatility and investment cycle.

Capital intensity is low in ordinary property-and-equipment terms but meaningful in regulated-capital and resilience terms. Cboe Clear Europe held $128.1 million of actual capital against a $76.0 million minimum at FY2025; Cboe Europe held $71.2 million against $36.6 million, and Cboe NL held $21.1 million against $10.3 million [data package §0a, Regulatory-capital snapshot]. Those balances cannot be casually swept to the parent. The platform also requires continuous technology spending, cyber defense, redundant connectivity, regulatory change work, and clearing liquidity. The correct economic description is “asset-light revenue with capital- and reliability-sensitive tail obligations,” not “pure software.”

3. Unit economics

European equities execution

Execution net revenue can be framed as industry ADNV × Cboe market share × capture × trading days, with smaller additions from auctions, reporting, block trading, and access. Industry activity is the largest cyclical input. Cboe cannot control whether Europe experiences high volatility, abundant issuance, or low investor turnover. It can influence share through execution quality, breadth of order types, fee tiers, uptime, and broker integration. It can influence capture, but raising price too aggressively can reduce liquidity and route flow elsewhere.

The favorable unit-economic path is a stable 24%–25% share, modest industry-notional growth, and flat-to-rising capture while fixed venue costs grow more slowly than net revenue. The unfavorable path is share erosion combined with fee competition: even growing industry volume can then fail to translate into profit. The historical data illustrate both sides. European ADNV rose from €9.8 billion in FY2024 to €12.8 billion in FY2025, market share rose from 23.6% to 25.0%, and capture increased from €0.255 to €0.269 basis points. Yet Q2 2026 share was 24.4%, below FY2025, so the model assumes no effortless share ratchet.

Cboe Clear Europe

Clearing earns small amounts on enormous numbers of trades and settlements. FY2025 fee per trade was approximately €0.009 and net fee per settlement €1.012. Trade-level pricing is tiny because clearing is competitive and scale-driven; profit comes from processing density, netting efficiency, membership breadth, and spreading compliance/technology costs over large volumes. The key distinction is between trades cleared and net settlements. Higher netting can reduce settlement counts relative to trades while improving customer economics, so a simplistic “more settlements always better” forecast is wrong.

New SFT clearing can add a different revenue pool. The reviewed package says European clearing targets securities-financing transactions but discloses neither SFT revenue, member adoption, nor a dated product-volume series [data package §6, line 342]. Central clearing can reduce bilateral counterparty exposures and risk-weighted assets, but adoption depends on lender/borrower onboarding, collateral economics, interoperability, and regulatory treatment. The revised base case gives SFT only a modest contribution, the bull case assumes material adoption, and the bear case assumes it remains niche.

Clearing margin can expand faster than venue revenue when incremental activity uses existing risk, technology, and member infrastructure. It can also reverse abruptly. A default event, operational outage, member concentration problem, or regulatory capital increase can impose costs far larger than routine fee revenue. This appendix therefore does not value regulatory capital as surplus cash and does not assume the current default waterfall eliminates tail risk.

Data and access

Data and access carry better incremental economics than transaction revenue because distributing an additional feed or connection usually adds less cost than building the underlying venue. The moat is strongest where a dataset is proprietary, required for price discovery, or embedded in a customer's systems. It is weaker where regulators mandate standardized access, an EU consolidated tape substitutes for direct feeds at some use cases, or customers rationalize duplicate connections.

The segment does not disclose customer counts, churn, recurring contract value, or Europe-specific data dollars. Accordingly, the model uses the companywide 8.4% FY2021–FY2025 access/data CAGR as a structural reference and the current low-teens Data Vantage guide as a near-term cross-check, not as segment-specific guidance. Pricing is only one lever; the data package notes management's statement that nearly 90% of a recent Data Vantage increase came from new units and new sales. For Europe, international distribution and more services per customer are therefore more important than an aggressive price-only thesis.

Cost base and reinvestment

The cost base includes compensation, technology support, depreciation/amortization, professional services, travel, facilities, and regulatory fees. A venue or clearing house has high fixed costs and low normal marginal processing costs, which explains the segment's operating leverage. But the fixed-cost label can mislead: regulatory and technology complexity can step up rather than remain flat. Shorter settlement cycles require coordination among trading venues, CCPs, CSDs, clearing members, and settlement agents. Around-the-clock access and new asset classes create similar step costs.

Portfolio exits improve margin only when stranded cost is actually removed. Technology licenses, data-center commitments, legal entities, transition-service obligations, and shared staff can outlive the revenue. The bear case assumes slower stranded-cost removal and renewed pricing investment. The base case assumes most exit-related costs are removed by the

second forecast year while Cboe reinvests part of the savings in European clearing and data. The bull case assumes the retained platform absorbs new volume with modest incremental cost and that SFT economics mature without a commensurate capital burden.

4. Competitive dynamics

European trading is fragmented by design. Cboe competes with incumbent national exchanges and pan-European venues, including Euronext, Deutsche Börse/Xetra, LSEG's London Stock Exchange and Turquoise, Nasdaq Nordic, and SIX/Aquis. It also competes with systematic internalisers and bilateral/off-exchange workflows for order flow. Cboe's own reviewed 24.4% Q2 2026 share makes it a leader, but not a monopoly. Its share can move several percentage points without the underlying market growing or shrinking.

The competitor set includes connected infrastructure groups with technology and customer distribution, not only stand-alone challengers. SIX/Aquis, Turquoise, Euronext, and the national exchanges can bundle execution, data, clearing, or issuer relationships. The reviewed package does not quantify their share or forecast activity, so the scenario model treats competitive intensity through Cboe's own share and capture endpoints rather than importing an unreviewed competitor statistic.

Cboe's response is product breadth. In Q1 2026 it reported leadership in periodic auctions and strength in BIDS Europe, closing-cross, retail and block services. This matters because order flow is not homogeneous. An asset manager working a block values different execution characteristics from a retail broker seeking price improvement or a market maker optimizing speed and rebates. The strategy can preserve share even when lit-continuous trading loses relative importance. It also raises execution complexity and surveillance obligations.

Clearing has a separate competitive map. On Cboe Europe venues, participants can choose among several CCPs, and user-choice or interoperable clearing can shift activity without changing execution-market share. Because the reviewed package provides Cboe Clear Europe activity but no comparable competitor-volume series, the forecast does not convert broad network-coverage claims into revenue.

Price competition is real because brokers can route among venues and CCPs. The strongest pricing power is not a blunt fee increase; it is the ability to charge for differentiated functionality, proprietary data, connectivity, or balance-sheet efficiency while maintaining liquidity. Cboe's clearing and execution relationship can create a bundled advantage, but regulators may resist closed vertical silos. Conversely, mandatory open access or expanded interoperability can open incumbent venue flow to Cboe Clear Europe. Regulation therefore changes the distribution of economics, not merely compliance cost.

Europe's move toward a shorter settlement cycle is both opportunity and risk. A well-prepared CCP can help members compress processes and reduce risk, but the transition requires investment and can expose operational faults. The equity consolidated tape is similarly two-sided: it may broaden market transparency and usage while reducing the scarcity value of some direct-feed use cases. The reviewed package does not quantify either effect, so both enter the scenario logic as margin and data-growth sensitivities rather than as booked revenue.

Substitution risk comes from systematic internalisers, dark/bilateral protocols, internal broker matching, and technology vendors that lower multi-venue switching costs. The counterweight is best-execution regulation and the need for reliable, transparent benchmarks. Cboe does not need every trade to occur on a central limit order book; it needs a meaningful share of the workflows that institutions use as market structure evolves. Its periodic auctions and BIDS franchise show that it can capture changes in execution style, but durability requires continuous product iteration.

5. Moat at the segment level

The segment has a real but conditional moat. Its strongest component is network density: brokers route where liquidity resides, market makers quote where order flow appears, and clearing members prefer infrastructure that nets many obligations across many venues. Cboe Clear Europe's connectivity to numerous venues and national settlement systems is costly to recreate. Venue and CCP licenses, surveillance capability, regulatory relationships, default management, and years of member testing create a meaningful entry barrier.

The second moat is workflow embed. Smart-order routers, market-data handlers, risk controls, clearing selections, and operational playbooks are coded around venue identifiers and service behavior. Switching is possible—European regulation encourages it—but not frictionless. Reliability earns trust slowly and can lose it quickly. This creates a valuable incumbent position but not carte blanche on price.

The third moat is breadth. Cboe can offer lit, dark, block, auction, closing, clearing, access and data capabilities across jurisdictions. That improves the value of a connection and sales relationship. The reviewed package does not provide a consistent BIDS Europe customer-count or share series, so the moat case relies on the disclosed venue and clearing activity rather than an isolated marketing statistic.

The moat is weaker in three places. First, basic matching technology is replicable by well-funded exchanges and vendors. Second, regulation can standardize data or force access, shifting economics among incumbents. Third, liquidity is mobile when fees, performance, or execution quality deteriorate. SIX/Aquis, Turquoise, Euronext, and national exchanges already possess licenses, networks, and customers. This is therefore not a winner-take-all proprietary-index moat like Cboe's best U.S. options products.

Over five to ten years, the moat should preserve an attractive position if Cboe maintains uptime, competitive economics, and member trust while extending clearing and data. The 2046-style durability test is less certain. A pan-European clearing and execution utility should still be needed, but the identity of the highest-margin venue could change with regulation, consolidation, distributed execution, or a major operational event. Segment verdict: **narrow-to-moderate moat, durable enough for a five-year forecast, but not immune to share loss or regulatory redistribution**.

6. Historical growth rates

The reportable segment is the finest consistently dollar-disclosed unit. Europe equities, Cboe Clear Europe, Australia, Japan, and CEDX do not have a consistent five-year dollar revenue series in the reviewed package, so none is back-solved. This table reproduces the reviewed segment total and calculates the three-year CAGR from FY2022 to FY2025.

Product / sub-segment	FY2021 gross rev	FY2022 gross rev	FY2023 gross rev	FY2024 gross rev	FY2025 gross rev	FY2022–FY2025 CAGR	Most recent YoY	Data-package cite
Europe and Asia Pacific segment total	$240m [§3 row 175]	$265m [§3 row 175]	$281m [§3 row 175]	$324m [§3 row 175]	$379m [§3 row 175]	12.7% [§3 rows 175–176]	16.8% [§3 row 176]	`data_package.md` §3, Europe and Asia Pacific table
Europe equities revenue	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	n/a [§4 row 276]	n/a [§4 row 276]	`data_package.md` §4, Europe/APAC product row
Cboe Clear Europe revenue	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	n/a [§4 row 276]	n/a [§4 row 276]	`data_package.md` §4, Europe/APAC product row
Australia, Japan, and CEDX revenue	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	Not separately disclosed [§4 row 276]	n/a [§4 row 276]	n/a [§4 row 276]	`data_package.md` §4, Europe/APAC product row

The exact arithmetic on the rounded segment series is within the required 2% tolerance: $240m × 1.101 = $264.2m versus $265m; $265m × 1.063 = $281.7m versus $281m; $281m × 1.153 = $324.0m versus $324m; and $324m × 1.168 = $378.4m versus $379m. The three-year CAGR is `(379 / 265)^(1/3) − 1 = 12.7%`. No smoothing or perimeter adjustment is hidden in the historical table.

Venue KPIs provide the economic history that dollar disaggregation cannot:

Driver	FY2021	FY2022	FY2023	FY2024	FY2025	FY2022–FY2025 change	Latest interim	Data-package cite
Europe matched ADNV	€7.7bn [§0a KPI row]	€10.8bn [§0a KPI row]	€9.4bn [§0a KPI row]	€9.8bn [§0a KPI row]	€12.8bn [§0a KPI row]	5.8% CAGR [§0a KPI row]	€15.5bn implied by industry €63.4bn × 24.4% share [§0a and §5]	`data_package.md` §0a and §5
Europe equities market share	18.1% [§0a additional KPI]	23.5% [§0a additional KPI]	24.0% [§0a additional KPI]	23.6% [§0a additional KPI]	25.0% [§0a additional KPI]	+150 bps [§0a additional KPI]	24.4% in Q2 2026 [§5 row 310]	`data_package.md` §0a and §5
Europe net capture	€0.267 bps [§0a additional KPI]	€0.231 bps [§0a additional KPI]	€0.226 bps [§0a additional KPI]	€0.255 bps [§0a additional KPI]	€0.269 bps [§0a additional KPI]	5.2% CAGR [§0a additional KPI]	€0.289 bps in Q2 2026 [§0a additional KPI]	`data_package.md` §0a
Cboe Clear Europe trades cleared	1,244.2m [§0a KPI row]	1,499.9m [§0a KPI row]	1,172.0m [§0a KPI row]	1,229.2m [§0a KPI row]	1,464.6m [§0a KPI row]	(0.8%) CAGR [§0a KPI row]	422.5m in Q2 2026 [§5 row 311]	`data_package.md` §0a and §5
Cboe Clear Europe net settlements	9.9m [§0a KPI row]	10.3m [§0a KPI row]	10.0m [§0a KPI row]	11.2m [§0a KPI row]	13.6m [§0a KPI row]	9.7% CAGR [§0a KPI row]	4.0m in Q2 2026 [§5 narrative]	`data_package.md` §0a and §5

The KPI arithmetic is internally coherent. FY2022–FY2025 matched-ADNV CAGR is `(12.8 / 10.8)^(1/3) − 1 = 5.8%`; net-capture CAGR is `(0.269 / 0.231)^(1/3) − 1 = 5.2%`; trades-cleared CAGR is `(1,464.6 / 1,499.9)^(1/3) − 1 = −0.8%`; and settlements CAGR is `(13.6 / 10.3)^(1/3) − 1 = 9.7%`. The very different trades and settlements paths are why the forward model does not use a single clearing-volume scalar.

7. Management guidance

The reviewed data package contains three segment-relevant forward statements and one explicit model instruction. None is numeric segment guidance.

- **Q3 2025 call, data package §6 line 340:** “future growth potential.” Management highlighted European equities and clearing after deciding that Australia and Japan were non-core. Interpretation: capital allocation is favoring the retained European network, but the phrase supplies no growth rate or margin floor.
- **Q4 2025 call, data package §6 line 341:** “healthy secular tailwinds.” Interpretation: this supports a multi-year volume and clearing-adoption thesis, but it does not justify extrapolating 20% quarterly growth.
- **Q2 2026 call, data package §6 line 342:** “clearing as an enabler.” Interpretation: European SFT clearing can extend the network beyond cash-equity trade clearing. The model treats SFT as an adoption option, not committed revenue.
- **Data package §6 line 343 model implication:** isolate continuing Europe/Clear economics from the Australia sale and Japan closure because FY2025 and horizon perimeters differ. This is implemented explicitly below.

[DATA GAP: no numeric FY2026 or five-year revenue, market-share, clearing-volume, or `Operating income (loss)` guidance is disclosed specifically for Europe and Asia Pacific.] Companywide organic net-revenue guidance of mid-to-high teens and Data Vantage guidance of low teens are cross-checks only. The model does not assign the companywide guide to this segment.

8. Forward growth assumptions

Model architecture and forecast allocation

The issuer does not disclose TTM revenue by venue. A bottoms-up driver test therefore requires an analyst allocation, but the allocation must not be mistaken for history. The following weights partition the disclosed $308.7 million TTM net-revenue total for sensitivity mechanics only. They are explicit, sum to 100%, and are not evidence that Australia plus Japan/CEDX contributed 7% of TTM revenue. The reported segment remains the controlling forecast unit; the allocation is only a way to expose how retained execution, clearing, data, and exited activity affect the scenario.

Forecast driver bucket	Illustrative TTM weight	Illustrative TTM net revenue	Historical anchor used	Horizon ownership treatment
European equities execution	42%	129.7	ADNV, market share, capture	Retained
Cboe Clear Europe	27%	83.3	Trades, settlements, unit fees	Retained
Europe data and access	24%	74.1	Companywide access/data base rate	Retained
Australia	5%	15.4	No venue dollars disclosed	Zero owned revenue at horizon in all cases
Japan and CEDX / other exited activity	2%	6.2	No venue dollars disclosed	Zero owned revenue at horizon in all cases
Total	100%	308.7	Disclosed TTM net revenue	Reconciles exactly

The 42%/27%/24%/5%/2% mix is an analyst sensitivity scaffold, not an issuer-disclosed product split. The 7% combined exit bucket is deliberately visible because the reviewed package says venue dollars are a true non-disclosure. Changing that bucket changes the retained revenue base and the apparent margin uplift; synthesis must not treat the weights as reported facts. Sale proceeds are not part of segment revenue or `Operating income (loss)`.

Base case growth assumptions

Product / driver	Historical reference	Latest indicator	Management FY+1 guide	Base CAGR TTM→2031	Base case mechanism
European equities execution	ADNV 5.8% and capture 5.2% FY2022–FY2025	24.4% share; €0.289 bps Q2 capture	None numeric	7.0%	Industry ADNV grows mid-single digits; share stays near 24%–25%; capture holds around current levels; auctions/block/retail mix adds modestly
Cboe Clear Europe	Trades (0.8%); settlements +9.7%	422.5m trades and 4.0m settlements in Q2	“clearing as an enabler”	8.0%	Cash-equity activity grows mid-single digits; fee realization remains disciplined; SFT contributes modestly but is not assumed to reach network scale in the base case
Europe data and access	Companywide access/data +8.4% FY2021–FY2025	International sales breadth; no subscriber count	Company Data Vantage low teens, not segment-specific	9.0%	More units, feeds and connections; pricing is secondary; consolidated-tape substitution remains manageable
Australia	Venue dollars not disclosed	Sales process announced	No segment guide	n/a	Owned recurring revenue falls to zero by horizon; transition services are temporary
Japan and CEDX / other exited	Venue dollars not disclosed	Wind-down effects disclosed	Exit already contemplated	n/a	No owned recurring revenue at horizon

The revised base case decelerates the segment from 16.8% FY2025 gross growth and 20% Q2 2026 net growth to a 6.3% five-year net-revenue CAGR. This is not a generic maturation assumption. The first two years absorb the assumed Australia/Japan/CEDX perimeter loss, European share is held roughly flat rather than extrapolated, and clearing/data are allowed to outgrow execution. Clearing is reduced from the draft's unsupported 11% CAGR to 8%: that is below settlement growth and the companywide low-teens data guide, but above the negative three-year trade-count CAGR because preferred clearing and modest SFT uptake may improve mix. No separate SFT revenue history exists in the package.

Bull case growth assumptions

Product / driver	Historical reference	Latest indicator	Management anchor	Bull CAGR TTM→2031	Bull case mechanism
European equities execution	ADNV 5.8%; capture 5.2% FY2022–FY2025	Q2 share 24.4%, below FY2025	“future growth potential”	10.0%	Industry ADNV compounds high single digits, Cboe share reaches about 27%, and capture holds above €0.30 bps through differentiated mechanisms
Cboe Clear Europe	Settlements +9.7%; FY2025 trades +19%	Q2 activity remains elevated	“clearing as an enabler”	13.0%	Preferred clearing broadens and SFT adoption becomes material; the case still stays below the unsupported 16% draft assumption because the reviewed package discloses neither SFT revenue nor member adoption
Europe data and access	Companywide access/data +8.4%	Roughly half of Q2 data sales outside U.S.	Company Data Vantage low teens	13.0%	International distribution, new datasets and higher connection density sustain low-teens growth without relying solely on price
Australia	No consistent dollars	Sales process announced	Portfolio pruning	n/a	Zero owned horizon revenue; no proceeds assigned
Japan and CEDX / other exited	No consistent dollars	Wind-down effects disclosed	Portfolio pruning	n/a	Zero owned horizon revenue

The revised bull case does not keep the recent 20% segment growth rate for five years. It produces a 10.1% net-revenue CAGR because even successful European execution and clearing must overcome the removal of APAC businesses. The clearing assumption is reduced from 16% to 13%; it still requires material SFT and preferred-clearing adoption, but no longer presumes network scale without disclosed revenue or member evidence. The case also requires share/capture strength, not simply more volatile markets.

Bear case growth assumptions

Product / driver	Historical reference	Latest indicator	Management anchor	Bear CAGR TTM→2031	Bear case mechanism
European equities execution	Share reached 25.0% in FY2025	Q2 share eased to 24.4%	No numeric floor	1.0%	Low industry turnover, share slips toward 23%, capture falls toward €0.275 bps, and SI/off-exchange competition absorbs growth
Cboe Clear Europe	Trades slightly down FY2022–FY2025	Strong Q2 volume	“healthy secular tailwinds”	2.0%	Cash clearing grows slowly; SFT remains niche; T+1 and capital costs consume benefits
Europe data and access	Companywide +8.4% historical base rate	No subscriber/churn disclosure	Company guide not segment-specific	4.0%	Customer rationalization and consolidated-tape substitution limit growth; modest unit expansion persists
Australia	No consistent dollars	Sale timing subject to approvals	No numeric segment guide	n/a	Excluded by horizon; failure to sell would add low-margin revenue, not necessarily value
Japan and CEDX / other exited	No consistent dollars	Wind-down effects disclosed	No guide	n/a	Zero horizon revenue; some stranded cost remains

The bear case is not a collapse scenario. It assumes European market infrastructure remains necessary but Cboe fails to turn infrastructure relevance into attractive incremental economics. Retained operations grow, yet the portfolio exit absorbs almost all of that growth. Net revenue reaches only $318.4 million in 2031, 0.6% annual growth from the TTM anchor.

Venue, market-share, capture, and clearing endpoints

Driver	TTM / latest anchor	Bear 2031	Base 2031	Bull 2031
European industry ADNV growth	Q2 industry €63.4bn	2% CAGR	5% CAGR	7% CAGR
Cboe European equities share	24.4% Q2 2026	23%	25%	27%
European net capture	€0.289 bps Q2 2026	€0.275 bps	€0.295 bps	€0.320 bps
Cash-equity clearing activity	FY2025 1,464.6m trades	2% CAGR	6% CAGR	8% CAGR
Settlement activity	FY2025 13.6m	2% CAGR	7% CAGR	9% CAGR
SFT contribution	Early launch	Niche	Meaningful	Network-scale
Australia owned revenue	Included partly in TTM	Zero	Zero	Zero
Japan/CEDX owned revenue	Partial TTM legacy	Zero	Zero	Zero

The execution endpoints are directionally consistent with the driver CAGRs but are not a separate revenue layer; adding them to the driver forecast would double count. Capture is a net-revenue variable. Clearing trades and settlements are both shown because netting can make them diverge.

Year-by-year forecast cadence

Period end	Bear net revenue	Base net revenue	Bull net revenue	Main transition
TTM 2026-06-30	308.7	308.7	308.7	Reported perimeter
2027-06-30	303.0	318.0	325.0	Australia/Japan/CEDX exit drag; limited transition-service revenue
2028-06-30	307.0	338.0	357.9	Continuing Europe becomes the full owned base
2029-06-30	311.0	359.8	399.7	Clearing and data begin to drive mix
2030-06-30	315.0	387.9	446.5	Operating network scales
2031-06-30	318.4	418.3	498.9	Fully continuing perimeter

The cadence makes the deceleration explicit. Base net revenue grows only 3.0% in the first year because exits offset healthy continuing growth, then advances from the retained driver base. Bull does not leap immediately to its 10.1% five-year CAGR; clearing adoption builds over time. Bear stays nearly flat because retained growth and perimeter loss almost cancel. The 2027–2028 transition-service amounts are scenario residuals, not disclosed contractual revenue.

Revenue sensitivity around the base case

Variable changed from base	Down assumption	2031 net revenue	Up assumption	2031 net revenue
European execution CAGR	5%	402.0	9%	436.0
Clearing CAGR	6%	407.4	10%	430.1
Data/access CAGR	7%	408.2	11%	429.2
All retained-driver CAGRs	2 points lower	380.9	2 points higher	458.5

The revised base endpoint is $418.3 million. Execution has the largest one-variable dollar sensitivity because it has the largest illustrative TTM weight; data has the highest base growth assumption, while clearing is capped at 8% pending disclosed SFT evidence. These are model sensitivities, not new historical disclosures.

9. Forward `Operating income (loss)` margin assumptions

`Operating income (loss)` is the exact issuer metric in the sealed bridge. No adjusted EBITDA, corporate expense, interest income, investment gain, tax, disposal proceeds, or consolidated bridge item is allocated here. Corporate Items and Eliminations remain a separate negative line for synthesis.

Horizon margin by driver

Driver	Bear 2031 net revenue	Bear `Operating income (loss)` / net margin	Base 2031 net revenue	Base `Operating income (loss)` / net margin	Bull 2031 net revenue	Bull `Operating income (loss)` / net margin
European equities execution	136.3	26.5%	181.8	36.0%	208.8	41.0%
Cboe Clear Europe	92.0	33.5%	122.5	41.0%	153.6	47.0%
Europe data and access	90.1	32.0%	114.0	42.0%	136.5	46.0%
Australia	0.0	n/a	0.0	n/a	0.0	n/a
Japan and CEDX / other exited	0.0	n/a	0.0	n/a	0.0	n/a
Revenue-weighted segment	318.4	30.1%	418.3	39.1%	498.9	44.2%

The revised base margin rises from 35.1% of TTM net revenue to 39.1%, a 400-basis-point increase. The mechanism is not price alone: the scenario assumes that low-margin exited businesses disappear, most directly attributable exit costs are removed by the second year, and the retained data and clearing mix improves. It does not assume that every shared technology, regulatory, or personnel cost leaves with Australia/Japan/CEDX. This is still an analyst margin scenario because venue profit and stranded-cost dollars are not disclosed. Base remains well below Q2 2026's 49.1% quarterly margin and allows continuing investment in SFT, settlement-process change, distribution, cyber resilience, and market-structure products.

The bull margin reaches 44.2%, below the Q2 2026 observed quarterly level. This requires high incremental margins on clearing and data, stable execution capture, and no material capital or outage shock, but it does not assume the exited businesses carried all low-margin cost. The bear margin falls to 30.1% despite portfolio pruning because slower revenue growth prevents fixed-cost absorption, fee competition reduces capture, and stranded costs persist. A successful sale can therefore shrink revenue and improve quality; incomplete cost separation can do the reverse.

Year-by-year segment margin and `Operating income (loss)`

Period end	Bear `Operating income (loss)` / net margin	Bear `Operating income (loss)`	Base `Operating income (loss)` / net margin	Base `Operating income (loss)`	Bull `Operating income (loss)` / net margin	Bull `Operating income (loss)`
TTM 2026-06-30	35.1%	108.4	35.1%	108.4	35.1%	108.4
2027-06-30	32.0%	97.0	35.5%	112.9	37.0%	120.3
2028-06-30	30.0%	92.1	36.5%	123.4	39.5%	141.4
2029-06-30	29.0%	90.2	37.5%	134.9	41.5%	165.9
2030-06-30	29.0%	91.4	38.3%	148.6	43.0%	192.0
2031-06-30	30.1%	95.8	39.1%	163.6	44.2%	220.6

The first-year bear decline includes stranded costs after exits and lower capture. Base margin expansion is staged rather than recognized on the sale date. Bull leverage also builds over several years; it is not an immediate annualization of one strong quarter.

Margin sensitivity

2031 net-revenue margin	2031 `Operating income (loss)` on base revenue	Change versus base OI
36.0%	150.6	(13.0)
39.1% base	163.6	0.0
42.0%	175.7	12.1

Every 100 basis points of segment margin on the $418.3 million base revenue endpoint changes `Operating income (loss)` by approximately $4.2 million. Margin discipline is therefore as important as two points of driver growth.

10. Segment rollup and arithmetic reconciliation

Bottoms-up net-revenue rollup

Driver	Bear 2031	Base 2031	Bull 2031
European equities execution	136.3	181.8	208.8
Cboe Clear Europe	92.0	122.5	153.6
Europe data and access	90.1	114.0	136.5
Australia	0.0	0.0	0.0
Japan and CEDX / other exited	0.0	0.0	0.0
Segment net revenue	**318.4**	**418.3**	**498.9**

The exact pre-rounded calculations are based on the illustrative $308.7 million allocation and compounded for exactly five years. Rounded driver lines sum to $318.4 million, $418.3 million, and $498.9 million. These are scenario mechanics, not venue-level historical disclosure. The reported segment total remains the model's accounting unit.

Net-to-gross and `Operating income (loss)` bridge

Bridge line	TTM anchor	Bear 2031	Base 2031	Bull 2031
Gross segment revenue	423.7	445.4	565.3	665.2
Transaction-based expenses	(115.0)	(127.0)	(147.0)	(166.3)
Net revenue	308.7	318.4	418.3	498.9
Net revenue / gross revenue	72.9%	71.5%	74.0%	75.0%
`Operating income (loss)`	108.4	95.8	163.6	220.6
`Operating income (loss)` / gross revenue	25.6%	21.5%	28.9%	33.2%
`Operating income (loss)` / net revenue	35.1%	30.1%	39.1%	44.2%

Each case ties: gross revenue minus the positive magnitude of transaction-based expenses equals net revenue; equivalently, gross revenue plus the displayed negative expense line equals net revenue. Net revenue multiplied by the displayed rounded margin equals `Operating income (loss)` within $0.2 million; the driver-level calculation controls. No corporate item appears. Bear/base/bull gross-revenue CAGRs are 1.0%, 5.9%, and 9.4% from the auxiliary $423.7 million TTM anchor; net-revenue CAGRs are 0.6%, 6.3%, and 10.1%. `Operating income (loss)` CAGRs are (2.4%), 8.6%, and 15.3%.

The net-to-gross assumption is also scenario-specific. Bear net revenue falls to 71.5% of gross because weaker capture and continued liquidity incentives consume more transaction revenue. Base reaches 74.0% as data/access and clearing become a larger share. Bull reaches 75.0% because the highest-growth services require less liquidity pass-through than cash execution. These are explicit mix assumptions, not an undisclosed historical series; the TTM gross and expense anchors remain subject to the reviewer note above.

Profit reconstruction by driver

Driver	Bear `Operating income (loss)`	Base `Operating income (loss)`	Bull `Operating income (loss)`
European equities execution	36.1	65.5	85.6
Cboe Clear Europe	30.8	50.2	72.2
Europe data and access	28.8	47.9	62.8
Sum of driver `Operating income (loss)`	**95.8**	**163.6**	**220.6**

Bear profit rows sum to $95.7 million before rounding, base to $163.6 million, and bull to $220.6 million. The displayed totals retain the scenario calculation. Maximum rounding residual is $0.1 million, below 0.1% of segment profit.

Portfolio-exit sensitivity

The core scenario gives Australia zero owned 2031 revenue. If the sale failed and the illustrative 5% TTM Australia bucket remained owned and grew 3% annually, it would add roughly $17.9 million of 2031 net revenue. At an illustrative 12% `Operating income (loss)` margin, it would add only about $2.1 million of segment profit. That diagnostic shows why "more revenue" is not automatically "more value." Neither the 5% weight nor 12% margin is disclosed, so the diagnostic cannot be presented as a forecast of the sale outcome and assigns no transaction proceeds.

Base-case perimeter / cost sensitivity	2031 net revenue	2031 `Operating income (loss)`	Interpretation
Exit bucket is 3% of TTM, retained mix otherwise proportional	436.3	170.6	Smaller revenue perimeter loss than scaffold
Core: exit bucket is 7% of TTM; 39.1% margin	418.3	163.6	Explicit analyst scaffold
Exit bucket is 10% of TTM, retained mix otherwise proportional	404.8	158.3	Larger revenue perimeter loss
Core revenue, 36.1% margin	418.3	151.0	Roughly 300 bps more stranded-cost drag
Core revenue, 42.1% margin	418.3	176.1	Roughly 300 bps more cost removal/mix benefit

This table prevents the undisclosed exit mix and stranded-cost benefit from disappearing inside the point estimate. The revenue sensitivities reassign the retained mix proportionally; the margin sensitivities hold revenue fixed. They are not issuer guidance.

Japan and CEDX are modeled as exited following the disclosed wind-down effects, so retaining their $6.2 million illustrative allocation to 2031 would be inconsistent with the scenario perimeter. Transition-service revenue after an Australia sale is temporary and excluded from the terminal run rate. Canada is outside this segment. Any Australia/Canada consideration is a corporate cash-flow item; the reviewed package provides no amount or allocation that can be credited here.

Probability-weighted segment diagnostic

Metric	Probability-weighted 2031 result
Gross segment revenue	549.3
Net revenue	404.5
`Operating income (loss)`	154.7
Implied OI / net-revenue margin	38.2%

The diagnostic uses 30% bear, 50% base, and 20% bull. The overweight to bear versus bull reflects the true venue-dollar gap, the announced but not quantified Australia process, the lack of SFT revenue/adoption disclosure, and the risk that recent volume and margin strength normalize. It is not a fourth scenario and should not replace the scenario distribution.

11. Key risks, wildcards, and management implications

Risks and wildcards

- **European trading-volume normalization — Bear.** FY2025 and H1 2026 benefited from strong industry activity. A low-volatility or low-turnover period can reduce ADNV even if Cboe holds share. The kill signal is two consecutive half-years of declining industry ADNV combined with segment net revenue below the model cadence.
- **Share and capture compression — Bear.** Q2 share of 24.4% was already below FY2025's 25.0%. If market share falls below 22% while net capture stays below €0.26 basis points, the 7% base execution CAGR is no longer credible.
- **SFT adoption — Bull/Base wildcard.** Central clearing can reduce bilateral risk and balance-sheet usage, but customer onboarding is slow and economics depend on collateral, regulation, and member participation. A lack of disclosed member growth or material activity by 2028 would move clearing toward bear.
- **Settlement-cycle execution and operational risk — Bear.** A shorter EU settlement cycle compresses processing windows and raises coordination demands. Failed settlements, client remediation, or unplanned technology expense could erase margin leverage. The reviewed package does not quantify timing or cost.
- **CCP tail risk — Bear.** Member default, model error, collateral stress, or a liquidity event can overwhelm ordinary fee economics. The €1.2 billion facility and default waterfall mitigate but do not eliminate this risk.
- **Regulatory redistribution — Bear/Base.** MiFIR transparency, open access, interoperability, and consolidated-tape rules can either open incumbent flow or commoditize data. The model assumes a balanced outcome; unilateral fee restrictions would pressure capture.
- **Consolidation among rivals — Bear.** SIX/Aquis combines a challenger platform with an integrated European infrastructure group, while LSEG is reinvesting in Turquoise. Competitor bundling can lower switching friction and intensify pricing.
- **Portfolio execution — Bear.** Australia sale timing, transition-service obligations, employee consultation, and stranded technology can delay savings. The model does not book sale proceeds as an operating offset.
- **Currency translation — All cases.** Much of the segment earns euros and other local currencies but reports in USD. Q2 2026 net revenue was $84.8 million; the reviewed package does not reproduce a segment constant-currency amount. A sustained weak euro reduces USD outcomes even when venue economics are sound.
- **Data substitution — Bear.** An EU consolidated tape can reduce demand for some direct-feed use cases. Proprietary depth, low-latency, auction, and clearing data should remain valuable, but the model's 9% base data CAGR would be too high if customers eliminate duplicate feeds.
- **Cyber and outage risk — Bear.** Venue or CCP downtime damages trust, triggers regulatory scrutiny, and can move flow immediately. This is the segment's most asymmetric non-financial operating risk.
- **Upside from clearing breadth — Bull.** Preferred clearing, European SFTs, fixed-income lending, and new asset classes could create a denser multi-product clearing network. The bull case requires observable revenue and member adoption, not press releases alone.

Management implications

Management should report Europe and Asia Pacific on a continuing-perimeter bridge as soon as the Australia sale closes. Investors need gross and net revenue, `Operating income (loss)`, and one-time/transition costs for retained Europe, Australia, Japan, and CEDX. The current aggregate segment disclosure makes it difficult to distinguish operating leverage from perimeter effects. Venue-level revenue need not be published if commercially sensitive, but a continuing-operations bridge would materially improve forecast confidence.

Second, management should give SFT adoption evidence. Useful metrics include clearing members onboarded, notional or loan value cleared, eligible-security breadth, average daily activity, and incremental collateral or regulatory-capital requirements. Trades-cleared counts alone cannot show whether the new service is economically material.

Third, the team should protect market share through service differentiation rather than fee subsidy. Cboe's 24%–25% share is valuable because it supports data, connectivity and clearing relationships. A temporary share gain purchased with structurally lower capture is not equivalent to franchise strengthening. Reporting capture beside share should continue.

Fourth, settlement-cycle readiness should be treated as a moat investment. The transition can deepen customer dependence if Cboe helps members reduce fails and operational risk. It can destroy trust if preparation is late. Management should

disclose testing milestones, settlement efficiency, and incident rates before implementation.

Fifth, capital allocation must respect clearing obligations. Cboe Clear Europe's regulatory capital and liquidity resources are operating inputs, not idle cash. New SFT or fixed-income services should be evaluated on return on required capital and tail-risk-adjusted economics, not revenue growth alone.

Finally, the Australia/Canada proceeds must stay at corporate level until management allocates them. This segment forecast removes Australia's operations but does not credit cash, a disposal gain, or buybacks. Synthesis can separately model corporate cash deployment after confirming closing, taxes, fees, and the allocation of consideration.

Rollup-ready summary

Case	Segment TTM+5 gross revenue	Segment TTM+5 net revenue	Exact profit metric	Segment TTM+5 profit margin on net revenue	Segment TTM+5 profit	Probability
Bear	$445.4m	$318.4m	`Operating income (loss)`	30.1%	$95.8m	30%
Base	$565.3m	$418.3m	`Operating income (loss)`	39.1%	$163.6m	50%
Bull	$665.2m	$498.9m	`Operating income (loss)`	44.2%	$220.6m	20%

The forecast is rollup-ready on the issuer's exact positive-profit convention. It preserves Corporate Items and Eliminations outside the segment, treats transaction-based expenses explicitly, excludes modeled-exited operations and Australia under the announced sales-process assumption from terminal owned revenue, and assigns no sale proceeds. The repaired reviewed package now verifies the complete $423.7 million gross revenue plus $(115.0) million transaction-based expense equals $308.7 million net-revenue bridge; no upstream TTM anchor gap remains.

Appendix B4 - Futures

Cboe Global Markets — Futures Segment Deep Dive

Forecast base: TTM ended 2026-06-30 **Forecast horizon:** TTM ended 2031-06-30, exactly five calendar years later **Currency and scale:** USD millions unless stated otherwise **Exact issuer segment profit metric:** `Operating income (loss)` **Evidence control:** historical Cboe figures and management language come from the reviewed `data_package.md`; the sealed statutory bridge is not reinterpreted.

0. Segment boundary and taxonomy note

Futures is not perimeter-comparable across the full historical series. Through FY2024 the reportable segment was the legacy Cboe Futures Exchange, principally VIX futures and related access and data activity. Effective January 1, 2025, Cboe prospectively folded the remaining Digital futures activities into Futures after closing the U.S. digital spot market; it did not recast FY2021-FY2024. The old Digital segment had `Operating income (loss)` of $(491.4)m in FY2022, $(46.7)m in FY2023, and $(112.4)m in FY2024, but none of those historical losses belongs in the reported pre-2025 Futures series. FY2025 and the TTM base use the new perimeter. Therefore, the fall in reported Futures margin from 70.1% in FY2024 to 54.4% in FY2025 cannot be read as a pure deterioration in the legacy CFE franchise. This forecast starts from the post-combination TTM perimeter, keeps Digital revenue and costs embedded where Cboe reports them, and does not backcast or manufacture a stand-alone Digital P&L. [data_package §1, taxonomy paragraph; §3, Futures table]

1. What this segment actually is

The Futures segment operates Cboe Futures Exchange, or CFE, a regulated U.S. futures venue. Its economic center is VIX futures: standardized contracts whose settlement is linked to the Cboe Volatility Index. Users include institutional asset managers, hedge funds, volatility funds, market makers, proprietary trading firms, banks, commodity trading advisers, and increasingly retail investors accessing futures through brokers. They use the contracts to hedge sudden equity-market volatility, express a view on the future path of volatility, construct relative-value trades across maturities, or arbitrage relationships among VIX futures, VIX options, SPX options, volatility-linked exchange-traded products, and over-the-counter volatility instruments.

Cboe's product page describes VIX futures as reflecting the market's estimate of the VIX Index on future expiration dates and identifies risk management, alpha generation, and diversification as principal uses. CFE is the home venue for futures on Cboe's proprietary VIX Index. That combination matters: the segment is not a generic matching engine selling an undifferentiated contract. It commercializes a benchmark, contract specification, regulatory venue, liquidity pool, clearing connectivity, and distribution network as one system. [Cboe VIX Futures](https://www.cboe.com/tradable-products/vix/vix-futures)

Revenue is built in several layers. Transaction and clearing fees are predominantly usage based: contracts traded multiplied by revenue per contract, or RPC. Access and capacity fees monetize physical and logical ports, connectivity, trading permits, and the ability of members to reach the market at the speed and capacity required. Market-data and licensing revenue monetize real-time and depth-of-book feeds and permitted downstream use. Regulatory fees and other smaller items round out the segment. The post-2025 perimeter also contains remaining Digital futures activities, but Cboe does not disclose their revenue separately. Event contracts and other new derivatives can use parts of the same exchange, surveillance, connectivity, and distribution infrastructure, although they need liquidity, compliant product certification, and customer access before they become meaningful revenue.

The go-to-market is therefore two-sided. Cboe must persuade liquidity providers to quote competitively and clearing firms to support the contract, while brokers, fund platforms, institutions, and data vendors must make the product accessible to end users. A firm seeking direct CFE access must become a Trading Privilege Holder, and a clearing firm must also belong to the Options Clearing Corporation. These requirements deepen the institutional network but also create onboarding friction. [Cboe CFE Membership](https://www.cboe.com/markets/us/futures/membership/)

Pricing is not a single posted take rate. RPC reflects fee schedules, membership status, customer and market-maker mix, volume tiers, rebates, product mix, and contract size. The reported series rose from $1.641 in FY2021 to $1.760 in FY2024, then eased to $1.723 in FY2025 and $1.664 in Q2 2026. That history supports modest long-run pricing rather than assuming annual list-price increases flow one-for-one into net RPC. Access and data are less directly tied to each incremental contract, creating recurring revenue and operating leverage, but port demand and data usage can still move with market participation.

2. Current economics: FY2025 and the TTM base

FY2025 gross revenue was $135.9m, down 3.7%, and reported `Operating income (loss)` was $73.9m, a 54.4% gross-revenue margin. The reviewed data package and sealed statutory bridge supply the exact TTM anchor: $140.4m revenue and $76.4m of `Operating income (loss)`, also a 54.4% margin. The latest four quarterly net-revenue observations were $29.6m, $33.7m, $35.8m, and $30.6m; their $129.7m sum is below TTM gross revenue because the two measures use different revenue presentation. The model compounds from gross revenue, matching the segment table and statutory bridge, rather than mixing the quarterly net-revenue denominator into a gross-revenue forecast. [SEC25 and EX25Q3–EX26Q2 via data_package §3, Futures table, and §5; QF_TTM_ARITHMETIC via data_package §3a and statutory_bridge.json, TTM Futures line]

The observed operating driver was volatile rather than steadily weakening. Annual Futures ADV was 230.4 thousand contracts in FY2021, 218.2 thousand in FY2022, 223.3 thousand in FY2023, 238.6 thousand in FY2024, and 227.2 thousand in FY2025. Quarterly ADV then moved from 200.7 thousand in Q3 2025 to 239.2 thousand in Q4, 283.3 thousand in Q1 2026, and 222.7 thousand in Q2. Quarterly RPC moved from $1.745 to $1.717, $1.649, and $1.664. Q1's volume spike and Q2's reversal make the case for a normalized multi-year volume path rather than annualizing either quarter. [data_package §0a, KPI row Futures ADV and row Futures RPC; §5, operating-driver rows Futures ADV and Futures RPC]

Product revenue is not separately disclosed for VIX futures, Mini VIX futures, Digital futures, event contracts, access, or data within this segment. To make the forecast reconstructable without pretending those disclosures exist, this appendix uses an analytical driver bridge. Applying the reported quarterly ADV and RPC to an assumed 64, 64, 62, and 63 trading days produces about 59.75m TTM contracts and $101.0m of **net-transaction-fee proxy** revenue. Because reported RPC is net transaction fees per contract while the segment anchor is gross revenue, the $39.4m closure amount is labeled **access, data, regulatory, Digital, gross-to-net transaction presentation difference, and other residual**. It is not an issuer-disclosed product figure, and neither its composition nor its stand-alone margin is disclosed. The day-count convention affects only the analytical split, not the $140.4m segment total: a one-day change around blended TTM ADV moves roughly $0.4m between the proxy and residual with zero segment-revenue effect. [data_package §0a, Futures RPC definition; §3a, TTM Futures line; §4, Futures product non-disclosure; §5, EX26Q2 driver table]

Capital intensity is low at the segment level in ordinary periods because CFE shares Cboe technology, cybersecurity, surveillance, data distribution, legal, and corporate infrastructure. Cboe does not disclose segment capex or R&D, so none is invented here. Consolidated FY2025 capex was $71m, or 1.5% of revenue, and FY2026 guidance was raised to $98m-$108m as the company invested in event contracts, clearing, and around-the-clock access. The Futures segment should be viewed as low in physical capital but high in required technology resilience, regulatory capability, liquidity development, and intangible-product investment. A venue outage or surveillance failure would be economically severe even if accounting capex stays modest. [SEC25 cash-flow statement and EX26Q2 via data_package §6, company guidance, and §7, capital-allocation table]

3. Unit economics

At the core, transaction revenue is contracts traded multiplied by realized RPC. Contracts traded are approximately ADV multiplied by trading days. ADV itself depends on the level and volatility of expected equity volatility, the installed base of hedgers and speculators, the use of VIX-linked exchange-traded products, term-structure trading, and the liquidity advantage of the incumbent order book. RPC depends on fee schedules and mix. The multiplication is powerful: a 4% volume increase and a 1% RPC increase produce roughly 5.0% transaction-fee growth before rounding. It is also unforgiving: if volume declines 10%, small pricing actions cannot protect revenue without risking further elasticity or migration into substitutes.

The order book creates strong incremental economics. Once the exchange, matching engine, surveillance, market-data dissemination, connectivity, and regulatory staff are in place, the cash cost of processing one additional contract is small. Market-maker incentives, clearing arrangements, and technology capacity are not zero, but much of the cost base is fixed or step-fixed. High-volume years can therefore produce rapid margin expansion. That is consistent with the legacy segment's 66.7% and 70.1% gross-revenue margins in FY2023 and FY2024. Conversely, revenue can fall faster than costs in quiet volatility regimes or during product investment, compressing margin.

The 2025 Digital perimeter is the largest complication. The TTM segment margin remained 54.4%, exactly the FY2025 level, well below FY2024's legacy-Futures 70.1%. Some of that gap may reflect Digital personnel, technology, amortization, compliance, or transition cost, but Cboe does not disclose the decomposition. The base case therefore does not snap margin back to 70%. It assumes five years of partial fixed-cost absorption, disciplined spending, and mix improvement lift the margin to 58.9%. The bull case reaches 64.8%, still below the old peak despite much higher revenue, because event products and

Digital-adjacent growth need investment and may carry lower initial economics. The bear case falls to 48.3% because weak transaction revenue, continued platform investment, and limited ability to remove regulated-venue costs create negative operating leverage.

Access and data have different unit economics from transactions. A new port, depth-of-book subscription, or licensed data user adds revenue with limited marginal processing cost, but sales support, data infrastructure, entitlements, audits, and customer connectivity are real. CFE offers top-of-book and depth-of-book market data with flexible licensing, making this both a recurring revenue stream and part of the trading moat. The value of the feed rises with liquidity and relevance; it is not independent of the flagship contract. [Cboe U.S. Futures Market Data](https://www.cboe.com/market_data_services/us/futures/)

New products initially reverse normal exchange operating leverage. Product design, legal analysis, CFTC submissions, surveillance, market-maker incentives, marketing, broker enablement, and customer education arrive before scale. Cboe said the latest company revenue upgrade did not incorporate notable incremental event-contract revenue, and it disclosed no Futures product revenue split from which to underwrite one. The reviewed base and bear cases therefore assign **zero incremental event/new-product revenue**. Only the bull case includes $18m and a 42% analytical margin, reflecting successful distribution and liquidity formation but not mature VIX-like economics. That bull amount is an assumption-bound option value, includes direct transaction fees plus associated access/data revenue net of incentives and cannibalization, and is excluded from the core and residual growth paths so it is counted once.

4. Competitive dynamics

The direct venue competitors are CME Group, Intercontinental Exchange, and other regulated futures exchanges that sell equity-index, volatility, rates, commodities, crypto, and event exposures to many of the same clearing firms and trading customers. Nasdaq and specialist event-contract venues add product-specific competition. The competition is broader than matching identical contracts: portfolio managers can hedge equity risk through E-mini or Micro E-mini S&P 500 futures, SPX or ETF options, variance swaps, volatility swaps, VIX-linked funds, or dynamic equity hedges. Every substitute competes for attention, capital, connectivity budgets, and risk limits.

CFE's advantage is that VIX futures are tied to Cboe's proprietary VIX benchmark and sit inside a dense liquidity and hedging ecosystem. A rival can create a different volatility index and list futures on it, but it cannot simply move the branded VIX contract and its open interest. Liquidity is reflexive: tight spreads attract hedgers and arbitrageurs; their activity creates more data and depth; that depth lowers execution cost and makes the incumbent safer for larger orders. Cross-product arbitrage with VIX options and SPX options further anchors activity in Cboe's ecosystem even though those options are reported in a different segment.

The moat is not absolute. Large intermediaries are multi-homed and already connect to CME, ICE, and other venues. Switching the marginal trade is easy when a substitute offers better capital efficiency, lower fees, or a more direct hedge. OTC dealers can customize exposures that exchange contracts cannot. Volatility-linked exchange-traded products can expand VIX futures demand, but product closures, leverage restrictions, or investor losses can reduce it. The infamous volatility shocks in the asset class show that high activity can create both revenue and political or conduct scrutiny.

Pricing power is therefore strongest where Cboe's product uniqueness and liquidity are highest, and weaker where access, data, or new contracts are easy to compare. The FY2021-FY2025 RPC CAGR was only about 1.2%, and Q2 2026 RPC was below the FY2025 average. That is consistent with measured pricing power, not monopoly-style annual increases. The base case assumes 1.0% annual RPC growth. The bull case assumes 1.5% as mix shifts to differentiated products and deeper institutional use. The bear case assumes a 0.5% annual decline because incentives and lower-fee mix outweigh list pricing.

Event contracts have a different competitive map. Cboe has regulated-exchange infrastructure and relationships, but specialist venues may have more consumer-native interfaces, faster product iteration, and established retail habits. Regulatory interpretation is also evolving. In 2026 the CFTC withdrew its earlier event-contract rule proposal, issued an advisory reminding designated contract markets of core-principle and product-submission obligations, and sought further public input. That creates room for innovation but not a settled permission set. [CFTC withdrawal](https://www.cftc.gov/PressRoom/PressReleases/9179-26); [CFTC advisory](https://www.cftc.gov/PressRoom/PressReleases/9193-26); [CFTC prediction-markets ANPR](https://www.cftc.gov/LawRegulation/FederalRegister/proposedrules/2026-05105.html)

5. Moat at the segment level

The segment has a real, narrow moat centered on benchmark intellectual property, liquidity, institutional connectivity, and regulatory operating capability. VIX is a recognized shorthand for implied U.S. equity volatility. The value is not the formula alone; it is the linked complex of SPX option inputs, calculation governance, settlement procedures, futures and options liquidity, clearing support, broker availability, and risk-management workflows. Users care that a hedge can be entered and exited in stressed markets. That reliability is earned over years and is hard for a new venue to reproduce quickly.

Network effects are the second layer. Market makers prefer venues with two-way flow; customers prefer venues with narrow spreads and reliable depth; data vendors and brokers prioritize products customers demand. Open interest and cross-product arbitrage reduce execution friction. Because many participants are already connected to Cboe for SPX and VIX options, expanding use of VIX futures can require less incremental commercial effort than building an unrelated contract from scratch.

Regulation is the third layer. CFE is a CFTC-regulated designated contract market and must maintain surveillance, financial resources, systems safeguards, rule enforcement, and compliant product processes. These requirements are costly but confer credibility. They also mean the segment cannot slash expenses as if it were an unregulated software product. In a bear scenario, the regulated cost floor is one reason margin falls faster than revenue.

The moat is durable over five to ten years if three conditions hold: VIX remains the reference benchmark for tradable U.S. equity volatility; Cboe preserves reliable markets during stress; and the firm continues broad broker and institutional distribution. Its weakest point is customer multi-homing. Participants do not need to choose only one futures venue, so adjacent volume can migrate. Another weakness is the reliance on one flagship economic complex. A legal, methodology, market-structure, or reputational shock to VIX would affect the segment more than a diversified futures exchange. The correct conclusion is **strong product moat, moderate venue moat, concentrated franchise risk**.

6. Historical growth rates and operating drivers

The reported segment table must be read across the 2025 boundary. The three-year CAGR shown below runs from FY2022 to FY2025, but the endpoint includes Digital while the starting point does not. It is mathematically correct and economically contaminated. No product-level VIX or Digital dollar revenue was disclosed, so no such figures are fabricated.

Product / sub-segment	FY2023 revenue	FY2024 revenue	FY2025 revenue	3-year CAGR from FY2022	Most recent YoY	Data-package cite
Futures reportable segment	$129.0m [data_package §3, Futures row Revenue]	$141.1m [data_package §3, Futures row Revenue]	$135.9m [data_package §3, Futures row Revenue]	4.3% [data_package §3, Futures rows FY2022 and FY2025 Revenue; perimeter caveat §1]	(3.7%) [data_package §3, Futures row YoY]	SEC23; SEC25 [data_package §3, Futures table; §1 taxonomy boundary]
VIX futures and other futures	Not separately disclosed [data_package §4, Futures product row]	Not separately disclosed [data_package §4, Futures product row]	Not separately disclosed [data_package §4, Futures product row]	n/m [data_package §4, Futures product row]	n/m [data_package §4, Futures product row]	[data_package §4, row Futures / VIX futures and other futures]
Access, data, regulatory, and Digital activities	Not separately disclosed [data_package §4, Futures product row; §10 product-revenue gap]	Not separately disclosed [data_package §4, Futures product row; §10 product-revenue gap]	Not separately disclosed [data_package §4, Futures product row; §10 product-revenue gap]	n/m [data_package §4, Futures product row]	n/m [data_package §4, Futures product row]	[data_package §4 and §10, Futures product disclosure gap]

Historical segment arithmetic checks are: $120.6m × 0.993 = $119.8m; $119.8m × 1.077 = $129.0m; $129.0m × 1.094 = $141.1m; and $141.1m × 0.963 = $135.9m, each within 0.1% after rounding. The CAGR check is $119.8m × (1.043)^3 = approximately $135.9m. ✓ The latest-quarter check is $30.6m net revenue and 2% YoY growth; the annual table is gross revenue, so those figures are not multiplied together. [SEC23; SEC25; EX26Q2 via data_package §3, Futures table, and §5, segment quarterly row Futures]

The backfilled ADV and RPC series is the cleanest product-level history available.

Operating driver	FY2021	FY2022	FY2023	FY2024	FY2025	Four-year CAGR	Data-package cite
Futures ADV, thousand contracts	230.4 [data_package §0a, KPI row Futures ADV]	218.2 [data_package §0a, KPI row Futures ADV]	223.3 [data_package §0a, KPI row Futures ADV]	238.6 [data_package §0a, KPI row Futures ADV]	227.2 [data_package §0a, KPI row Futures ADV]	(0.3%) [data_package §0a, KPI row Futures ADV]	SEC21–SEC25 [data_package §0a, Material KPI family history row Futures ADV]
Futures RPC, USD per contract	$1.641 [data_package §0a, KPI row Futures RPC]	$1.674 [data_package §0a, KPI row Futures RPC]	$1.755 [data_package §0a, KPI row Futures RPC]	$1.760 [data_package §0a, KPI row Futures RPC]	$1.723 [data_package §0a, KPI row Futures RPC]	1.2% [data_package §0a, KPI row Futures RPC]	SEC21–SEC25 [data_package §0a, Material KPI family history row Futures RPC]

Driver tie-outs: 230.4 × (1 – 5.3%) = 218.2; 218.2 × (1 + 2.3%) = 223.3; 223.3 × (1 + 6.9%) = 238.6; and 238.6 × (1 – 4.8%) = 227.2. RPC tie-outs are $1.641 × 1.020 = $1.674; $1.674 × 1.048 = $1.755; $1.755 × 1.003 = $1.760; and $1.760 × 0.979 = $1.723. All are within the mandatory 2% tolerance. ✓

The TTM analytical net-transaction-fee proxy ties as follows: Q3 2025 200.7k ADV × 64 days × $1.745 = $22.4m; Q4 239.2k × 64 × $1.717 = $26.3m; Q1 2026 283.3k × 62 × $1.649 = $29.0m; Q2 222.7k × 63 × $1.664 = $23.3m. Total proxy revenue is $101.0m. $101.0m plus the $39.4m analytical closure residual equals the sealed $140.4m TTM gross revenue. ✓ The implied weighted TTM ADV is about 236.2k and blended RPC is $1.691. The quarter-day counts are analyst assumptions; ADV and RPC are issuer-disclosed in EX26Q2, and the residual cannot be decomposed from public segment disclosure. [data_package §0a, RPC definition; §5, EX26Q2 operating-driver table]

7. Management guidance and commentary

No numeric Futures-only FY2026 revenue guide was provided. The relevant management anchors from the reviewed packet are:

- **Q3 2025 call, 2025-10-31 — Craig Donohue, CEO: “global derivatives leader.”** [data_package §6, Options and derivatives bullet 1] Management's portfolio realignment makes derivatives the capital-allocation priority. For Futures, that supports continued investment but does not guarantee volume.
- **Q4 2025 call, 2026-02-06 — Jill Griebenow, CFO: “highest returns on organic investments.”** [data_package §6, Options and derivatives bullet 2] The hurdle is returns from product development and distribution rather than acquisition-led scale.
- **Q1 2026 call, 2026-05-01 — management guidance: “low double-digit to mid-teens.”** [data_package §6, Options and derivatives bullet 3] This was a company organic net-revenue range, not a Futures guide; it should not be applied mechanically to this smaller segment.
- **Q2 2026 call, 2026-07-31 — Jill Griebenow, CFO: “mid-to-high teens.”** [data_package §6, Options and derivatives bullet 4] The further company upgrade was supported by the existing product base and did not require a large event-contract contribution.
- **Q2 2026 call, 2026-07-31 — Rob Hocking: “natural extension of our derivatives business.”** [data_package §6, Options and derivatives bullet 5] Existing derivatives technology and distribution lower launch cost, but liquidity still must be earned.
- **Q3 2025 call, 2025-10-31 — management: “organic opportunity.”** [data_package §6, Futures and Global FX bullet 1] Event products can reuse infrastructure. The base case treats them as an unmodeled option, not booked revenue.
- **Q4 2025 call, 2026-02-06 — management: “disciplined expense management.”** [data_package §6, Futures and Global FX bullet 2] This supports modest margin recovery from the post-Digital base but not an immediate return to the legacy 70% peak.
- **Q2 2026 call, 2026-07-31 — management: “doesn't incorporate anything incremental.”** [data_package §6, Futures and Global FX bullet 3] The latest company revenue upgrade excludes notable incremental event-contract revenue; absent a disclosed segment product split, the base case assigns no incremental event revenue.
- **Q2 2026 SEC release, 2026-07-31 — Craig Donohue: “We’re investing in opportunities that will define Cboe’s future.”** [data_package §6, Data Vantage and company guidance bullet 5] Event contracts and around-the-clock access are named investments; near-term expense precedes uncertain revenue.

The controlling modeling interpretation is conservative. A strong company guide is evidence of current momentum, but Q2 Futures net revenue grew only 2% and ADV declined from the Q1 spike. Futures has a different volatility cycle from the Options segment. The segment forecast therefore uses its own ADV, RPC, access/data, and new-product paths.

8. Forward growth assumptions by product and case

The lines below are analytical modeling constructs because issuer product revenue is not separately disclosed. “Core transaction and clearing” starts at the $101.0m TTM net-transaction proxy, not a disclosed product-revenue line. “Access, data, regulatory, Digital, gross-to-net transaction difference, and other” is the $39.4m mathematical residual to the sealed segment total; its components cannot be separately valued. “Incremental event and other new products” starts at zero. In the

bull case only, it captures all incremental direct transaction, associated access/data, incentive, and cannibalization economics; the core and residual growth paths exclude that incremental contribution, preventing double counting.

Base case

Product / analytical line	Historical evidence	Latest YoY	Management FY+1 guide	Base CAGR TTM to TTM+5y	Justification
Core transaction and clearing	FY2021-FY2025 ADV CAGR (0.3%); RPC CAGR 1.2%	Q2 ADV normalized after Q1; Q2 RPC $1.664	No segment numeric guide	5.0%	4.0% ADV plus 1.0% RPC reflects wider hedging adoption and distribution, offset by volatility normalization and fee mix.
Residual: access/data/regulatory/Digital/gross-to-net difference/other	Segment revenue 3-year CAGR 4.3%, perimeter-contaminated; residual mix undisclosed	Futures Q2 net revenue +2%	“disciplined expense management”; no line guide	6.0%	Existing-perimeter connectivity, depth data, licensing, member demand, and presentation differences grow below company-wide access/data history; no incremental event economics are included.
Incremental event and other new products	No separately disclosed historical revenue or segment product split	Early-stage launch	Latest guide “doesn't incorporate anything incremental”	n/m; $0m in 2031	No additive base value is underwritten without disclosed revenue, durable liquidity, or a separable economics bridge.

The core transaction growth rate is the product of a 4.0% ADV CAGR and 1.0% RPC CAGR: 1.04 × 1.01 – 1 = 5.04%. The volume assumption is above the flat FY2021-FY2025 history but starts from a TTM weighted ADV near 236.2k, only around the FY2024 annual level. It requires secular distribution and hedging use, not permanently crisis-level volatility. The RPC assumption stays close to the actual 1.2% four-year CAGR and below a heroic pricing case.

Bull case

Product / analytical line	Historical evidence	Latest YoY	Management FY+1 guide	Bull CAGR TTM to TTM+5y	Justification
Core transaction and clearing	ADV flat over FY2021-FY2025; RPC +1.2% CAGR	Q1 showed 283.3k ADV capacity	No segment numeric guide	9.6%	8.0% ADV plus 1.5% RPC assumes international and retail access, more volatility strategies, and sustained VIX ecosystem depth.
Residual: access/data/regulatory/Digital/gross-to-net difference/other	Aggregate Cboe access/data families grew high single digits; residual mix undisclosed	Data demand broad-based at company level	Organic-investment priority	10.0%	Existing-perimeter feeds, ports, depth licensing, extended hours, and platform use accelerate; incremental event economics remain excluded.
Incremental event and other new products	No reliable disclosed base	XSP yes/no launch early	“natural extension” and “organic opportunity”	n/m; $18m in 2031	Multiple brokers enable access and liquidity compounds; the amount is a bull-only option and includes associated access/data net of incentives and cannibalization.

The bull core rate is 1.08 × 1.015 – 1 = 9.62%. This is a regime and execution case, not a simple extrapolation of FY2025. It requires VIX futures use to broaden while Cboe preserves liquidity leadership. The $18m event/new-product amount is not evidence-backed product guidance; it is a bull-only option-value assumption and is counted once outside both existing-perimeter paths.

Bear case

Product / analytical line	Historical evidence	Latest YoY	Management FY+1 guide	Bear CAGR TTM to TTM+5y	Justification
Core transaction and clearing	ADV four-year CAGR (0.3%)	Q2 ADV fell to 222.7k; RPC $1.664	No segment numeric guide	(1.5%)	ADV falls 1.0% annually and RPC falls 0.5% as low volatility, substitute hedges, and incentives outweigh pricing.
Residual: access/data/regulatory/Digital/gross-to-net difference/other	Segment revenue has stayed positive over most years; residual mix undisclosed	Q2 segment net revenue +2%	“disciplined expense management”	1.0%	Contractual and connectivity features protect nominal revenue, but customer consolidation, weak activity, and Digital costs cap growth.

Product / analytical line	Historical evidence	Latest YoY	Management FY+1 guide	Bear CAGR TTM to TTM+5y	Justification
Incremental event and other new products	No separately disclosed base	Early-stage and unproven	Guide excludes incremental contribution	n/m; $0m in 2031	Regulatory limits, weak liquidity, or superior specialist distribution prevent durable monetization.

The bear core rate is 0.99 × 0.995 – 1 = negative 1.495%. It is not an extreme collapse: the scenario assumes persistent erosion rather than a one-time volatility shock. The larger economic damage comes through fixed-cost deleverage.

Year-by-year revenue paths

Base case, USD m	TTM 2026-06-30	2027-06-30	2028-06-30	2029-06-30	2030-06-30	2031-06-30
Core transaction and clearing proxy	101.0	106.1	111.4	117.1	123.0	129.2
Mixed residual (components undisclosed)	39.4	41.8	44.3	46.9	49.7	52.7
Incremental event and other new products	0.0	0.0	0.0	0.0	0.0	0.0
Segment revenue	140.4	147.9	155.7	164.0	172.7	181.9

Bear case, USD m	TTM 2026-06-30	2027-06-30	2028-06-30	2029-06-30	2030-06-30	2031-06-30
Core transaction and clearing proxy	101.0	99.5	98.0	96.5	95.1	93.7
Mixed residual (components undisclosed)	39.4	39.8	40.2	40.6	41.0	41.4
Incremental event and other new products	0.0	0.0	0.0	0.0	0.0	0.0
Segment revenue	140.4	139.3	138.2	137.1	136.1	135.1

Bull case, USD m	TTM 2026-06-30	2027-06-30	2028-06-30	2029-06-30	2030-06-30	2031-06-30
Core transaction and clearing proxy	101.0	110.7	121.4	133.0	145.8	159.9
Mixed residual (components undisclosed)	39.4	43.3	47.7	52.4	57.7	63.5
Incremental event and other new products	0.0	1.0	3.0	6.0	10.0	18.0
Segment revenue	140.4	155.1	172.0	191.5	213.5	241.3

The base segment CAGR is 5.3%, the bear CAGR is negative 0.8%, and the bull CAGR is 11.4%. The year-by-year path makes the required deceleration and acceleration explicit. No case extrapolates the 283.3k Q1 2026 ADV spike as a permanent base, and neither base nor bear assigns additive value to undisclosed event-product revenue.

9. Forward `Operating income (loss)` margin assumptions

The issuer metric is `Operating income (loss)`, with positive values denoting profit and negative values denoting loss. Current TTM `Operating income (loss)` is $76.4m and the margin on gross segment revenue is 54.4%. Corporate Items and Eliminations are excluded from every product and segment margin below and remain for the synthesis bridge.

Case	Product / analytical line	2031 revenue	2031 analytical margin on `Operating income (loss)`	2031 `Operating income (loss)`	Mechanism versus TTM
Bear	Core transaction and clearing	$93.7m	55.0%	$51.5m	Lower volume and RPC meet a regulated fixed-cost floor; incentives absorb pricing.
Bear	Mixed residual (components undisclosed)	$41.4m	33.0%	$13.7m	Some recurring revenue holds up, but gross-to-net presentation, Digital/platform support, and compliance limit any precise mix claim or cost removal.
Bear	Incremental event and other new products	$0.0m	n/m	$0.0m	Product launches fail to monetize; related expense is reflected in segment economics.

Case	Product / analytical line	2031 revenue	2031 analytical margin on Operating income (loss)	2031 Operating income (loss)	Mechanism versus TTM
Bear	Futures segment	$135.1m	48.3%	$65.2m	610 bps below TTM from negative operating leverage and stranded investment.
Base	Core transaction and clearing	$129.2m	65.0%	$84.0m	Five years of volume growth absorb fixed venue, surveillance, and technology costs.
Base	Mixed residual (components undisclosed)	$52.7m	44.0%	$23.2m	Existing-perimeter access/data and Digital rationalization improve profitability, but the allocation is analytical and investment continues.
Base	Incremental event and other new products	$0.0m	n/m	$0.0m	No product-level disclosure or durable-liquidity evidence supports additive base value.
Base	Futures segment	$181.9m	58.9%	$107.2m	450 bps above TTM from existing-franchise mix and fixed-cost absorption, still below the legacy FY2024 peak.
Bull	Core transaction and clearing	$159.9m	72.0%	$115.1m	Strong utilization drives high incremental margins while pricing stays rational.
Bull	Mixed residual (components undisclosed)	$63.5m	53.0%	$33.7m	Existing-perimeter data and access scale with limited marginal cost and a cleaner post-Digital platform; event economics are excluded.
Bull	Incremental event and other new products	$18.0m	42.0%	$7.6m	Multiple liquid contracts spread launch and surveillance costs; direct and associated revenue is included once, net of incentives and cannibalization.
Bull	Futures segment	$241.3m	64.8%	$156.3m	1,040 bps above TTM, supported by scale but conservatively below a pure mature-product margin.

The line margins are analytical allocations, not issuer disclosures, and must not be carried into valuation as separately disclosed businesses. They are used only to ensure the segment margin is revenue weighted and reconstructable. The base margin increase exceeds 100 bps because the mechanism is explicit: $28.2m of core-transaction growth absorbs a cost base that includes exchange operations, technology, regulation, and market supervision; $13.3m of mixed-residual growth adds some recurring mix while retaining gross-to-net and Digital uncertainty; and the modeled post-2025 Digital burden normalizes without recasting any FY2022-FY2024 Digital losses into Futures.

The bull margin does not return all the way to a theoretical mature-exchange ceiling despite much higher revenue. Event products need customer acquisition and surveillance, extended hours add staffing and resilience expense, and the Digital integration means the segment's accounting perimeter is broader than FY2024. The base reaches $107.2m of `Operating income (loss)`, a 7.0% five-year CAGR from $76.4m. The bear margin remains positive because the VIX franchise and some access/data revenue provide a floor, but profit declines 14.7% from $76.4m to $65.2m even though revenue declines only 3.8%.

10. Segment rollup, reconciliation, and sensitivities

Case	Core transaction proxy	Mixed residual	Incremental event/new products	Segment revenue	Revenue CAGR	Segment Operating income (loss) margin	Segment Operating income (loss)	Profit CAGR
Bear	$93.7m	$41.4m	$0.0m	$135.1m	(0.8%)	48.3%	$65.2m	(3.1%)
Base	$129.2m	$52.7m	$0.0m	$181.9m	5.3%	58.9%	$107.2m	7.0%
Bull	$159.9m	$63.5m	$18.0m	$241.3m	11.4%	64.8%	$156.3m	15.4%

Revenue tie-outs are exact to displayed precision: bear $93.7m + $41.4m + $0.0m = $135.1m; base $129.2m + $52.7m + $0.0m = $181.9m; bull $159.9m + $63.5m + $18.0m = $241.4m versus $241.3m from unrounded components, a $0.1m display-rounding difference or 0.04%. Profit tie-outs use unrounded line values: bear $51.5m + $13.7m = $65.2m; base $84.0m + $23.2m = $107.2m; bull $115.1m + $33.7m + $7.6m = $156.4m versus $156.3m from unrounded components. All analytical-line-to-segment residuals are below 0.1%, comfortably inside the 1% contract. Profit CAGRs are measured over exactly five years from the sealed $76.4m TTM base.

The table below isolates key base-case sensitivities while holding all other base assumptions constant. It is not a probability-weighted forecast; it shows the mechanical exposure around the $181.9m base revenue outcome.

Sensitivity at 2031-06-30	**Revenue impact versus base**	**Approximate `Operating income (loss)` impact**	**Interpretation**
ADV CAGR 1 point higher for five years	+$6.3m	+$4.1m	Liquidity and adoption compound through the core transaction line.
ADV CAGR 1 point lower for five years	$(6.1)m	$(4.0)m	Quiet volatility or substitute hedges reduce contracts.
RPC CAGR 0.5 point higher	+$3.2m	+$2.1m	Mix and pricing improve without a volume response.
RPC CAGR 0.5 point lower	$(3.2)m	$(2.1)m	Incentives or lower-fee mix dilute take rate.
Residual-line CAGR 2 points higher	+$5.2m	+$2.3m	More existing-perimeter access, data, and platform demand; residual composition remains undisclosed.
Incremental event/new revenue reaches $6m	+$6.0m	+$2.1m	This is upside to the zero-event base, not an issuer-guided product forecast.
Proxy trading-day count one day higher in each quarter	$0.0m	$0.0m	About $1.6m shifts from residual to proxy; the sealed segment total is unchanged.
Segment margin 200 bps lower	$0.0m	$(3.6)m	Investment or Digital costs persist without changing revenue.

The most important insight is that base-case value assigns no additive event-contract revenue. The $18m bull-only amount is a sensitivity-like option, not a separately disclosed product forecast; it includes associated access/data demand and therefore must not be added again through the residual line. The asymmetry is appropriate for a nascent product, but consolidated valuation should not capitalize the $18m as a stand-alone franchise without evidence of durable liquidity and net revenue after incentives.

Rollup instructions for the main model are simple. Use the three scenario revenue and `Operating income (loss)` values above as the Futures segment line. Do not add Digital separately; it is already inside the post-2025 perimeter. Do not allocate Corporate Items and Eliminations, interest income, investment gains, other income, tax, or consolidated capex into this segment. Those items remain outside Futures and are projected once in the statutory synthesis. The sealed bridge has no operating adjustment between the sum of reportable-segment `Operating income (loss)` and statutory operating income other than Corporate Items and Eliminations.

11. Key risks and wildcards

[Bear] Volatility-regime normalization. VIX futures volume can be high during stress and subdued during extended calm. The business benefits from uncertainty but cannot forecast crises as a growth strategy. A quiet five-year regime would pressure ADV and delay fixed-cost absorption.

[Bear] Benchmark or methodology concentration. The franchise depends disproportionately on the integrity, acceptance, and tradability of VIX. A methodology controversy, settlement disruption, legal challenge, or loss of user confidence could affect both volumes and data value.

[Bear] Substitute hedges and capital efficiency. SPX options, ETF options, equity-index futures, OTC volatility instruments, and dynamic hedging can replace some VIX futures exposure. Cross-margin or capital changes at competitors could shift the economics even if CFE execution quality remains good.

[Bear/Base] Fee and incentive pressure. Large intermediaries are sophisticated and multi-homed. Raising fees too aggressively may change routing, product choice, or market-maker participation. The modest historical RPC CAGR is a better anchor than an assumption of unconstrained pricing.

[Bear] Digital perimeter drag. Cboe does not disclose remaining Digital revenue or expense inside Futures. Integration, technology, compliance, or exit-related costs could persist longer than the base margin path assumes. Because the old Digital losses were not recast, apparent historical comparisons offer little protection against this uncertainty.

[Bear/Bull] Event-contract regulation. The regulatory direction can expand the addressable market or sharply constrain products, jurisdictions, marketing, and customer access. The CFTC's 2026 actions show active policy development, not finality. State-level litigation or gaming-law disputes can add friction even where federal derivatives jurisdiction applies.

[Bear/Base] Liquidity launch risk. A listed contract without tight spreads, market makers, broker distribution, and repeat use creates little revenue. Infrastructure reuse reduces launch cost but does not manufacture network effects. This is why incremental event revenue is zero in both bear and base.

[Bull] International and retail distribution. More brokers, longer trading hours, smaller contract formats, and education can widen the user base. If these users deepen liquidity rather than simply cannibalize existing contracts, ADV can compound above historical rates.

[Bull] Cross-product flywheel. Growth in SPX options, VIX options, and volatility strategies can produce more hedging and arbitrage in VIX futures. That benefit crosses reportable segments operationally but should not cause revenue or profit double counting in the financial rollup.

[Bear] Operational resilience and cyber risk. The brand promises executable hedges during stress, precisely when systems are under the most load. An outage, data error, surveillance failure, or cyber incident during a volatility event could cause regulatory sanctions, customer losses, and lasting liquidity damage.

[Base/Bull] Data and access monetization. Depth-of-book data, port capacity, licensing, and new-product feeds may grow faster than ADV and raise revenue quality. The risk is customer consolidation or resistance to data fees. Subscriber counts are a true non-disclosure, so this thesis must be judged through revenue outcomes rather than invented account metrics.

[Bear/Base] Expense rigidity. Regulated-market surveillance, systems safeguards, compliance, and cyber readiness create a cost floor. Management's “disciplined expense management” helps, but margin protection is structurally weaker in a revenue downturn than a purely variable-cost model would imply.

Investment and management implications

For management, the priority should be depth before breadth. VIX futures economics improve when liquidity, broker access, clearing support, and cross-product usefulness reinforce one another. New contracts should be judged against measurable thresholds—active market makers, repeat users, bid-ask spreads, open interest, and revenue net of incentives—rather than the number of products listed. The zero-revenue base treatment lets management rationally exit unsuccessful event products without breaking the segment thesis.

The Digital lesson is equally important. The segment's current 54.4% margin is the honest post-combination starting point, while FY2024's 70.1% is evidence of legacy CFE potential, not a forecast entitlement. A credible return toward 58%-65% should be demonstrated through disclosed segment profit, stable platform expense, and recurring access/data growth. If revenue grows but margin does not, investors should assume reinvestment or perimeter costs are more durable than expected.

For investors, Futures is small—only 2.9% of FY2025 gross company revenue—but its marginal economics and strategic relevance are larger than its size suggests. It strengthens the Cboe volatility ecosystem and provides optionality around event and other derivatives. At the same time, a favorable Futures outcome cannot rescue a consolidated thesis if Options, equities, or Data Vantage disappoint. The appropriate modeling approach is a carefully reconciled segment line with asymmetric new-product upside, not a heroic growth narrative.

Summary

Case	Segment TTM+5y Revenue	Exact profit metric	Segment TTM+5y Profit Margin	Segment TTM+5y Profit	Probability
Bear	$135.1m	`Operating income (loss)`	48.3%	$65.2m	25%
Base	$181.9m	`Operating income (loss)`	58.9%	$107.2m	55%
Bull	$241.3m	`Operating income (loss)`	64.8%	$156.3m	20%

Probability-weighted segment revenue is $182.1m and probability-weighted `Operating income (loss)` is $106.5m. Those expected values are arithmetic summaries, not a fourth scenario. The base case remains the recommended rollup anchor because it requires neither crisis-level volatility nor any additive event-contract revenue, while allowing measured benefit from Cboe's benchmark, liquidity, distribution, access, and data moat.

Appendix B5 - Global FX

Global FX — Segment Deep Dive

Company: Cboe Global Markets **Forecast base:** TTM ended 2026-06-30 **Forecast horizon:** 2031-06-30, exactly five calendar years after the base **Reporting currency:** USD millions unless stated otherwise **Exact segment profit metric:** `Operating income (loss)` **Revenue basis used for the forward model:** segment net revenue, because it is the post-liquidity-payment amount linked mechanically to ADNV and net capture. Historical gross revenue remains shown where that is the only five-year segment series in the reviewed data package.

0. Segment boundary and taxonomy note

Global FX is one of Cboe's five reportable segments and its composition is stable across FY2021-FY2025 and the TTM period. The only material recent reportable-segment taxonomy change was the prospective combination of Digital into Futures on 2025-01-01; it did not affect Global FX. Cboe's later portfolio realignment also did not move Global FX out of the five-segment reporting structure through Q2 2026. Cash and Spot Markets and Data Vantage are cross-segment revenue categories, not reportable segments, so this appendix does not substitute either category for Global FX or assign Cboe-wide data revenue to this segment. [data_package §1, lines 117-131]

This boundary matters in two ways. First, the segment contains institutional spot FX activity on Cboe FX and associated SEF activity, while the data package identifies ADNV and net capture as the controlling operating drivers. Second, the issuer discloses one segment-level `Operating income (loss)` line but does not publish a consistent dollar split among spot ECN, Full Amount, NDF, connectivity, and market-data products. The financial forecast therefore remains one reportable segment, supported by an analyst driver bridge rather than fabricated product histories. Corporate Items and Eliminations remain outside Global FX and are reserved for the synthesis-stage statutory bridge. [data_package §3a, Forecast-driver schedule row 250]

1. What this segment actually is

Global FX is an electronic institutional foreign-exchange venue. Its core service is to bring liquidity providers and liquidity takers together for spot currency trading, with Cboe earning transaction revenue on notional matched. It is not a retail broker, does not primarily warehouse directional currency risk, and does not earn a conventional bank spread by taking the other side of customer trades. The platform's economic job is to make price discovery, credit intermediation, connectivity, matching, reporting, and execution quality reliable enough that banks, non-bank market makers, hedge funds, commodity-trading advisers, asset managers, proprietary firms, and other institutional users direct flow to it.

The execution menu matters because institutional FX is not one homogeneous order type. Cboe's anonymous ECN supports sweepable, firm, and non-firm liquidity; aggressive, passive, disclosed, anonymous, and curated interactions; and spot, metals, and NDF products. Its Full Amount protocol is designed for a single-ticket fill of a larger order, limiting information leakage and market impact. The official protocol description says price takers can use the same API as the ECN to transfer risk discreetly, while market makers can use Cboe's technology, credit infrastructure, reporting, and liquidity-management tools. Those capabilities make Global FX a venue and workflow product, not merely a matching-engine commodity. [Cboe FX trading protocols](https://www.cboe.com/global/fx/trading_protocols/)

Customers connect directly or through institutional middleware and vendor partners using FIX order entry, ITCH or FIX market-data feeds, and graphical interfaces. Cboe operates matching infrastructure in New York and London, giving the platform physical proximity to major liquidity pools and allowing users to manage latency and regulatory requirements across regions. Prime-broker relationships and pre-trade risk controls help translate bilateral institutional credit into executable venue liquidity. The platform is explicitly institutional: Cboe's resource materials describe an approximately $600,000 average trade size and say it seeks a $500,000 minimum trade size, even though smaller orders can be submitted. [Cboe FX resources](https://www.cboe.com/global/fx/resources/)

Pricing has four economic layers. Transaction fees are charged on matched notional and reduced by liquidity payments; the resulting net transaction revenue is represented by Cboe's net-capture metric per $1 million traded. Connectivity and access charges monetize ports, sessions, capacity, and low-latency infrastructure. Market-data revenue monetizes live feeds, historical quotes and trades, and analytics use cases. Finally, product mix changes the effective rate: spot ECN, Full Amount, and NDF/SEF activity do not necessarily have identical economics, even though the issuer reports one blended Global FX capture rate.

Go-to-market is an institutional network-building exercise. Cboe must onboard liquidity providers, prime brokers, buy-side firms, and vendor channels; curate the quality of quoted liquidity; maintain response-time and fill-quality standards; and persuade users that its venue improves total execution cost. The current Cboe product description emphasizes a diverse contributor base and analytics-driven liquidity curation. Its market-data offering says anonymous quotes and trades are supplied by global banks, hedge funds, CTAs, asset managers, and proprietary traders. That multi-contributor mix is central: a venue with more natural and market-making flow can show better depth and price continuity, which attracts more takers and in turn encourages providers to quote more competitively. [Cboe FX Spot](https://www.cboe.com/global/fx/spot/) and [Cboe FX market data](https://www.cboe.com/market_data_services/global/fx/)

2. Current economics at the TTM base

The TTM ended 2026-06-30 contains Q3 2025, Q4 2025, Q1 2026, and Q2 2026. Global FX net revenue was $103.2m, obtained by summing the four reviewed quarterly net-revenue observations of $22.5m, $23.7m, $29.4m, and $27.6m. The issuer's exact segment profit measure, `Operating income (loss)`, was $56.5m. The resulting margin on net revenue was 54.7%. [data_package §5, Global FX row 295; data_package §3a, TTM bridge row 233]

For comparison, FY2025 gross segment revenue was $93.8m, `Operating income (loss)` was $46.0m, and margin on gross revenue was 49.0%. Gross revenue and net revenue are not interchangeable: liquidity payments lie between them. The model therefore labels the denominator every time. The Q2 2026 reported margin of 56.2% was on net revenue, consistent with this forward convention. [data_package §3, Global FX rows 195-198; data_package §5, lines 287-295]

Operating activity accelerated into the TTM. Quarterly ADNV was $49.9bn, $53.3bn, $70.4bn, and $60.6bn, while capture was $2.89, $2.95, $2.87, and $2.96 per $1m. Q1 showed why volatility cannot be separated from the revenue analysis: notional spiked while capture eased. Q2 showed the reverse at the margin: ADNV normalized but capture improved. The four-quarter averages are approximately $58.5bn ADNV and $2.92 capture. These averages are analyst calculations from data-package observations; they are not additional issuer disclosures and, because both published KPIs are rounded, their product is only a cross-check on reported transaction fees. [data_package §5, Operating-driver rows 314-315]

The following bridge reconciles the disclosed KPIs to the TTM economic base. The transaction sleeve is the $88.8m sum of the four SEC-filed quarterly `Net transaction and clearing fees` lines: $19.1m, $20.4m, $25.6m, and $23.7m. A modeled 260 venue days is used only to cross-check that reported sum against rounded ADNV and capture; it does not overwrite reported revenue. [EX25Q3–EX26Q2, Table 3, as identified in data_package §0 and §5]

TTM economic bridge	Amount	Status and source
Global FX segment net revenue	$103.2m	Reported quarterly sum; data_package §5, row 295
`Operating income (loss)`	$56.5m	Sealed TTM bridge; data_package §3a, row 233
`Operating income (loss)` margin on net revenue	54.7%	$56.5m / $103.2m
Average ADNV	$58.5bn	Analyst calculation from data_package §5, row 314
Average net capture per $1m	$2.92	Analyst calculation from data_package §5, row 315
Modeled venue days for KPI cross-check	260	Analyst convention; four quarterly KPIs are rounded
Net transaction and clearing fees	$88.8m	Reported quarterly sum; EX25Q3–EX26Q2 Table 3
Residual data, access, capacity, and other net revenue	$14.4m	$103.2m less $88.8m; analyst residual, not a disclosed product-revenue split

The transaction sleeve accounts for about 86.0% of TTM net revenue, leaving about 14.0% for data, access, capacity, and other revenue in the analyst bridge. This is not a claimed issuer product split: only the $88.8m transaction-fee sum and $103.2m segment net revenue are reported, while the characterization of the $14.4m difference is analytical. It is a useful forecast control because transaction revenue should respond primarily to ADNV and capture, while non-transaction revenue should respond to client connections, ports, feeds, geography, and product breadth. `[DATA GAP: Cboe does not disclose a consistent Global FX dollar split among spot ECN, Full Amount, NDF/SEF, connectivity, and market data; the $88.8m/$14.4m split must not be read as disclosed product economics.]`

The segment's direct capital intensity is low relative to a balance-sheet intermediary: matching engines, software, colocation, network capacity, surveillance, and personnel require investment, but the venue does not need to finance the full notional it matches. However, low physical capital does not mean zero reinvestment. Reliability, cyber resilience, capacity, data-feed performance, vendor certification, and duplicate New York/London infrastructure are table stakes. Cboe does not disclose

segment capex or segment R&D. Company-wide FY2026 capex guidance rose to $98m-$108m, but allocating that range to Global FX would be false precision. [data_package §6, line 360] `[DATA GAP: segment-level capex, depreciation, and R&D are not separately disclosed.]`

3. Unit economics

The simplest Global FX revenue equation is:

`Net transaction revenue = ADNV x active trading days x two charged sides x net capture per $1m`

Total segment net revenue then adds data, access, capacity, and other net revenue. Profit subtracts technology operations, market supervision, sales and client service, infrastructure, depreciation and amortization, and allocated segment personnel. This structure creates strong incremental margins when volume rises on existing infrastructure. A matching engine can process materially more notional without a proportional increase in people or physical assets. That scale effect is visible in the historical gross-revenue margin: 4.6% in FY2021, 12.8% in FY2022, 33.0% in FY2023, 41.6% in FY2024, and 49.0% in FY2025. [data_package §3, Global FX rows 197-198]

Volume is the largest variable driver, but its quality matters. A rise in market-wide volatility can lift notional rapidly, yet extremely one-sided or toxic flow can cause liquidity providers to widen quotes, reject more requests where non-firm liquidity is permitted, or reduce size. Conversely, a broader institutional customer base and more firm liquidity can support higher sustainable volume without an equal increase in adverse-selection cost. Cboe's product design lets clients select different combinations of firm/non-firm and disclosed/anonymous liquidity, making liquidity curation a revenue-quality tool rather than a mere interface feature.

Capture is the second lever and must be forecast separately. Net capture can improve because of price changes, mix shift toward higher-value protocols, more NDF or Full Amount activity, less aggressive liquidity incentives, or better segmentation of maker and taker behavior. It can fall if venues compete for market makers, if large clients receive tier discounts, if flow shifts toward lower-rate currency pairs, or if Cboe deliberately spends capture to gain share. The FY2021-FY2025 capture series moved from $2.73 to $2.69 to $2.64 to $2.68 to $2.85 per $1m, showing that rate is neither a fixed escalator nor a structural decliner. [data_package §0a, Material KPI family row 64]

Non-transaction revenue improves the quality of the model because it should be less volatile than daily matched notional. Real-time feeds, historical data, connectivity, ports, and capacity can grow with clients, locations, and analytical use. Cboe's dedicated currency-pair ITCH feeds and its historical quote/trade products create monetization beyond the matched ticket. But the data package does not disclose Global FX customer counts, subscriptions, or a product-level dollar history. Company-wide access and capacity plus market data rose at an 8.4% FY2021-FY2025 CAGR, a useful structural cross-check but not a segment-specific growth rate. [data_package §0a, Recurring data and access economics, lines 89-97]

The cost base has a fixed/semi-fixed character. Core engineering, surveillance, cyber defense, regulatory compliance, support coverage, and data-center presence do not disappear in a quiet quarter. That makes low-volume periods operationally deleveraging. Sales incentives, capacity, and support usage vary more directly with activity, but not one-for-one. The historical margin expansion therefore likely combines scale, capture improvement, disciplined expense growth, and product maturity; it should not be extrapolated indefinitely. Once a venue has reached the mid-50s margin on net revenue, competition and ongoing technology refresh constrain further expansion.

Specific margin-up mechanisms are: higher ADNV on existing matching capacity; share gains that deepen liquidity without equivalent acquisition cost; a larger share of firm or Full Amount execution that customers value; more NDF/SEF activity; capture above $3.00 per $1m; and faster data/access growth. Margin-down mechanisms are: share bought through rebates or liquidity payments; capacity and resilience investment ahead of revenue; price competition from larger multi-asset venues; lower capture from protocol/currency mix; regulatory or surveillance expense; and prolonged low volatility. The base case assumes some scale leverage but keeps investment high enough to defend the network.

4. Competitive dynamics

Global FX competes in a fragmented but intensely networked institutional market. Direct competitors include CME's EBS Market for central, firm-liquidity spot and NDF price discovery; LSEG's Matching and FXall franchises; Deutsche Börse's 360T and GTX businesses; FXSpotStream's bank-owned streaming network; Bloomberg venues and workflows; and bank-owned single-dealer platforms and multi-dealer aggregators. These offerings overlap but are not identical. EBS has deep liquidity in important currency pairs and a strong interdealer identity. FXall and 360T combine trading with institutional workflow and

relationship-based execution. FXSpotStream emphasizes streaming connectivity to bank liquidity providers. Single-dealer platforms can bundle research, credit, relationship pricing, and execution.

The competitive pool is much broader than Cboe's disclosed-venue share denominator. The BIS measured $3.0tn of global spot turnover per day in April 2025, up 42% from 2022, while all OTC FX instruments reached $9.6tn. Cboe's approximately $50bn-$60bn daily segment activity is therefore only a small share of all global spot activity. The more relevant venue-share measure compares Cboe with publicly reporting electronic spot venues; Cboe's official 2024 recap reported 19.6% share in that narrower pool. One must not divide Cboe ADNV by the BIS total and call the result Cboe's disclosed market share because BIS uses different coverage and double-counting conventions. [BIS 2025 FX survey](https://www.bis.org/publications/202509-commentary-otc-derivatives) and [Cboe FX 2024 recap](https://www.cboe.com/insights/posts/cboe-fx-2024-recap-and-look-ahead)

Market growth is attractive but cyclical. The BIS found that interdealer trading was 46% of global turnover and other financial institutions were 50%, with the latter growing faster. That supports Cboe's institutional positioning: asset managers, hedge funds, non-bank firms, and other financial customers are important marginal sources of electronic flow. Yet the April 2025 survey also coincided with tariff-related volatility, so its 42% spot growth should not be used as a five-year annual growth rate. The base case deliberately normalizes addressable electronic spot growth to about 6%.

Competitor volumes demonstrate both the size of the opportunity and the risk of share pressure. FXSpotStream reported monthly 2025 spot ADV ranging roughly from $67bn to $91bn through the first half and rising later in the year, while CME said EBS exceeded $100bn ADV on several volatile April 2025 days. Deutsche Börse reported 360T all-product FX ADV of EUR169.6bn for FY2025, though that broader measure is not directly comparable with Cboe spot/SEF ADNV. These figures show that Cboe is a meaningful venue but not uniquely scaled. [FXSpotStream volumes](https://www.fxspotstream.com/volumes/), [CME on EBS liquidity](https://www.cmegroup.com/articles/2025/fx-traders-lovers-of-the-light.html), and [Deutsche Börse monthly indicators](https://www.deutsche-boerse.com/resource/blob/249080/d0fe0bb893c755a660f16a47b11ad35d/data/monthly-volume-development_en.pdf)

Pricing power is therefore conditional. Cboe can monetize differentiated execution quality, firm liquidity, low information leakage for large trades, credit controls, and high-quality data. It cannot raise capture freely if competing venues offer similar fills at lower explicit cost or if banks internalize more flow. Institutional clients measure spread, market impact, reject rate, information leakage, response time, fill ratio, and operational risk, not just the fee printed on an invoice. The platform's ability to improve total execution cost is the source of pricing power; network membership alone is insufficient.

Entry barriers are substantial but not absolute. A new entrant can buy matching technology, but it cannot quickly reproduce prime-broker links, market-maker relationships, buy-side integrations, certified APIs, global support, historical performance, surveillance credibility, and two-sided liquidity. Liquidity is path-dependent: users prefer venues where their counterparties already participate, and providers prefer venues with attractive, diverse order flow. Regulatory permissions, the FX Global Code, operational resilience, and data-center connectivity add further friction. The GFXC's current code emphasizes robust, fair, liquid, open, and appropriately transparent markets; meeting those expectations is a continuing cost of legitimacy. [Global FX Code](https://www.globalfxc.org/fx-global-code/)

Substitution risk is still real. Dealer internalization can prevent client flow from reaching multilateral venues. Algorithmic smart-order routers can commoditize individual venues by moving flow to whichever pool has the best expected outcome. Futures can substitute for spot or NDF exposure in some use cases, particularly when centralized clearing and transparency are valued. Relationship-based request-for-stream and request-for-quote protocols can win sensitive institutional trades that do not suit anonymous order books. Cboe's answer is protocol breadth, but broader breadth raises its own complexity and support costs.

5. Moat at the segment level

Global FX has a real but narrower moat than Cboe's proprietary-index options franchise. The strongest protection is the liquidity-and-connectivity network: banks and non-bank liquidity providers quote because institutional takers connect, while takers connect because the venue aggregates credible two-sided liquidity. Each prime-broker arrangement, vendor certification, API integration, and client workflow makes the network more useful and raises switching friction. Historical data and execution analytics deepen the relationship because users can calibrate algorithms, measure fill quality, and back-test behavior on the same venue.

The second protection is execution-product design. Full Amount serves larger risk transfer with a single-ticket objective and reduced information leakage. The ECN lets users choose firm, non-firm, anonymous, disclosed, and curated interactions. This breadth allows Cboe to accommodate different toxicity, latency, credit, and information-leakage preferences without forcing every customer into one market model. Dedicated New York and London matching infrastructure plus currency-pair feeds strengthen performance and resilience. Those features are replicable in principle, but reproducing them with comparable liquidity is difficult.

The third protection is institutional trust. FX venues handle fast-moving markets where outages, stale prices, reject behavior, and information handling can be more expensive than the explicit fee. Cboe's broader regulated-market reputation, daily transparency, liquidity standards, and commitment to the FX Global Code can reduce perceived counterparty and conduct risk. Trust is slow to build and quick to lose, which makes operational discipline part of the moat.

The moat does not create monopoly pricing. Cboe lacks an exclusive underlying index in spot FX, currency pairs are fungible across venues, and sophisticated clients can multi-home. Large dealers can internalize orders or steer customers to their own platforms. Competitors have equally strong brands, distribution, and liquidity in different pools. Consequently, the defensible claim is that Cboe can sustain a meaningful share and attractive incremental margin through execution quality and network depth, not that it can take share every year or raise capture without consequence.

Over five to ten years, durability depends on three tests. Cboe must keep latency, fill quality, resilience, and risk controls at least competitive; expand protocols and regions without fragmenting liquidity; and turn venue data into paid products without discouraging order flow. Passing those tests supports a mid-to-high-50s `Operating income (loss)` margin on net revenue. Failing them could push market share toward the high teens and capture back toward the mid-$2s, producing revenue stagnation even if global FX volumes grow.

6. Historical growth rates

The data package's consistent dollar-disclosed product level is the Global FX reportable segment; lower-level product dollars are a true non-disclosure. The table therefore uses the finest disclosed line and does not back-solve ECN, Full Amount, NDF/SEF, connectivity, or data revenue.

Product / sub-segment	FY2022 rev	FY2023 rev	FY2024 rev	FY2025 rev	3-yr CAGR	FY2025 YoY	Data package cite
Global FX segment gross revenue	~$69m [data_package §3, row 195]	$75.0m [data_package §3, row 195]	$80.0m [data_package §3, row 195]	$93.8m [data_package §3, row 195]	~10.8% FY2022-25 [calculated from rounded data_package §3, row 195]	17.4% [data_package §3, row 196]	data_package §3, Global FX rows 193-198

The conventional three-year CAGR spans the three compounding intervals from FY2022 to FY2025 and is approximately 10.8% using the data package's rounded FY2022 value. The more recent FY2023-to-FY2025 CAGR is 11.8% across two intervals. Keeping both prevents the common error of calling three annual observations a three-year CAGR.

Internal arithmetic check: $75.0m x 1.067 = $80.0m, matching FY2024 after rounding. $80.0m x 1.174 = $93.9m versus the reported $93.8m, a $0.1m rounding difference or 0.1%, well inside the required 2% tolerance. No historical product dollars were back-solved.

The operating drivers corroborate the revenue pattern without being treated as product revenue.

Operating driver	FY2023	FY2024	FY2025	FY2023-25 CAGR or change	Latest interim	Data package cite
Global FX ADNV	$44.7bn	$46.7bn	$52.8bn	8.7% CAGR	$60.6bn in Q2 2026	data_package §0a, Material KPI row 63
Net capture per $1m	$2.64	$2.68	$2.85	+$0.21, or 8.0% cumulative	$2.96 in Q2 2026	data_package §0a, Material KPI row 64
Quarterly segment net revenue	n/a	n/a	n/a	n/a	$27.6m in Q2 2026, +17% YoY	data_package §5, Global FX row 295

Driver tie-outs are directionally strong: FY2024 ADNV growth of about 4.5% plus capture growth of about 1.5% is consistent with mid-single-digit revenue growth; FY2025 ADNV growth of about 13.1% plus capture growth of about 6.3% supports high-teens revenue growth. Differences arise from trading days, protocol mix, and non-transaction revenue. No product-level revenue is inferred from these percentages.

7. Management guidance from the reviewed data package

Management has not provided a stand-alone five-year Global FX revenue or margin target. The relevant statements therefore constrain the model qualitatively rather than supply a numeric segment guide.

- **Q3 2025 call, 2025-10-31 — Craig Donohue; data_package §6, line 347:** “organic opportunity.” The comment framed new event products as using existing infrastructure. For Global FX, the relevant interpretation is that Cboe favors extensions that reuse technology and distribution; no incremental Global FX revenue was quantified.

- **Q4 2025 call, 2026-02-06 — Jill Griebenow; data_package §6, line 348:** “disciplined expense management.” The data package applies this directly to Futures and notes its volume sensitivity. It is still a useful company operating principle, but it is not permission to assume fixed Global FX costs or immediate margin expansion.

- **Q2 2026 call, 2026-07-31 — Jill Griebenow; data_package §6, line 349:** “doesn't incorporate anything incremental.” The latest company revenue upgrade excluded material contribution from unproven products. The Global FX base case similarly excludes a major new product windfall and relies on venue volume, capture, share, and data/access execution.

- **Q3 2025 call, 2025-10-31 — Craig Donohue; data_package §6, line 354:** “nearly 90% ... new unit and new sales.” This Data Vantage observation indicates that most incremental cross-company data revenue came from units and sales rather than price. For Global FX, it supports a client/usage-led non-transaction forecast, but it is not a disclosed segment mix.

- **Q4 2025 call, 2026-02-06 — Jill Griebenow; data_package §6, line 355:** “mid to high single-digit.” This was the initial FY2026 Data Vantage organic target. It provides a conservative starting range for the segment's data/access residual, not a direct Global FX guide.

- **Q1 2026 call, 2026-05-01 — Jill Griebenow; data_package §6, line 356:** “low double-digit.” Data Vantage's target was upgraded after Q1, showing stronger current demand for Cboe-wide data and access products.

- **Q2 2026 call, 2026-07-31 — Jill Griebenow; data_package §6, line 357:** “low teens.” The second Data Vantage upgrade followed 15% Q2 growth. The base case does not carry low-teens growth for Global FX non-transaction revenue for five years; it fades that cross-company signal to an 8% CAGR.

- **Q2 2026 SEC release, 2026-07-31 — Craig Donohue; data_package §6, line 358:** “We're investing in opportunities that will define Cboe's future.” Management named event contracts, Cboe Clear U.S., and around-the-clock access. None is a Global FX revenue commitment; the implication is that group resources remain contested and Global FX must keep earning investment through returns.

The company FY2026 organic net-revenue guide was mid-to-high teens and Data Vantage's guide was low teens. Global FX Q2 net revenue grew 17%, within that company context, but a cyclically strong current year should not be compounded unchanged. The five-year base case decelerates from 12% in year one to 4.7% in year five and produces a 7.6% CAGR.

8. Forward growth assumptions

Base case

Product	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Base CAGR TTM to TTM+5y	Justification
Global FX segment net revenue	~10.8% FY2022-25 gross revenue; 11.8% FY2023-25	17% Q2 2026 net revenue	No segment guide; company organic guide mid-to-high teens	7.6%	ADNV grows with institutional electronic FX, the scenario share proxy edges to 20.5%, capture reaches $3.05, and the non-transaction residual grows 8%; current volatility normalizes.

The base addressable publicly reporting electronic spot pool grows from an analyst proxy of about $293bn ADV at the TTM base to $393bn in 2031, about a 6.1% CAGR. Cboe share rises modestly from the 20.0% proxy to 20.5%, producing $80.6bn ADNV. Because the data package does not provide a consistent denominator, the pool/share decomposition is a scenario narrative and sensitivity, not an independently sourced historical identity; the actual forecast input is Cboe ADNV. Capture increases from $2.92 to $3.05 as protocol and client mix offset tier pressure. The $14.4m non-transaction residual grows 8%, consistent with but below recent company Data Vantage guidance over a five-year horizon. This generates $148.9m of horizon net revenue using unrounded pool/share inputs.

Bull case

Product	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bull CAGR TTM to TTM+5y	Justification
Global FX segment net revenue	~10.8% FY2022-25 gross revenue; 11.8% FY2023-25	17% Q2 2026 net revenue	No segment guide; company organic guide mid-to-high teens	12.6%	Aggregate ADNV reaches $96.8bn, the scenario share proxy reaches 22.5%, capture reaches $3.20, and the non-transaction residual compounds at 12%; NDF is qualitative upside, not a separate dollar sleeve.

The bull pool reaches $430bn ADV, approximately 8% annual growth, supported by secular electronification and more trading by financial institutions. Cboe wins share through liquidity quality, Full Amount, firm execution, and London/New York distribution. NDF can contribute to aggregate volume and mix, but no separate NDF revenue, capture, margin, or client-concentration assumption is made because none is disclosed. Share of 22.5% is demanding but not independently verifiable from the data package. Capture of $3.20 assumes customers pay for better outcomes and that mix improves without a rebate war. Horizon net revenue is $186.4m.

Bear case

Product	3-yr historical CAGR	Latest YoY	Mgmt FY+1 guide	Bear CAGR TTM to TTM+5y	Justification
Global FX segment net revenue	~10.8% FY2022-25 gross revenue; 11.8% FY2023-25	17% Q2 2026 net revenue	No segment guide; company organic guide mid-to-high teens	0.0%	Industry activity grows only 3%, the scenario share proxy falls to 18%, capture retraces to $2.70, and 4% residual growth only offsets transaction pressure.

The bear case is not a global FX collapse. The scenario pool still grows to $339bn ADV, but bank internalization, strong streaming competitors, and weaker Cboe execution outcomes reduce the share proxy. Lower capture reflects fee competition and liquidity incentives. Cboe ADNV ends at $61.0bn, only modestly above the TTM average despite market growth. Non-transaction revenue provides a cushion, leaving horizon net revenue at $103.2m.

Explicit driver build

Driver	TTM base	Bear 2031	Base 2031	Bull 2031
Publicly reporting electronic spot pool ADV	~$293bn analyst proxy	$339bn	$393bn	$430bn
Cboe venue share	20.0% analyst proxy	18.0%	20.5%	22.5%
Cboe Global FX ADNV	$58.5bn	$61.0bn	$80.6bn	$96.8bn
Net capture per $1m	$2.92	$2.70	$3.05	$3.20
Modeled venue days	260 cross-check	260	260	260
Net transaction revenue	$88.8m reported sum	$85.7m	$127.8m	$161.0m
Data/access/other net revenue	$14.4m analyst residual	$17.5m	$21.2m	$25.4m
Total segment net revenue	$103.2m reported	$103.2m	$148.9m	$186.4m

The 20.0% TTM share is an analyst proxy anchored to Cboe's official 19.6% 2024 disclosed-venue share and the data package's subsequent ADNV growth. It is not a data-package historical disclosure and is used only to make share sensitivity explicit. Revenue is calculated from Cboe ADNV, capture, venue days, and the separate residual; pool and share do not provide a second, supposedly independent forecast. `[DATA GAP: the reviewed package contains Global FX ADNV and capture but no consistent FY2025-TTM publicly reporting venue-share series or denominator; the starting share and pool are model proxies.]`

Year-by-year deceleration path

Case	2027-06-30	2028-06-30	2029-06-30	2030-06-30	2031-06-30	Endpoint net revenue
Bear revenue growth	3.0%	0.0%	(1.0%)	(1.0%)	(0.9%)	$103.2m
Base revenue growth	12.0%	9.0%	7.0%	5.5%	4.7%	$148.9m
Bull revenue growth	16.0%	14.0%	12.0%	10.0%	10.85%	$186.4m

The base deceleration is deliberate. Latest quarterly growth of 17% benefits from a strong ADNV/capture environment; carrying 17% for five years would more than double revenue and require a much larger share gain than assumed. The base path falls to high single digits as market activity normalizes, then to mid-single digits as Cboe's share stabilizes. This is less abrupt than assuming an immediate fall from 17% to low single digits and is consistent with a venue that still has structural electronic-volume and data tailwinds.

9. Forward `Operating income (loss)` margin assumptions

The exact segment profit metric is `Operating income (loss)`. Margins below use segment net revenue as the denominator. No corporate/unallocated expense, interest, investment gains, or tax is inserted into Global FX. The sealed TTM corporate line of negative $10.7m belongs outside the five reportable segments and is forecast once by synthesis. [data_package §3a, rows 233-257]

Case	TTM net revenue	TTM `Operating income (loss)` margin	TTM+5y net revenue	TTM+5y `Operating income (loss)` margin	Margin change	Specific mechanism
Bear	$103.2m	54.7%	$103.2m	48.0%	(670) bps	Share/capture pressure removes scale benefit while compliance, data-center, and engineering costs remain; liquidity incentives rise.
Base	$103.2m	54.7%	$148.9m	58.0%	+330 bps	Higher ADNV and recurring data/access revenue leverage the fixed platform while ongoing resilience investment caps expansion.
Bull	$103.2m	54.7%	$186.4m	62.0%	+730 bps	Strong ADNV, capture, and aggregate protocol mix create high incremental margin; investment grows slower than revenue but is not held flat.

The bear decline exceeds 100 bps because the mechanism is explicit: transaction revenue ends below the TTM transaction sleeve even though the market pool grows, while the platform must continue funding duplicate infrastructure, support, surveillance, and client connectivity. The segment cannot cut its way to an unchanged margin without risking liquidity quality and further share loss.

The base expansion also exceeds 100 bps, but it is modest relative to the revenue increase. Approximately $46m of net revenue is added over five years, while the margin rises only 330 bps. That implies Global FX reinvests a material portion of incremental gross profit in capacity, product, distribution, cyber resilience, and data. A 58% margin remains below an extreme software-like outcome and respects venue competition.

The bull margin requires both mix and scale. Capture reaches $3.20, the analyst residual grows 12%, and Cboe processes much more ADNV on its established platform. Even then, the model stops at 62%; it does not treat all incremental revenue as profit. No separate margin benefit is assigned to NDFs because their economics are undisclosed. If share is bought with rebates, the bull revenue case could occur with only a base-like margin, which is why revenue and margin sensitivities are shown separately.

The year-by-year operating path is:

Case and metric	2027-06-30	2028-06-30	2029-06-30	2030-06-30	2031-06-30
Bear net revenue	$106.3m	$106.3m	$105.2m	$104.2m	$103.2m

Case and metric	2027-06-30	2028-06-30	2029-06-30	2030-06-30	2031-06-30
Bear `Operating income (loss)` margin	53.0%	52.0%	50.0%	49.0%	48.0%
Bear `Operating income (loss)`	$56.3m	$55.3m	$52.6m	$51.1m	$49.5m
Base net revenue	$115.6m	$126.0m	$134.8m	$142.2m	$148.9m
Base `Operating income (loss)` margin	55.5%	56.3%	57.0%	57.5%	58.0%
Base `Operating income (loss)`	$64.2m	$70.9m	$76.8m	$81.8m	$86.4m
Bull net revenue	$119.7m	$136.5m	$152.8m	$168.1m	$186.4m
Bull `Operating income (loss)` margin	56.5%	58.0%	59.5%	61.0%	62.0%
Bull `Operating income (loss)`	$67.6m	$79.2m	$90.9m	$102.6m	$115.6m

10. Segment rollup and sensitivities

Because the issuer does not disclose product dollars below Global FX, the rollup contains one reportable-segment revenue line. The operating-driver sleeves reconcile to that line but are not presented as issuer products.

Case	Global FX transaction net revenue	Global FX data/access/other net revenue	Segment TTM+5y net revenue	`Operating income (loss)` margin	Segment `Operating income (loss)`
Bear	$85.7m	$17.5m	$103.2m	48.0%	$49.5m
Base	$127.8m	$21.2m	$148.9m	58.0%	$86.4m
Bull	$161.0m	$25.4m	$186.4m	62.0%	$115.6m

Revenue tie-out: Bear $85.7m + $17.5m = $103.2m; Base $127.8m + $21.2m = $149.0m versus $148.9m from the unrounded 20.5% × $393bn ADNV input; Bull $161.0m + $25.4m = $186.4m. Each displayed difference is at most $0.1m and arises only from rounding. **Profit tie-out:** $103.2m × 48.0% = $49.5m; $148.9m × 58.0% = $86.4m; $186.4m × 62.0% = $115.6m. No corporate line is included.

ADNV and capture sensitivity

The table holds horizon data/access/other net revenue at the base $21.2m and varies Cboe ADNV and capture. Values are total segment net revenue.

Cboe horizon ADNV	$2.70 capture	$3.05 capture	$3.30 capture
$70.0bn	$119.5m	$132.2m	$141.3m
$80.6bn	$134.4m	$149.0m	$159.5m
$90.0bn	$147.6m	$163.9m	$175.6m

At base ADNV, a $0.25 move in capture changes annual net revenue by approximately $10.5m. At base capture, moving ADNV from $70bn to $90bn changes net revenue by about $31.7m. This illustrates why capture cannot be treated as a rounding item: rate and volume interact multiplicatively.

Revenue and margin sensitivity

Horizon net revenue	54% margin	58% margin	62% margin
$140.0m	$75.6m	$81.2m	$86.8m
$148.9m	$80.4m	$86.4m	$92.3m
$160.0m	$86.4m	$92.8m	$99.2m

A four-point margin miss at base revenue changes horizon `Operating income (loss)` by approximately $6.0m. The operating-income range is material for Global FX but small relative to Cboe's total TTM segment profit; the greater investment significance is whether Global FX demonstrates that Cboe can compound attractive returns outside proprietary derivatives.

11. Key risks, wildcards, and management implications

[Bear] Venue-share erosion despite industry growth. Cboe can lose share even when global spot volume rises because institutional clients multi-home and route dynamically. EBS, FXall, 360T, FXSpotStream, Bloomberg, and bank platforms each have differentiated pools and workflow advantages. The bear case assumes the electronic pool grows but Cboe share falls to 18%, demonstrating that industry growth is not a substitute for competitive execution.

[Bear] Capture compression. A venue can buy volume through lower fees or larger liquidity incentives, making ADNV an incomplete KPI. If capture falls toward $2.70 and share also weakens, transaction revenue declines despite higher market notional. Management should report and manage share, capture, fill quality, and client breadth together rather than celebrate volume alone.

[Bear/Base] Dealer internalization and fragmentation. BIS evidence indicates dealers match a substantial portion of flow internally. Better bank algorithms and more sophisticated internalization can keep attractive customer flow away from public venues. At the same time, proliferation of protocols and curated pools can fragment visible liquidity. Cboe must offer enough choice to serve institutions without splitting the network into subscale pools.

[Bear] Operational or cyber failure. FX trades continuously across global time zones, and institutional customers can reroute quickly after an outage or data-integrity incident. The immediate financial cost may be smaller than the long-lived liquidity loss. Maintaining redundant New York/London systems, capacity, recovery procedures, and surveillance is therefore a moat investment, not discretionary overhead.

[Bear/Base] Last-look and conduct standards. Non-firm liquidity can improve pricing but creates concerns around reject behavior, latency, and information use. The FX Global Code and regulatory scrutiny raise transparency expectations. Cboe's response-time standards and protocol disclosures can differentiate it, but tighter rules may increase costs or reduce liquidity-provider participation. Poorly managed conduct could damage trust faster than fees can repair it.

[Base/Bull] Firm-liquidity and Full Amount adoption. Large institutions value low market impact and predictable completion. If Cboe increases instantly executable liquidity and wins more large-ticket Full Amount flow, it can gain share without relying solely on price. The benefit appears in both ADNV and potentially capture, making this the most attractive quality-of-growth wildcard.

[Bull] NDF/SEF expansion. Institutional demand for non-deliverable currencies and regulated execution can expand the addressable pool. Cboe already operates compatible ECN and Full Amount protocols for NDFs. A larger NDF contribution could lift both volume and mix, but the data package does not disclose a Global FX product-revenue split, so no separate NDF dollar, capture, margin, or client-concentration assumption is included in any case. `[DATA GAP: NDF/SEF revenue, profitability, and client concentration are not separately disclosed.]`

[Base/Bull] Market-data monetization. Currency-pair feeds, historical data, and analytics can raise recurring revenue and deepen switching costs. The bull case assumes 12% growth in the modeled non-transaction sleeve, but pricing must not impair the contributor network. Data created by a diverse client base has value precisely because the trading venue remains neutral and liquid.

[Bear/Bull] Volatility and macro regime. Monetary-policy divergence, tariffs, capital flows, and risk shocks can move ADNV dramatically. A high-volatility year can lift revenue, but the relationship is not linear if liquidity providers retreat or clients internalize flow. The model treats current elevated activity as partly cyclical: the base decelerates and the bear still allows market growth.

[Bear] Customer and prime-broker concentration. Institutional FX liquidity depends on a finite set of large banks, non-bank market makers, prime brokers, and buy-side firms. The data package does not provide client concentration, active users, or subscriber counts. Loss of a major provider can reduce depth and trigger a network feedback loop; loss of a prime broker can affect access for multiple customers. `[DATA GAP: Global FX client count, active-user growth, revenue concentration, and prime-broker concentration are not disclosed.]`

[Bear/Base] Technology commoditization. Matching speed alone is not durable because competitors can upgrade hardware and software. Cboe must convert technology into measurable execution quality, liquidity curation, resilience, and integrated data. If customers see protocols as interchangeable, smart routers will make fees and rebates more important, compressing returns.

[Base] Currency-pair and institutional-mix shifts. Growth in renminbi, NDFs, and emerging-market currencies can create opportunity but may require new credit, compliance, and liquidity-provider capabilities. The BIS reported rising EME-currency

importance and a larger share of turnover with other financial institutions. The strategic implication is to expand where Cboe has credible liquidity rather than list every pair and dilute service quality.

Management implications. First, disclose Global FX market share consistently alongside ADNV and capture. Investors cannot distinguish market growth from venue outperformance without the denominator. Second, add stable KPIs for firm-liquidity share, Full Amount activity, NDF/SEF activity, data/access revenue, and active institutional clients without revealing sensitive counterparty data. Third, evaluate sales and technology investment on share-adjusted contribution economics: volume bought through capture compression should not be presented as equal to organic network growth. Fourth, protect the non-transaction opportunity by packaging data and connectivity around execution outcomes rather than imposing blunt price increases. Fifth, preserve platform reliability and conduct transparency even when margin pressure tempts cost cutting.

The key monitoring dashboard is therefore compact: public-venue share, ADNV, capture, firm-liquidity percentage, Full Amount and NDF mix, non-transaction revenue, and net-revenue `Operating income (loss)` margin. If ADNV grows while share and capture fall, quality is weakening. If share rises with stable capture and non-transaction revenue grows, the network is compounding. If margins rise solely because investment falls, reported economics may be borrowing from future liquidity quality.

Summary

Case	Segment TTM+5y Revenue	Exact profit metric	Segment TTM+5y Profit Margin	Segment TTM+5y Profit	Probability
Bear	$103.2m net revenue	`Operating income (loss)`	48.0%	$49.5m	25%
Base	$148.9m net revenue	`Operating income (loss)`	58.0%	$86.4m	50%
Bull	$186.4m net revenue	`Operating income (loss)`	62.0%	$115.6m	25%

The probability-weighted horizon outcome is $146.9m of net revenue and $84.5m of `Operating income (loss)`. The 50% base weight reflects strong Q2 2026 growth but no segment guide and an explicit normalization path; the balanced 25% tails reflect, on one side, share/capture competition and denominator disclosure gaps and, on the other, firm-liquidity, Full Amount, and data upside. That expected value is a decision aid, not a fourth case. The investment case rests on Global FX sustaining roughly one-fifth of the scenario proxy for publicly reporting electronic spot venues, holding capture around $3 per $1m, and using data/access plus protocol breadth to turn market growth into high incremental returns. The moat is credible but earned continuously; unlike proprietary index derivatives, Cboe does not own the underlying FX product.

Appendix S - Synthesis (Combined Earnings Model)

Cboe Global Markets — Synthesis (Combined Earnings Model)

This appendix mechanically consolidates the five reviewed segment forecasts into statutory operating income, pretax income, net income attributable to common, diluted EPS, cash flow, and a balance-sheet bridge. It uses no adjusted EBITDA measure and introduces no undisclosed operating-income plug. All amounts are USD millions unless stated otherwise; margins and growth rates are calculated from unrounded values.

Control status

The quote packet was validated at 2026-09-09 07:33:06 SGT and remained actionable through 2026-09-10 04:05:08 SGT. The exact quote-packet SHA-256 is `81b74a7318cc8ae00d4660f43c7b307a277d95cf8c163cc7a9d9f63e8ed6b70e`. The statutory bridge independently validated with SHA-256 `fed38c48503d96b1b8db579a514485710836c90ec2a989f76c0ad47984ae74bc`. The reviewed `data_package.md` matched SHA-256 `460b7749c9a305c38cf2d0c2cc340269628dda79c0c2b73a8e494110872cb240`. `gate_manifest.json` records durable DR clearance and all five segment-review records as `CLEARED_FOR_SYNTHESIS`, with zero unresolved material issues. Those files were not modified.

1. Anchors

- Today: 2026-09-09.
- Fiscal year end: December 31.
- Latest completed fiscal year used only for historical tie-out: FY2025.
- Latest completed quarter: Q2 2026, ended 2026-06-30.
- TTM anchor: 2026-06-30, comprising Q3 2025, Q4 2025, Q1 2026, and Q2 2026. The statutory construction is FY2025 less H1 2025 plus H1 2026.
- Horizon: 2031-06-30, exactly 5.0 calendar years after the TTM anchor. No row compounds from FY2025 and no row uses six fiscal years.
- Immutable valuation price: USD 293.33 per common share, a raw exchange close for the 2026-09-08 completed session, listing BATS:CBOE on Cboe BZX Exchange, CUSIP 12503M108. Raw-source SHA-256: `9a14f4ccdf02cbd006f5c26f7673984077ca476ab960186369510d2e67ad9ba2`.
- Reporting and quote currency: USD. Listed unit and financial-statement unit are one common share.
- Split bridge: 105.0 million financial-statement diluted shares at 2026-06-30 × 1.0 no-intervening-split factor = 105.0 million quote-basis diluted financial shares at 2026-09-08. The split evidence SHA-256 is `7aabbcb3aca9751280af6998944c1071be2b2354fd9049899fcbe5c9e3c4616b`.
- Listed-unit bridge: 1.0 depositary ratio × 1.0 share-class factor = 1.0 financial share per listed unit; 105.0 million quote-basis financial shares ÷ 1.0 = 105.0 million listed-unit equivalents.
- FX bridge: 1.0 USD quote currency per USD reporting currency at 2026-09-08, identity same-currency conversion.
- Historical bridge status: statutory bridge valid, all five residuals zero for FY2025 and TTM, and DR verdict `STATUTORY BRIDGE VERIFIED — CLEARED FOR FORECASTING; DATA PACKAGE VERIFIED — CLEARED FOR WAVE 2`.

Cboe is an exchange and market-infrastructure operator, not a property-and-casualty insurer or reinsurer. The insurer-specific retained-economics lane is therefore `NOT TRIGGERED — issuer is not a P&C insurer or reinsurer`; no `insurer_return_bridge.json` is created.

2. Segment-level forward assumptions

The appendices do not all use the same revenue denominator. Options, Europe and Asia Pacific, and Global FX forecast net revenue because that is the disclosed economically useful TTM base; North American Equities and Futures forecast gross segment revenue. The exact issuer profit metric is nevertheless uniform: `Operating income (loss)`. Section 3 explicitly

restores the gross-to-net presentation lines so the consolidated revenue endpoint is statutory gross revenue.

Segment	Exact profit metric	TTM revenue and basis	Bear 2031 revenue	Base 2031 revenue	Bull 2031 revenue	Bear margin	Base margin	Bull margin
Options	Operating income (loss)	1,755.4 net	1,976.3	2,724.1	3,117.3	68.0% net	75.5% net	78.0% net
North American Equities	Operating income (loss)	1,706.1 gross	1,598.0	1,983.0	2,230.0	10.5% gross	14.5% gross	16.5% gross
Europe and Asia Pacific	Operating income (loss)	308.7 net	318.4	418.3	498.9	30.1% net	39.1% net	44.2% net
Futures	Operating income (loss)	140.4 gross	135.1	181.9	241.3	48.3% gross	58.9% gross	64.8% gross
Global FX	Operating income (loss)	103.2 net	103.2	148.9	186.4	48.0% net	58.0% net	62.0% net

Sources are the reviewed `appendix_B_options.md` Sections 8–10, `appendix_B_north_american_equities.md` Sections 8–10, `appendix_B_europe_asia_pacific.md` Sections 8–10, `appendix_B_futures.md` Sections 8–10, and `appendix_B_global_fx.md` Sections 8–10. The endpoints and corresponding segment profits are reproduced, not re-derived or altered.

The principal distinctions are economically deliberate. Options carries the strongest proprietary-product moat but begins from an elevated TTM run rate. North American Equities absorbs the Canada perimeter exit and remains sensitive to share and capture. Europe and Asia Pacific removes Australia, Japan, and CEDX owned recurring revenue while allowing retained Europe clearing and data to scale. Futures gives no base-case additive value to event products. Global FX separates ADNV from capture and does not treat a volatile quarter as a permanent growth rate.

3. Combined revenue build

The first line below is the sum of the reviewed segment operating-revenue endpoints exactly as delivered. The next three lines restore cost-of-revenue presentation for the segments modeled on net revenue. They are revenue-denominator bridges only: they do not affect segment or consolidated operating income. Corporate revenue eliminations are zero because the statutory source shows no separate revenue-elimination line.

Line	Bear	Base	Bull
Sum of reviewed segment operating-revenue endpoints	4,131.0	5,456.2	6,273.9
Options gross-to-net presentation add-back	1,146.254	1,416.532	1,496.304
Europe and Asia Pacific transaction-based expense add-back	127.000	147.000	166.300
Global FX cost-of-revenue add-back	4.128	4.467	4.660
Corporate revenue eliminations	0.000	0.000	0.000
Combined statutory TTM+5 revenue	**5,408.382**	**7,024.199**	**7,941.164**
Implied statutory revenue CAGR from 2026-06-30 to 2031-06-30	1.34%	6.77%	9.43%

The TTM denominator reconciliation is independently sourced from the QFR-cleared quantitative foundation: Options gross revenue 2,684.7 less net revenue 1,755.4 gives a 929.3 presentation difference; Europe and Asia Pacific gross revenue 423.7 less net revenue 308.7 gives 115.0; and Global FX gross revenue 106.4 less net revenue 103.2 gives 3.2. North American Equities 1,706.1 and Futures 140.4 are already gross. Thus 4,013.8 of reviewed segment operating-revenue bases plus 929.3, 115.0, and 3.2 equals statutory TTM revenue of 5,061.3 exactly. This is a named presentation reconciliation, not Corporate Items and not an operating-income plug.

At the horizon, the Options gross-up is 58%, 52%, and 48% of net revenue in bear, base, and bull. The bear ratio rises from the 52.94% TTM ratio because weaker proprietary mix and greater rebate or liquidity-payment pressure consume more gross revenue. Base is approximately stable. Bull falls as proprietary index and data/access mix improve. Europe and Asia Pacific uses the reviewed appendix's exact scenario transaction-expense values. Global FX cost of revenue is 4.0%, 3.0%, and 2.5% of net revenue as bear competition requires more incentive spending and bull capture/mix improves. These explicit assumptions make statutory revenue comparable across periods without changing any reviewed segment endpoint.

The gross-equivalent segment totals are therefore Options 3,122.554 / 4,140.632 / 4,613.604; North American Equities 1,598.0 / 1,983.0 / 2,230.0; Europe and Asia Pacific 445.4 / 565.3 / 665.2; Futures 135.1 / 181.9 / 241.3; and Global FX 107.328 / 153.367 / 191.060 for bear/base/bull. Each scenario's five gross-equivalent lines sum exactly to combined statutory revenue.

4. Combined operating income build

Line	Bear	Base	Bull
Options Operating income (loss)	1,343.9	2,056.7	2,431.5
North American Equities Operating income (loss)	167.8	287.5	367.9
Europe and Asia Pacific Operating income (loss)	95.8	163.6	220.6
Futures Operating income (loss)	65.2	107.2	156.3
Global FX Operating income (loss)	49.5	86.4	115.6
Sum of segment profit on sealed common metric	1,722.2	2,701.4	3,291.9
Corporate Items and Eliminations - operating income (loss)	(20.0)	(10.7)	(5.0)
Consolidated segment-profit metric	1,702.2	2,690.7	3,286.9
Operating bridge adjustments	0.0	0.0	0.0
Combined statutory TTM+5 operating income	**1,702.2**	**2,690.7**	**3,286.9**
Implied statutory operating margin	31.47%	38.31%	41.39%

The sealed bridge has no operating adjustment between consolidated segment profit and statutory operating income. That identity is preserved at the horizon. Corporate Items are forecast independently and are never allocated into a segment. Bear expands the TTM loss from 10.7 to 20.0 because duplicated transition support, regulatory costs, and new-product infrastructure do not scale down with weak revenue. Base holds the exact TTM loss of 10.7. Bull improves the loss to 5.0 through corporate operating leverage but does not assume the corporate line becomes a profit center.

The outcome is dominated by Options. It supplies 76% of base segment operating income, broadly consistent with the moat appendix's conclusion that proprietary SPX/VIX economics dominate group profit. The base margin rises because the highest-margin segment grows faster and the retained Europe, Futures, and FX platforms scale. The model still funds technology, clearing, resilience, surveillance, and product launches; it does not capitalize those costs or shift them below operating income.

5. Net income and EPS build

Line	Bear	Base	Bull
Combined statutory operating income	1,702.200	2,690.700	3,286.900
Interest expense	(81.000)	(54.864)	(33.000)
Interest income	40.000	81.000	152.250
Earnings on investments, net	0.000	75.000	150.000
Other income, net	0.000	10.000	14.500
Pretax income	**1,661.200**	**2,801.836**	**3,570.650**
Tax rate assumed	30.0%	29.0%	27.5%
Income tax provision	(498.360)	(812.532)	(981.929)
Net income	**1,162.840**	**1,989.303**	**2,588.721**
Less non-common allocation	(5.700)	(5.700)	(5.700)
Net income attributable to common	**1,157.140**	**1,983.603**	**2,583.021**
Quote-basis diluted financial shares at TTM+5, millions	104.139300	104.139300	104.139300
EPS in USD per quote-basis financial share	11.111463	19.047596	24.803520

Line	Bear	Base	Bull
Financial shares per listed unit	1.000000	1.000000	1.000000
EPS in USD per listed unit	11.111463	19.047596	24.803520
FX: quote USD per reporting USD	1.000000	1.000000	1.000000
EPS in quote currency per listed unit	**11.111463**	**19.047596**	**24.803520**

The exact unit formulas are `EPS_REPORTING_PER_QUOTE_BASIS_FINANCIAL_SHARE = COMMON_NI_REPORTING ÷ QUOTE_BASIS_DILUTED_FINANCIAL_SHARES` and `EPS_QUOTE_PER_LISTED_UNIT = EPS_REPORTING_PER_QUOTE_BASIS_FINANCIAL_SHARE × FINANCIAL_SHARES_PER_LISTED_UNIT × FX_QUOTE_PER_REPORTING`. The bridge uses common-allocated net income rather than consolidated net income. The fixed 5.7 allocation equals the exact TTM difference between statutory net income of 1,353.1 and common-allocated net income of 1,347.4; absent an upstream scenario driver, it is held constant and disclosed instead of silently dropped.

Interest expense follows terminal debt multiplied by the scenario interest rate: bear 1,800 × 4.5% = 81.0; base 1,443.8 × 3.8% = 54.864; bull 1,000 × 3.3% = 33.0. Interest income follows average liquid assets multiplied by yield: bear 1,600 × 2.5% = 40.0; base 2,700 × 3.0% = 81.0; bull 4,350 × 3.5% = 152.25. Earnings on investments are zero, normalized to 75, and favorable at 150, respecting the upstream zero-to-low / normalized / favorable driver. Other income is zero, 10, and the TTM 14.5. Tax uses the reviewed 30.0% / 29.0% / 27.5% scenario rule and the current 27.5%–29.5% adjusted guide as context.

5a. Return-method input bridge

Input	Bear	Base	Bull	Source-bound path or availability
Statutory operating income	1,702.2	2,690.7	3,286.9	Section 4 statutory bridge
Normalized cash tax rate	30.0%	29.0%	27.5%	Reviewed driver schedule and current guide
Normalized NOPAT	1,191.540	1,910.397	2,383.003	Statutory OI × one minus tax rate
Terminal cash	1,500	2,500	4,000	From 2,276.2 TTM; preserves regulatory liquidity, with scenario surplus deployment
Terminal current financial investments	100	200	350	From 114.5 TTM current investments; separately identified non-operating asset
Gross debt	1,800.0	1,443.8	1,000.0	Higher funding / unchanged TTM / repayment scenario
Lease liabilities	150.0	120.0	90.0	From 136.5 TTM; higher / declining / faster declining path
Net debt before current investments	300.0	(1,056.2)	(3,000.0)	Gross debt less cash; negative is net cash
Preferred equity	0.0	0.0	0.0	Management appendix: no issued preferred shares
Minority interest balance	Unavailable	Unavailable	Unavailable	No terminal balance-sheet path in reviewed package
Other senior claims	Unavailable	Unavailable	Unavailable	Clearing and regulatory liabilities cannot be treated as generic debt
Separately valued non-operating assets	100	200	350	Current financial investments only; no sale proceeds assumed
Diluted listed-equivalent shares, millions	104.139300	104.139300	104.139300	Section 6 and 1.0 unit factor

The terminal cash path is an explicit policy assumption, not a residual from FCF. Cash above these balances is assumed to be consumed by dividends, debt actions, acquisitions, regulated-liquidity needs, or other capital allocation not separately valued here. Because terminal minority interest and all senior clearing claims are unavailable, EV/NOPAT cannot be the controlling shareholder-return method. The fully reconciled statutory EPS/P-E method remains usable. No sale proceeds from Australia or Canada are credited.

5b. Cash flow, capex, FCF, and capital-allocation consistency

Line	TTM anchor	Bear 2031	Base 2031	Bull 2031
Net income	1,353.1	1,162.840	1,989.303	2,588.721
OCF / net income assumption	145.1% reported	100.0%	110.0%	115.0%
Operating cash flow	1,962.8	1,162.840	2,188.234	2,977.029
Capex	88.3	105.000	140.484	174.706
Capex / statutory revenue	1.74%	1.94%	2.00%	2.20%
Free cash flow	**1,874.5**	**1,057.840**	**2,047.750**	**2,802.324**

The TTM OCF conversion is unusually high because clearing-collateral movements make statutory cash flow noisier than an ordinary software company, a point made in both the reviewed quantitative foundation and management appendix. The forecast therefore normalizes cash conversion below the TTM 145.1% ratio in every case. Bear uses 100%; base 110%; bull 115%. This is deliberately less aggressive than capitalizing the TTM working-capital benefit.

Capex respects the five-year record of roughly 1.2%–1.5% of gross revenue while recognizing the raised FY2026 guide of 98–108. Bear retains a 105 floor despite weak growth because resilience, clearing, and regulation are not optional. Base invests 2.0% of statutory revenue and bull 2.2%, both above the historical percentage as around-the-clock trading, event products, clearing, and Data Vantage scale. The 110 annual buyback assumption in Section 6 matches the 111.5 TTM cash outflow and is small relative to FCF in every scenario. It is therefore fundable without assuming buybacks maintain EPS mechanically.

6. Share-count path

The path is common across scenarios to isolate operating differences. It starts from the packet's 105.0 million quote-basis diluted financial shares. Annual repurchase cash is 110, approximately the TTM 111.5 run rate. Average repurchase price begins at USD 300 and rises 5% annually. SBC issuance is approximated as the constant 53.2 TTM SBC expense divided by the same annual average price. All calculations occur in financial shares, not ADRs or another security unit.

Year ending	Starting shares, m	Buyback, USD m	Average price, USD	Shares retired, m	SBC issuance, m	Ending shares, m
2027-06-30	105.000000	110.0	300.000	0.366667	0.177333	104.810667
2028-06-30	104.810667	110.0	315.000	0.349206	0.168889	104.630349
2029-06-30	104.630349	110.0	330.750	0.332577	0.160847	104.458618
2030-06-30	104.458618	110.0	347.288	0.316740	0.153187	104.295065
2031-06-30	104.295065	110.0	364.652	0.301658	0.145893	104.139300

The cumulative identity is 105.000000 – 1.666848 retired + 0.806148 issued = 104.139300 ending shares. The historical calibration is reasonable but not exact because weighted-average diluted shares, open-market repurchases, employee withholding, option dilution, and timing differ: diluted shares declined from 105.1 in FY2025 to 104.95 TTM, while 111.5 of TTM buyback cash and 53.2 of SBC imply a rough 0.199 million net retirement at the packet price. The modeled first-year 0.189 million net retirement is close and the difference is disclosed rather than forced into a share plug.

7. P/E 15 test

Case	EPS in USD per listed unit	EPS × 15	Packet price	Cushion	Pass?
Bear	11.111463	166.672	293.33	(43.18%)	FAIL
Base	19.047596	285.714	293.33	(2.60%)	FAIL
Bull	24.803520	372.053	293.33	26.84%	PASS

Required EPS is USD 293.33 ÷ 15 = USD 19.555333 per listed unit. The confident base case, not the bull case, controls. Base EPS falls short by USD 0.507738, so the P/E 15 entry gate fails. Rounding 19.047596 to USD 19.05 does not change that conclusion.

8. Reflexivity check

Historical anchor check	Arithmetic	Residual	Status
TTM statutory revenue	2,684.7 + 1,706.1 + 423.7 + 140.4 + 106.4	0.0 versus 5,061.3	PASS
TTM segment operating income	1,296.1 + 229.0 + 108.4 + 76.4 + 56.5	0.0 versus 1,766.4	PASS
TTM statutory operating income	1,766.4 – 10.7	0.0 versus 1,755.7	PASS
FY2025 segment operating income	1,113.3 + 188.1 + 53.9 + 73.9 + 46.0	0.0 versus 1,475.2	PASS
FY2025 statutory operating income	1,475.2 – 8.1	0.0 versus 1,467.1	PASS

The TTM revenue comparison is exact after restoring each disclosed gross-to-net presentation line, well inside the ±2% reflexivity requirement. The profit bridge matches the packet tolerance of 0.946 million with zero residual, and the FY bridge matches its 0.78 million tolerance with zero residual. No operating adjustment or silent scaling is introduced.

9. Latest interim bridge reconciliation

The cumulative interim bridge is triggered. The periods are comparable January 1 through June 30 windows, and no standalone quarter is also added to the statutory TTM.

Metric	FY2025	Less H1 2025	Add H1 2026	TTM ended 2026-06-30
Revenue	4,714.2	(2,368.5)	2,715.6	5,061.3
Operating income	1,467.1	(693.0)	981.6	1,755.7
Pretax income	1,566.6	(684.8)	1,010.2	1,892.0
Net income	1,100.0	(485.7)	738.8	1,353.1
Operating cash flow	1,752.6	(1,246.6)	1,456.8	1,962.8
Capex outflow	71.0	(35.0)	52.3	88.3

The segment net-revenue trend tables use four non-overlapping quarterly observations as a separate operating calibration: Q3 2025, Q4 2025, Q1 2026, and Q2 2026. They do not overwrite the statutory cumulative bridge. The common-allocated NI and diluted-share anchors come from the same QFR-cleared construction; quarterly EPS is never summed.

10. Sensitivity — which variable matters most

All rows hold the other two variables at base. The Options CAGR sensitivity uses the unrounded base CAGR of 9.186612%; the North American Equities margin sensitivity holds its 1,983.0 gross-revenue endpoint constant; share and tax sensitivities use the complete base pretax/common allocation bridge.

Variable	Down case	Base EPS	Up case	EPS range / impact
Options revenue CAGR ±200 bps	7.1866% gives 17.8096 EPS	19.0476	11.1866% gives 20.3797 EPS	(1.2380) / +1.3322
North American Equities margin ±200 bps	12.5% gives 18.7772 EPS	19.0476	16.5% gives 19.3180 EPS	(0.2704) / +0.2704
Ending diluted shares ±5%	+5% shares gives 18.1406 EPS	19.0476	–5% shares gives 20.0501 EPS	(0.9070) / +1.0025
Tax rate ±300 bps	32.0% gives 18.2405 EPS	19.0476	26.0% gives 19.8547 EPS	(0.8071) / +0.8071

Options revenue growth is the largest modeled driver, followed by share count and tax. The verdict is fragile: a roughly 74 basis-point increase in base EPS would be needed to reach the USD 19.5553 hurdle, and a favorable tax or modestly stronger Options path could close the gap. That fragility is not a reason to mark the gate pass; it is the monitoring focus. North American Equities margin matters less at group level because its gross revenue includes large pass-through costs.

11. Combined earnings summary

Case	Statutory revenue, USD bn	OI, USD bn	OI margin	Net income, USD bn	EPS, USD per listed unit	Probability	EPS × 15	Versus USD 293.33
Bear	5.408	1.702	31.47%	1.163	11.111	25%	166.672	(43.18%)
Base	7.024	2.691	38.31%	1.989	19.048	55%	285.714	(2.60%)
Bull	7.941	3.287	41.39%	2.589	24.804	20%	372.053	26.84%

Case	Statutory revenue, USD bn	OI, USD bn	OI margin	Net income, USD bn	EPS, USD per listed unit	Probability	EPS × 15	Versus USD 293.33
Probability-weighted EPS	n/a	n/a	n/a	n/a	18.215	100%	273.221	(6.86%)

Weights are 25% bear, 55% base, and 20% bull. Base receives the majority because recent growth is broad-based and the five-year moat passes, but management is newly installed, perimeter exits create execution risk, and the largest profit pool enters from elevated activity; bull remains less likely because it requires simultaneous durable Options strength and multiple non-core platforms scaling.

Tie-out checks

Check	Reproduced arithmetic and source	Result
1. Reported-financial and statutory-bridge tie-out	TTM gross revenue: 2,684.7 + 1,706.1 + 423.7 + 140.4 + 106.4 = 5,061.3. TTM OI: 1,766.4 – 10.7 = 1,755.7. FY2025 OI: 1,475.2 – 8.1 = 1,467.1. Packet residuals are all zero versus tolerances 0.946 and 0.78.	PASS
2. NI / shares / unit / FX = EPS	Bear: 1,157.140 ÷ 104.139300 × 1 × 1 = 11.111463. Base: 1,983.603276 ÷ 104.139300 × 1 × 1 = 19.047596. Bull: 2,583.021250 ÷ 104.139300 × 1 × 1 = 24.803520.	PASS
3. Segment sum at horizon	Gross-equivalent five-segment sums equal 5,408.382 / 7,024.199 / 7,941.164; Corporate revenue elimination is 0. Each ratio to combined statutory revenue is 100.000%.	PASS
4. Product-to-segment rollup	Options one financial line residual 0; NAE pass-through + net equals gross exactly; EAP driver residual ≤0.1; Futures residual ≤0.1 or 0.04%; Global FX residual ≤0.1 or 0.07%. Reviewed appendix Sections 10.	PASS
5. Weighted margin	EAP driver profits sum 95.7–95.8 / 163.6 / 220.6 and reproduce 30.1% / 39.1% / 44.2%. Futures analytical profits reproduce 65.2 / 107.2 / 156.3 within 0.1%. Options, NAE, and Global FX disclose no additive product-profit margins, so the conditional product-weight test is not triggered for them.	PASS
6. Share count and security-unit path	105.0 × split factor 1.0 = 105.0 quote-basis shares; ÷ 1.0 unit factor = 105.0 listed units. 105.000000 – 1.666848 retired + 0.806148 issued = 104.139300 after five years.	PASS
7. Growth plausibility	Base CAGRs: Options 9.19% ≤ 1.2 × 10.1%; NAE 3.05% exceeds 1.2 × 1.6% but the appendix explicitly quantifies Canada removal and U.S./BIDS/access drivers; EAP 6.3% is below recent 16.8%; Futures 5.3% narrowly exceeds 1.2 × 4.3% but is explicitly 4% ADV + 1% RPC plus residual; Global FX 7.6% ≤ 1.2 × 10.8%.	PASS
8. Historical arithmetic	For all 15 segment-case rows, TTM revenue × one plus displayed CAGR to the fifth power matches the endpoint within 0.22%; maximum absolute percentage residual is Global FX bull 0.213%, below 1%.	PASS
9. Recency anchor	Sum of reviewed TTM bases is 4,013.8. First-forward-year sums are bear 3,926.3, base 4,151.2, bull 4,274.0, changes of –2.18%, +3.42%, and +6.48%. Each is within 10%; basis is identical reviewed segment revenue denomination.	PASS
10. Period and horizon integrity	FY2025 – H1 2025 + H1 2026 uses like-for-like Jan–Jun periods; no overlap. Every segment compounds from 2026-06-30 to 2031-06-30, exactly five years.	PASS
11. Valuation, unit, hash, and probability arithmetic	Packet hashes recompute exactly; BATS:CBOE, USD common share, split 1, unit 1, FX 1 reproduce. EPS × 15 is 166.672 / 285.714 / 372.053. Probabilities 25% + 55% + 20% = 100%; weighted EPS is 18.214747 and ×15 is 273.221, a –6.855% cushion. Base controls and fails.	PASS

All 11 required arithmetic checks pass. The operating bridge residual is 0.0 in bear, base, and bull because there are no operating adjustments after the explicit Corporate Items line. The historical five-residual packet bridge is also zero for both FY2025 and TTM. The only unavailable return-method inputs are terminal minority interest and generic other senior claims; that prevents EV/NOPAT from controlling but does not impair the reconciled P/E method or the P/E 15 gate.

Synthesis conclusion

The base case produces statutory revenue of USD 7.024 billion, statutory operating income of USD 2.691 billion, statutory net income of USD 1.989 billion, common-allocated EPS of USD 19.047596 per listed share, OCF of USD 2.188 billion, capex of USD 0.140 billion, and FCF of USD 2.048 billion at 2031-06-30. Required EPS at the sealed USD 293.33 price and P/E 15 is USD 19.555333. The base cushion is negative 2.60%, so the entry-price gate fails narrowly. The result should be treated as price-sensitive rather than rounded into a pass.

```
SYNTHESIS CLEARED — 11/11 TIE-OUTS PASSED
```

```
SYNTHESIS VERIFIED — CLEARED FOR VALUATION PREFLIGHT
```

Appendix CS - Compounder Score

Cboe Global Markets - Compounder Score

Analysis date: 2026-09-09 **TTM anchor:** 2026-06-30 **Exact horizon:** 2031-06-30, 5.0 years **Security:** BATS:CBOE common share; Cboe BZX Exchange; USD; December 31 fiscal year-end **Current price:** USD 293.33, 2026-09-08 completed-session close **Diagnostic only:** no trade, portfolio, sizing, order, or message authority.

1. Executive Verdict

Compounder Score: 59/100. Business Quality: 56/80. 20% Return Underwriting: 3/20. Score-implied classification: Reject. Source confidence: Medium.

Cboe owns a high-quality but concentrated exchange franchise. Exclusive U.S. SPX-option rights, Cboe-owned VIX intellectual property, deep liquidity, regulated infrastructure, and the data/access ecosystem support attractive unit economics. Options and Futures supply roughly 80% of segment operating income. Statutory revenue compounded 7.8% and NOPAT 16.2% over FY2021-FY2025; diluted shares declined, SBC stayed near 1% of revenue, and the balance sheet reached net cash.

The evidence does not support an elite compounder score. Rubric-grade organic and acquisition-inclusive ROIIC cannot be reconstructed because net capex, non-cash working capital, disposal cash, and separately disclosed R&D are unavailable, while clearing-collateral movements distort ordinary cash-flow analysis. The rough acquisition-inclusive screen is volatile and begins near a depressed impairment period. Cboe also spent USD 708m on acquisitions in 2022, recorded a USD 460.9m Digital goodwill impairment, and later moved to sell or close several venues. Management is **YELLOW**, not PASS.

Valuation is the decisive failure. The sealed P/E method produces finite gross USD IRRs of **-7.37% bear, 8.35% base, 17.06% bull, and 7.44% probability-weighted**. The base exit P/E of 23.0x is slightly below the comparable normalized current 23.38x, so the weak return is not caused by a punitive exit multiple. At the base terminal EPS, a 20% CAGR would require about **38.32x**. The central method-matched maximum buy price for a 20% CAGR is **USD 176.06**, 40.0% below USD 293.33.

The sealed synthesis contains no scenario cumulative distribution-per-share schedule. Under the valuation contract, this appendix therefore uses a clearly labelled **zero-distribution diagnostic** rather than fabricating a dividend path. The current TTM dividend is disclosed separately; forward shareholder wealth excludes it. This is a conservative data gap, not a reason to publish null returns.

2. Data Source Map

Evidence need	Controlling source	Period / basis	Confidence and use
Price and listed security	`C:\Users\Admin\OneDrive\GPT\ER 2.0\Cboe Global Markets\quote_packet.json`	Close 2026-09-08; validated 2026-09-09	High; USD 293.33, BATS:CBOE, one listed unit per financial share
Market capitalization	Quote packet and diluted-share bridge	USD 293.33 x 105.0m = USD 30.800bn	High arithmetic; diluted-share rather than basic-share market value
Enterprise value	`raw\VP-valuation-preflight-20260909\fmp_ratios_ttm_cboe.json`	TTM provider value USD 29.977bn	Medium; diagnostic only because clearing claims and terminal NCI prevent EV/NOPAT use
Income statement	`quant_foundation.md`, `statutory_bridge.json`, SEC 10-K/10-Q archives	FY2021-FY2025 and TTM 2026-06-30	High; SEC overrides FMP operating-income classifications
Balance sheet	`quant_foundation.md`, `data_package.md`, SEC 10-Q	2026-06-30 latest	High; issuer-defined debt and clearing/regulatory restrictions control
Cash flow	`quant_foundation.md`, `data_package.md`, SEC statements	FY2021-FY2025 and TTM	High statements; medium economic conversion because clearing collateral is volatile
Diluted shares and SBC	`quant_foundation.md`, `appendix_synthesis.md`, proxy	FY2021-TTM and modeled 2031	High; explicit repurchase/SBC issuance bridge
Segment economics	Five reviewed `appendix_B_*.md` files and `appendix_synthesis.md`	TTM to 2031	High for reported totals; medium for product detail because venue revenue is undisclosed

Evidence need	Controlling source	Period / basis	Confidence and use
Management commentary	`appendix_management.md`; eight live-transcript archives	Q3 2024-Q2 2026	High for quotations; interpretation separated from claims
Capital allocation	`data_package.md`, `appendix_management.md`, SEC cash flow and proxy	FY2021-TTM	High for cash uses; medium for realized project returns
Compensation and governance	`appendix_management.md`, 2026 proxy, SEC-filed leadership disclosures	2023-2026	High; management gate YELLOW
Market runway and competitors	Segment appendices and `appendix_moat.md`	Five-, ten-, and twenty-year durability	Medium; no unsupported TAM is used

Hash-bound controls: quote packet `81b74a7318cc8ae00d4660f43c7b307a277d95cf8c163cc7a9d9f63e8ed6b70e`; statutory bridge `fed38c48503d96b1b8db579a514485710836c90ec2a989f76c0ad47984ae74bc`; data package `460b7749c9a305c38cf2d0c2cc340269628dda79c0c2b73a8e494110872cb240`; synthesis `1541f7a171dc6f473b1b3d17eea5a4b4e3e335ccbf864c9c8a1cc238a9aeeebd`.

3. Key Financial and Quality Metrics

Historical growth and conversion

The one-year column is FY2024-FY2025; three-year is FY2022-FY2025; five-year observation is FY2021-FY2025, a four-year CAGR. Ten-year operating-margin evidence is available, but a decision-grade ten-year statement and cash-flow series is not sealed; the 2017 Bats combination also breaks perimeter comparability.

Metric	1-year	3-year	5-year observation	10-year evidence	Interpretation
Revenue CAGR	15.13%	6.00%	7.77%	Not decision-grade	Solid through-cycle growth; TTM is unusually strong
NOPAT CAGR	32.81%	57.06%	16.24%	Not decision-grade	Three-year rate starts from impairment-hit FY2022
FCF CAGR	61.74%	41.68%	32.49%	Not decision-grade	SEC cash flow; clearing collateral amplifies volatility
Diluted-share CAGR	-0.38%	-0.50%	-0.49%	Not decision-grade	Buybacks more than offset equity issuance
Operating margin on gross revenue	31.1% endpoint	12.4% to 31.1%	23.1% to 31.1%	46.2% FY2016 to 31.1% FY2025	Bats perimeter and FY2022 impairment limit long comparisons
FCF / NOPAT	163.3% FY2025	Not additive	143.6% aggregate	Not decision-grade	Strong but overstated as a clean operating signal by collateral movements
CFO / net income	159.3% FY2025	Not additive	152.7% aggregate	Not decision-grade	Cash supports earnings; not software-like working capital
FCF / net income	152.9% FY2025	Not additive	144.2% aggregate	Not decision-grade	Strong aggregate conversion

TTM and balance-sheet snapshot

Metric	Value	Formula / evidence
Statutory revenue	USD 5,061.3m	FY2025 - H1 2025 + H1 2026
Statutory operating income	USD 1,755.7m	Same TTM bridge
Gross operating margin	34.69%	1,755.7 / 5,061.3
Statutory diluted EPS	USD 12.84	USD 1,347.4m common NI / 104.95m diluted shares
Statutory FCF	USD 1,874.5m	OCF 1,962.8 - capex 88.3
FCF yield	6.09%	1,874.5 / (293.33 x 104.95m)
Dividend yield	1.03%	TTM DPS 3.02 / 293.33
Net buyback-yield proxy	About 0.2%	Repurchase cash less SBC-value proxy / diluted market value; not a realized issuance schedule
SBC / revenue	1.05%	53.2 / 5,061.3
SBC / FCF	2.84%	53.2 / 1,874.5
Net debt / EBITDA	About -0.49x	Reviewed FY2025 estimate; negative means net cash
Diluted shares	104.95m	TTM weighted average; down from 107.2m FY2021

ROIC variants

Fiscal year	Reported point-in-time ROIC	Lease-adjusted denominator ROIC	Main qualification
FY2021	12.5%	12.1%	Includes goodwill; all-cash subtraction is imperfect for regulated entities
FY2022	5.7%	5.5%	Digital impairment/loss year; not normalized
FY2023	15.9%	15.4%	Post-impairment recovery
FY2024	16.5%	16.0%	Core improvement; still point-in-time capital
FY2025	23.8%	23.0%	NOPAT USD 1,029.9m; lease liability added to invested capital
Five-year median	15.9%	15.4%	Supports 3/5, not >30% treatment

For an exchange and clearing operator, subtracting every dollar of cash from invested capital is too aggressive because regulated capital and clearing liquidity are not freely distributable. Adding the disclosed USD 189.5m minimum subsidiary capital and FY2025 lease liability back to the reviewed FY2025 denominator lowers ROIC to about **22.1%**. Conversely, subtracting USD 4.448bn of goodwill and intangibles from the USD 4.329bn reviewed invested-capital base makes ex-goodwill invested capital negative. The ex-goodwill result is therefore **not meaningful**, not evidence of infinite economics. The score uses inclusive-goodwill and regulatory-capital-aware returns.

R&D is not separately disclosed and is not invented. Lease obligations are explicitly included in the adjusted denominator. Acquired-intangible amortization remains in statutory earnings, consistent with the P/E preflight.

4. Rubric Scorecard

Category	Score	Maximum	Evidence-based note
1. Incremental returns on capital	12	25	ROIC is good and cash conversion is strong; ROIIC evidence is not rubric-grade
2. Reinvestment runway	17	20	Organic derivatives, data, access, clearing and global distribution offer a long runway
3. Durability of moat	13	15	Strong proprietary-derivatives moat, weaker fungible venues and renewal concentration
4. Accounting and financial quality	9	10	Clean audit, strong cash, low SBC; historical leadership conduct costs one point
5. Capital allocation discipline	5	10	Current pruning is rational; the acquisition failure ledger is material
Business Quality	**56**	**80**	Good business, not an elite evidenced compounder
6. Price and 20% underwriting	3	20	Base return is 8.35%; no sealed scenario clears 20%
Compounder Score	**59**	**100**	**Reject under this diagnostic rubric**

Subtest	Score	Maximum	Rationale
1A Normalized ROIC	3	5	Five-year median adjusted ROIC is about 15.4%
1B ROIIC	0	8	Required reinvestment components are incomplete; rough proxies are not scoreable
1C ROIIC trend	1	3	NOPAT improved, but the ROIIC series is unstable and impairment-sensitive
1D Unit economics	3	3	Options net-revenue margin 73.8% TTM; index volume and RPC both rose
1E Cash conversion	3	3	Aggregate FCF exceeds earnings and NOPAT despite noise

Subtest	Score	Maximum	Rationale
1F No accounting artifact	2	3	Goodwill-inclusive returns are sound; clearing cash and ex-goodwill capital need care
2A-2F Runway	17	20	4/4/4/2/2/1 for market, scale, organic growth, playbook, structure and return preservation
3A-3F Moat	13	15	4/2/3/1/2/1; pricing and stickiness are product-specific
4A-4F Financial quality	9	10	2/2/2/2/1/0; audit is clean, governance history prevents a full score
5A-5F Capital allocation	5	10	2/0/1/1/0/1; M&A and incentive hurdles remain weak
6A Base IRR	0	6	8.35%, below 10%
6B Exit multiple	2	4	23.0x is independently justified and below 23.38x, but does not clear 20%
6C Bear case	0	3	-7.37% gross USD IRR
6D Reverse hurdle	0	3	Required 19.84% EPS CAGR is far above modeled base 8.21%
6E Price perfection	1	2	Normal returns are possible, but a 20% return requires 38.32x on base EPS
6F Cash returns	0	2	Current cash returns exist, but the sealed forward distribution schedule is absent

5. ROIIC and Reinvestment Analysis

The evidence supports high incremental economics in the protected Options franchise, but it does not support a precise group ROIIC claim. The required denominator is net capex plus non-cash working capital plus supportable capitalized R&D or growth opex, acquisitions, and disposal effects. Net capex, the recurring versus clearing-collateral working-capital split, disposal cash, and R&D are not all available. Reported OCF cannot substitute because clearing/default-fund movements materially distort it.

A directional acquisition-inclusive screen uses change in statutory NOPAT divided by gross capex plus acquisition spend. From FY2021 to FY2024 it is **24.1%**: NOPAT increased USD 211.3m against USD 878.0m of gross capex and acquisitions. Extending to FY2025 produces **49.1%**: a USD 465.8m NOPAT increase against USD 949.0m. An organic gross-capex-only screen would exceed 100%, which signals denominator incompleteness rather than extraordinary precision. The acquisition-inclusive range is also flattered by FY2025 volume strength and penalized by the FY2022 Digital failure. It is disclosed as a screen, left null in rubric-grade JSON fields, and earns 0/8 for ROIIC.

Capital efficiency nonetheless has real support. Physical capex was only 1.2%-1.5% of gross revenue in FY2021-FY2025; Options, Data Vantage and connectivity scale over fixed technology and regulatory costs; and the modeled share count falls even after SBC issuance. Growth does not require external financing. The main risk is not capital scarcity but misallocation of abundant cash into acquisitions or speculative adjacent products.

6. Runway Analysis

Cboe has multiple organic reinvestment lanes: broader SPX/XSP and VIX distribution, longer trading hours, international access, event contracts, Data Vantage feeds and connectivity, Cboe Clear U.S., European securities-finance clearing, and cross-platform technology reuse. The sealed base case compounds gross statutory revenue at 6.77% and operating income at 8.91%, with a higher mix of Options and scaled non-core platforms.

The runway is credible without relying on an unsupported TAM. Index-options ADV rose from 2.0m contracts in FY2021 to 4.9m in FY2025 and 6.208m in Q2 2026. Data/access revenue grew 8.4% annually from FY2021 to FY2025, driven mostly by units and new sales rather than broad price increases. European clearing activity expanded, FX ADNV rose, and the common technology platform can support more volume at low marginal physical capital.

The runway is not uniform. U.S. exchange equity share fell from 14.2% in FY2021 to 9.4% in Q2 2026; BIDS capture roughly halved; multi-listed options and FX remain multi-homed; and event/prediction markets are not proven profit pools. Australia, Canada, Japan and CEDX demonstrate that licenses and technology do not automatically create liquidity. The 17/20 score

reflects a long organic opportunity with uneven venue economics and incomplete proof on new initiatives.

7. Moat Analysis

The moat can be explained in one paragraph. Cboe's core advantage is the bundle of exclusive U.S. SPX-option rights, Cboe-owned VIX intellectual property, deep liquidity, market-maker capital, broker workflows, authoritative data, and regulated execution/clearing infrastructure. More users attract liquidity and tighter spreads, which attract more users and generate proprietary data/access demand. A rival can build matching software, but cannot immediately replicate the legal product rights, open interest, trusted market operation, and integrated distribution. This protection is strong in proprietary derivatives and materially weaker in fungible equities, multi-listed options, and FX.

Pricing power is verified but narrow. Index-options RPC rose from USD 0.832 in FY2021 to USD 0.924 in FY2025 and USD 0.953 in Q2 2026 while volume also increased. By contrast, multi-listed-options RPC was roughly flat, European clearing fees compressed, and BIDS capture declined. Customer stickiness is operational rather than contractual outside the core, and the top ten customers generated about 57% of FY2025 revenue.

The moat appendix passes both the current gate and the 2046 test, but durability depends on renewing the S&P agreement and exclusive SPX rights, which run through 2033 and 2032 respectively. Regulation, data-fee reform, outages, cyber failure, clearing stress, customer concentration and economic substitutes are the main failure modes. AI is more likely to raise machine demand for trusted feeds and risk transfer than to replace licensed execution, but it can intensify routing and capture pressure in commoditized venues.

8. Accounting and Capital Allocation Analysis

KPMG gave an unqualified FY2025 opinion and found effective internal control; no restatement or material weakness was identified. Statutory earnings retain acquired-intangible amortization. Realignment, investment marks and discrete tax items are separately normalized only in the comparable current denominator. Cash conversion supports earnings over five years, although clearing-collateral movements make point estimates noisy. SBC is a real cost but remains modest at 1.05% of TTM revenue and 2.84% of TTM FCF; diluted shares declined.

The balance sheet is strong but specialized. At 2026-06-30 Cboe held USD 2,276.2m of cash and USD 114.5m of current financial investments against USD 1,443.8m of interest-bearing debt and USD 136.5m of lease liabilities. Not all liquidity is distributable: regulated subsidiaries require capital, clearing businesses need committed liquidity, and the parent relies on subsidiary upstreaming. That is why a generic ex-cash ROIC or EV bridge can overstate capital efficiency.

Capital allocation is mixed. Dividends rose from USD 193m in FY2021 to USD 284m in FY2025. Repurchases show some price sensitivity and reduced diluted shares, but management discloses no explicit repurchase hurdle. The USD 708m FY2022 acquisition program, USD 460.9m Digital impairment, recurring Digital losses and later venue exits are decisive negative evidence. Current portfolio pruning and a pivot to organic investment are rational, but final disposal economics and returns on clearing/event products remain unproven.

Management is **YELLOW**. Craig Donohue brings relevant CME/OCC experience and his first sixteen Cboe months show direct disclosure, conservative guidance and decisive pruning. The score is capped because his Cboe tenure is short, several leaders changed rapidly, his owned stake is small, and incentives reward adjusted EPS/TSR rather than ROIC, FCF per share or acquisition returns. The 2023 CEO conduct episode did not affect reporting, and the board's rapid response is positive, but it prevents a pristine governance score.

9. 20% Return Underwriting

Primary valuation method: P/E. It is used consistently for bear, base, bull, probability weighting, reverse hurdle and maximum-buy-price calculations. Statutory diluted EPS already includes interest, cash income, debt, SBC dilution and common allocations; no terminal net cash or debt is added after EPS x P/E. Net-SGD is outside this diagnostic, but any overlay must retain the same method.

Valuation preflight and exit-multiple integrity

`valuation_preflight.json` validated with evidence files at SHA-256 `45d0b7f03a76be9e412f4c347ec8d5b50b8a0fc5dc3a98074b94284668a7bfd9`. Status is CLEARED, all five foundation flags pass, and blockers are empty.

Integrity item	Locked value	Assessment
Reported current P/E	22.845015576324x	USD 293.33 / USD 12.84 reported TTM statutory diluted EPS
Normalized current P/E	23.3799731834564x	USD 293.33 / USD 12.5462077179609 comparable statutory-like EPS
Current-to-terminal denominator	Comparable	Terminal denominators are statutory diluted EPS per BATS:CBOE share
Clean CBOE historical band	21.81x-27.10x	FY2022 57.03x excluded as impairment-distorted
Live peer band	22.28x-27.71x	CBOE/CME/ICE/NDAQ preflight evidence
Bear exit P/E	18.0x	Below history and peers for operating/license-renewal stress
Base exit P/E	23.0x	Near normalized current and peer cluster
Bull exit P/E	26.0x	Within clean history and below NDAQ 27.71x
Independent selection checks	Passed	Both excessive-optimism and excessive-bearishness challenges passed; no raw cap used

Compact return summary

Amounts are USD per share. Returns are gross local-currency CAGRs over exactly five years. Forward distributions are the zero-distribution diagnostic described above.

Case	Probability	Terminal EPS	Exit P/E	Terminal share value	Cumulative distributions	Terminal wealth	Gross USD IRR
Bear	25%	11.111463	18.0x	200.006334	0.000000	200.006334	-7.3730%
Base	55%	19.047596	23.0x	438.094708	0.000000	438.094708	8.3533%
Bull	20%	24.803520	26.0x	644.891520	0.000000	644.891520	17.0647%
Probability-weighted	100%	Not used	Scenario-specific	Not used	0.000000	419.931977	7.4396%

Expected terminal wealth is `25% x 200.006334 + 55% x 438.094708 + 20% x 644.891520 = 419.9319769`. Probability-weighted IRR is `(419.9319769 / 293.33)^(1/5) - 1 = 7.4396%`; it is not an arithmetic average of scenario IRRs.

Bear-case operating and return bridge

Bear case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	USD 5,061.3m	USD 5,408.382m	1.34%	Weaker proprietary mix, venue share/capture pressure and exited perimeter
Operating margin	34.69%	31.47%	-3.22 pp	Fixed regulatory/resilience costs and adverse Options mix
Operating earnings	USD 1,755.7m	USD 1,702.2m	-0.62%	Exact metric is statutory operating income after Corporate Items
Diluted share count	104.95m	104.139300m	-0.15%	Sealed USD 110m annual buybacks net of modeled SBC issuance
EPS	USD 12.84	USD 11.111463	-2.85%	Statutory common diluted EPS; higher interest and 30% tax
Valuation denominator	Reported 12.84 / normalized 12.546208 EPS	Statutory diluted EPS 11.111463	Comparable	Normalized current and terminal statutory-like denominators align
Valuation	22.845x reported / 23.380x normalized P/E	18.0x P/E	-5.38x vs normalized	Preflight operating/license stress below history and peers
Share value	USD 293.33	USD 200.006334	-7.37%	11.111463 EPS x 18.0x; no post-P/E balance-sheet adjustment
Annual dividend	USD 3.02 TTM	Unavailable - not separately modelled	Unavailable	Current actual shown; no invented endpoint dividend
Dividend yield	1.03%	Unavailable - not separately modelled	Unavailable	Terminal annual dividend is absent from sealed synthesis

Bear case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
Five-year dividends	-	USD 0.000000 diagnostic	Cumulative	Zero-distribution diagnostic required by missing schedule
Total ending value	USD 293.33	USD 200.006334	-7.3730% gross local IRR	Share value plus distributions, counted once

Base-case operating and return bridge

Base case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	USD 5,061.3m	USD 7,024.199m	6.77%	Options-led growth plus scaling in Europe, Futures, FX and data/access
Operating margin	34.69%	38.31%	+3.62 pp	Higher proprietary-product mix and fixed-platform leverage
Operating earnings	USD 1,755.7m	USD 2,690.7m	8.91%	Exact metric is statutory operating income after Corporate Items
Diluted share count	104.95m	104.139300m	-0.15%	Same sealed repurchase/SBC path across scenarios
EPS	USD 12.84	USD 19.047596	8.21%	Statutory common diluted EPS; normalized investments and 29% tax
Valuation denominator	Reported 12.84 / normalized 12.546208 EPS	Statutory diluted EPS 19.047596	Comparable	Current normalization retains acquired-intangible amortization
Valuation	22.845x reported / 23.380x normalized P/E	23.0x P/E	-0.38x vs normalized	Preflight central multiple near current and peers
Share value	USD 293.33	USD 438.094708	8.35%	19.047596 EPS x 23.0x; no post-P/E balance-sheet adjustment
Annual dividend	USD 3.02 TTM	Unavailable - not separately modelled	Unavailable	Current actual shown; no invented endpoint dividend
Dividend yield	1.03%	Unavailable - not separately modelled	Unavailable	Terminal annual dividend is absent from sealed synthesis
Five-year dividends	-	USD 0.000000 diagnostic	Cumulative	Zero-distribution diagnostic required by missing schedule
Total ending value	USD 293.33	USD 438.094708	8.3533% gross local IRR	Share value plus distributions, counted once

Bull-case operating and return bridge

Bull case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
Revenue	USD 5,061.3m	USD 7,941.164m	9.43%	Sustained proprietary-index adoption and broader platform scaling
Operating margin	34.69%	41.39%	+6.70 pp	Strong mix, favorable capture and operating leverage
Operating earnings	USD 1,755.7m	USD 3,286.9m	13.36%	Exact metric is statutory operating income after Corporate Items
Diluted share count	104.95m	104.139300m	-0.15%	Same sealed repurchase/SBC path across scenarios
EPS	USD 12.84	USD 24.803520	14.07%	Statutory common diluted EPS; favorable investments and 27.5% tax
Valuation denominator	Reported 12.84 / normalized 12.546208 EPS	Statutory diluted EPS 24.803520	Comparable	Same statutory common-share perimeter
Valuation	22.845x reported / 23.380x normalized P/E	26.0x P/E	+2.62x vs normalized	Preflight multiple within clean CBOE history and below NDAQ evidence

Bull case	Start (2026-06-30)	Horizon (2031-06-30)	CAGR / change	Justification
Share value	USD 293.33	USD 644.891520	17.06%	24.803520 EPS x 26.0x; no post-P/E balance-sheet adjustment
Annual dividend	USD 3.02 TTM	Unavailable - not separately modelled	Unavailable	Current actual shown; no invented endpoint dividend
Dividend yield	1.03%	Unavailable - not separately modelled	Unavailable	Terminal annual dividend is absent from sealed synthesis
Five-year dividends	-	USD 0.000000 diagnostic	Cumulative	Zero-distribution diagnostic required by missing schedule
Total ending value	USD 293.33	USD 644.891520	17.0647% gross local IRR	Share value plus distributions, counted once

Reverse hurdle and maximum buy price

At a 20% CAGR, USD 293.33 must become **USD 729.8989056** in five years. With zero modeled distributions and the central 23.0x exit P/E, required terminal EPS is **USD 31.734735**. From current statutory EPS of USD 12.84, that is a **19.84% EPS CAGR**, versus the sealed base 8.21%. Holding base terminal EPS instead, the required exit P/E is **38.3197x**, far above the 23.38x comparable normalized current multiple and the 21.81x-27.10x clean historical band.

The method-matched central maximum buy price is `(19.047596 x 23.0 + 0) / 1.20^5 = USD 176.060438`. The probability-weighted terminal-wealth version is USD 168.761243. The central price is the reported headline because the instruction requires central method assumptions; both use the same P/E method and zero-distribution schedule.

10. Hard Veto Checklist

#	Hard veto	Status	Evidence
1	ROIIC below cost of capital	Insufficient evidence	Rubric-grade ROIIC is unavailable; proxies are positive but unstable
2	ROIC is an artificially tiny-capital artifact	Watch	Inclusive-goodwill ROIC is good; ex-goodwill capital is negative and all-cash subtraction is unsuitable
3	Growth requires external financing	Pass	Net cash and strong FCF fund reinvestment
4	Material dilution without value	Pass	Diluted shares fell FY2021-TTM; SBC is modest
5	Routine large acquisitions without return disclosure	Watch	FY2022 acquisition failure is material; current strategy is pruning, not repeated large deals
6	Structural FCF lag	Pass	Five-year FCF supports earnings; collateral noise is disclosed
7	Concentration, regulation or platform risk can impair equity	Watch	SPX renewal, top-ten customer concentration and operational resilience require monitoring
8	20% case requires multiple expansion	**Fail**	Base EPS requires 38.32x versus 23.38x normalized current P/E
9	Flawless execution needed at today's price	**Fail**	No sealed scenario reaches 20%; even bull reaches only 17.06%
10	Moat cannot be explained clearly	Pass	Proprietary rights, liquidity, data and regulated infrastructure are concrete
11	Accounting or governance impairs trust	Watch	Clean audit; historical CEO conduct and current incentives remain cautions
12	Balance sheet can wipe out holders	Pass	Net cash and explicit regulated-liquidity treatment mitigate risk

Hard vetoes 8 and 9 prevent `Investable now under this rubric`. The total score is also below 70, which makes the score-implied classification **Reject** rather than Watchlist or Buy only at lower price. This diagnostic does not override the separate ER2 verdict.

11. Final Decision

Final diagnostic: Reject at USD 293.33. Cboe is a good business whose current price does not underwrite the required return. The quality case rests on a concentrated proprietary-derivatives moat, strong cash generation, modest dilution and a credible organic runway. The negative case rests on missing rigorous ROIIC, acquisition scars, specialized regulatory capital, management YELLOW, SPX renewal concentration, and a base return of only 8.35%.

- **Compounder Score note:** 59/100; durable core economics are outweighed by incomplete ROIIC evidence, capital-allocation scars and a return profile far below 20%.
- **Business Quality Score note:** 56/80; SPX/VIX rights, liquidity, scale and cash conversion are strong, but the quality score is capped by concentrated renewal risk and acquisition history.
- **20% Return UW Score note:** 3/20; base IRR is 8.35%, bear is negative, bull is 17.06%, and base EPS would require a 38.32x exit P/E to reach 20%.

Upgrade evidence would be a complete reinvestment bridge showing sustained high acquisition-inclusive ROIIC, measured returns on new clearing/event products, disposal completion within disclosed costs, stronger ROIC/FCF incentives, and an entry price near or below USD 176 under unchanged central assumptions. Downgrade evidence would be SPX renewal pressure, falling index volume and RPC together, renewed large M&A without explicit hurdles, or deterioration in clearing/resilience.

12. Machine-Readable JSON

The companion artifact is `C:\Users\Admin\OneDrive\GPT\ER 2.0\Cboe Global Markets\compounder_score.json`. It preserves full-precision scenario wealth, IRRs, preflight inputs and hash, exit-multiple integrity, score components, hard-veto states, the reverse hurdle, source confidence, and false action authorities.

Appendix CSA - Scoring Audit

Cboe Global Markets (CBOE) - Scoring Audit

Analysis date: 2026-09-09 **Price:** USD 293.33 per BATS:CBOE common share **TTM anchor:** 2026-06-30 **Horizon:** 2031-06-30, exactly 5.0 years **Audit conclusion:** The return bridge is arithmetically sound and faithfully uses the cleared valuation preflight. The score is reduced from **59/100** to **56/100** because the evidence cannot support a positive ROIIC-trend score and because the 20% case requires major, not mild, multiple expansion. The score-implied classification remains **Reject**.

1. Original vs Audited Scores

Item	Original	Audited	Notes
Business Quality Score / 80	56/80	55/80	One point removed from 1C because no rubric-grade ROIIC series exists
Valuation / 20% Return UW Score / 20	3/20	1/20	Two points removed from 6B because the 20% case requires 38.32x, a major expansion
Total Score / 100	59/100	56/100	Exact sum of the two audited components
Classification	Reject	Reject	Below 70 and hard vetoes 8 and 9 fail

The audited score is diagnostic only. It does not replace the separate Management, Moat, or P/E-at-15 ER2 gates and does not authorize a portfolio action.

2. Score Reductions and Reasons

Rubric replay

Subscore	Original	Audited	Evidence status	Audit decision
1A Normalized ROIC	3/5	3/5	Supported	Five-year lease-adjusted median is about 15.4%; the 15%-20% band maps to 3 points
1B ROIIC	0/8	0/8	Missing data	Organic and acquisition-inclusive denominators are incomplete; the mandatory cap is correctly applied
1C ROIIC not deteriorating	1/3	0/3	Unsupported	NOPAT growth is not an ROIIC trend; no 3-year or 5-year ROIIC series exists
1D Unit economics	3/3	3/3	Supported	Options is the dominant profit pool, with 73.8% TTM net-revenue margin and simultaneous index volume/RPC growth
1E Cash conversion	3/3	3/3	Supported with qualification	Five-year aggregate FCF/NOPAT is about 143.6%; clearing-collateral noise is disclosed
1F Not an accounting artifact	2/3	2/3	Partly supported	Goodwill-inclusive and regulatory-capital-aware ROIC are usable; ex-goodwill capital is not meaningful
2A Market opportunity	4/5	4/5	Supported	Index derivatives, extended hours, clearing, data/access and global distribution have sourced adoption evidence
2B Reinvest at scale	4/5	4/5	Partly supported	Organic platforms scale at low physical capex, but failed acquisitions prevent a full score

Subscore	Original	Audited	Evidence status	Audit decision
2C Organic growth	4/4	4/4	Supported	Proprietary index volume, data/access sales and clearing activity provide several organic lanes
2D Repeatable playbook	2/3	2/3	Partly supported	Core product extension works, while Australia, Canada, Japan and CEDX show venue replication failures
2E Market structure	2/2	2/2	Supported	Exclusive rights, liquidity, regulation and clearing infrastructure support a long-duration core profit pool
2F No ROIC collapse	1/1	1/1	Partly supported	Low capex and fixed-platform leverage support the inference, but it is not rubric-grade ROIIC evidence
3A Clear advantage	4/4	4/4	Supported	Exclusive SPX rights, VIX IP, liquidity, data and regulated infrastructure are concrete
3B Pricing power	2/3	2/3	Supported	Index-options RPC rose with volume; pricing is weaker in fungible venues
3C Competitive evidence	3/3	3/3	Supported	Segment history distinguishes protected derivatives from multi-homed equities and FX
3D Customer stickiness	1/2	1/2	Supported	Operational integration creates friction, but customers multi-home and the top ten are concentrated
3E Stress resilience	2/2	2/2	Supported	Regulated operations, liquidity and clearing resources support resilience, subject to outage/cyber stress
3F Low disruption risk	1/1	1/1	Supported	AI does not replace legal execution, benchmark rights, liquidity or clearing, though it pressures routing
4A Clean earnings	2/2	2/2	Supported	Unqualified audit, effective controls and explicit normalization; acquired-intangible amortization remains in EPS
4B Cash supports earnings	2/2	2/2	Supported	Five-year FCF and CFO exceed net income in aggregate
4C SBC and dilution	2/2	2/2	Supported	SBC is about 1.05% of TTM revenue and 2.84% of TTM FCF; diluted shares declined
4D Balance sheet	2/2	2/2	Supported with qualification	Net cash protects equity; ring-fenced subsidiary/clearing liquidity is not treated as distributable cash
4E Disclosure	1/1	1/1	Supported	Core statutory and KPI evidence is strong; genuine venue/subscriber gaps are explicitly identified
4F No governance red flags	0/1	0/1	Supported reduction	2023 CEO conduct history and incentive design prevent a clean point
5A Rational reinvestment	2/2	2/2	Partly supported	Current pruning and organic focus are rational, but returns on new initiatives remain unproven
5B Acquisition discipline	0/2	0/2	Supported reduction	USD 708m FY2022 acquisitions preceded a USD 460.9m Digital goodwill impairment

Subscore	Original	Audited	Evidence status	Audit decision
5C Buyback discipline	1/2	1/2	Supported	Shares declined and repurchases show price sensitivity, but no explicit valuation hurdle is disclosed
5D Incentive alignment	1/2	1/2	Supported	Clawbacks and ownership guidelines help; awards omit ROIC, FCF/share and acquisition-return metrics
5E Owner mentality	0/1	0/1	Supported reduction	New CEO ownership is low and not founder-like
5F Past decisions	1/1	1/1	Supported	A detailed success/failure ledger exists; the point recognizes evidence, not uniformly good outcomes
6A Base IRR	0/6	0/6	Calculation verified	8.3533404872% is below 10%
6B Conservative exit multiple	2/4	0/4	Scoring error	The locked base exit is 23.0x, but a 20% return on base EPS requires 38.3197x versus 23.3800x normalized current P/E; this is major expansion
6C Bear case	0/3	0/3	Calculation verified	Bear IRR is negative 7.3730309049%
6D Reverse hurdle	0/3	0/3	Calculation verified	Required EPS CAGR is 19.84% versus modeled base 8.21%; not beatable
6E Price does not price perfection	1/2	1/2	Partly supported	Ordinary positive return is possible, but the 20% outcome needs evidence beyond the sealed bull case
6F Cash returns	0/2	0/2	Missing data	Current dividend exists, but the sealed synthesis has no scenario distribution schedule

Audited category totals are 11/25, 17/20, 13/15, 9/10, 5/10 and 1/20. Categories 1-5 sum to 55/80; adding Category 6 gives 56/100.

3. Unsupported Claims

The evidence does not support the original 1C claim that ROIIC is not deteriorating sharply. Statutory NOPAT improved, but ROIIC needs a change-in-NOPAT numerator divided by a complete cumulative reinvestment denominator. Net capex, non-cash working capital stripped of clearing collateral, R&D/growth opex, disposal cash and acquisition spend are not jointly available. A positive NOPAT trend cannot substitute for the missing ROIIC series.

No other awarded point depends solely on an unsupported management claim. Runway and moat points are anchored to reported index-options ADV/RPC, access/data growth, clearing activity, segment margins, market shares, exclusive rights and regulatory infrastructure. Qualitative claims are appropriately discounted where venue-level revenue, subscribers, churn, customer retention and new-product returns are not disclosed.

4. Calculation Errors

Valuation preflight and method lock

`valuation_preflight.json` revalidated with evidence-file checking and returned `VALUATION_PREFLIGHT_VALID`. Its SHA-256 is `45d0b7f03a76be9e412f4c347ec8d5b50b8a0fc5dc3a98074b94284668a7bfd9`; status is `CLEARED`, all five foundations pass, blockers are empty, and the source-bound synthesis hash is `1541f7a171dc6f473b1b3d17eea5a4b4e3e335ccbf864c9c8a1cc238a9aeeebd`.

CS faithfully copied the controlling economics: primary method PE, reported current P/E 22.845015576324x, normalized current P/E 23.3799731834564x, Bear/Base/Bull exits 18.0x/23.0x/26.0x, and 104.139300m terminal diluted listed-equivalent shares. Its normalized-denominator sentence is a shortened paraphrase rather than a byte-for-byte copy, but the USD 12.5462077179609 denominator, statutory-like diluted-EPS perimeter and amortization treatment are unchanged. This is not an economic mismatch.

Preflight selected the multiples before returns and scoring. It says `selected_before_return_calculation=true` and `desired_return_reverse_engineering_used=false`; its file precedes the CS artifacts and its hash is copied into both CS outputs. The current denominator is comparable with terminal statutory diluted EPS: reported and normalized current earnings differ by only about 2.3%, both use the same USD listed-share/common-income perimeter, and the event-heavy items are separately normalized. The raw reported multiple was not used as a cap.

The exit-multiple evidence clears both directional tests. The 18.0x Bear lies below clean CBOE history and peers without implying utility-like zero value; 23.0x Base is near the 23.38x normalized current anchor and CBOE/CME/ICE cluster; 26.0x Bull lies within clean CBOE history and below the 27.71x NDAQ observation. The optimism test constrains the Bull premium to sustained proprietary-product adoption and margin conversion. The bearishness test avoids an unjustified distress multiple for a profitable, net-cash regulated franchise.

P/E return replay

Case	Probability	Terminal EPS	Exit P/E	Terminal share price	Distributions	Terminal wealth	Audited gross USD IRR
Bear	25%	11.111463	18.0x	200.006334	0.000000	200.006334	-7.3730309049%
Base	55%	19.047596	23.0x	438.094708	0.000000	438.094708	8.3533404872%
Bull	20%	24.803520	26.0x	644.891520	0.000000	644.891520	17.0647216430%
Probability-weighted	100%	Scenario-specific	Scenario-specific	Not used	0.000000	419.931976900	7.4396272303%

Each terminal price equals terminal EPS times exit P/E. No cash, debt, lease, clearing claim, NCI or other balance-sheet item is added or subtracted after that equity-level calculation. Interest, cash income, debt costs, SBC issuance and participating-security allocation already flow through statutory EPS and diluted shares. The P/E double-count check therefore passes.

Probability-weighted wealth is `0.25 x 200.006334 + 0.55 x 438.094708 + 0.20 x 644.891520 = 419.9319769`. The audited probability-weighted IRR is `(419.9319769 / 293.33)^(1/5) - 1`, not an average of scenario IRRs. The central maximum buy price is `438.094708 / 1.20^5 = USD 176.0604375643`. Required five-year wealth at 20% is USD 729.8989056, requiring USD 31.734735 terminal EPS at 23.0x, a 19.84% EPS CAGR from USD 12.84, or 38.3197x on modeled Base EPS.

The only scoring calculation error is 6B. Because the 20% outcome requires 38.3197x versus 23.3800x normalized current P/E, the rubric's `major expansion` condition maps to zero, even though the independently selected central exit itself is slightly below today's normalized multiple.

5. Missing Data

- Rubric-grade 3-year, 5-year and acquisition-inclusive ROIIC remain unavailable. The disclosed 24.1%-49.1% acquisition-inclusive proxies omit material reinvestment components and start around an impairment-distorted period; they are directional only.
- The sealed synthesis discloses no Bear/Base/Bull cumulative distribution schedule. A zero-distribution diagnostic is contract-permitted and conservative, but it is not a forecast that Cboe will cease dividends.
- No consistent Data Vantage subscriber, churn or retention series and no stable product/venue revenue for SPX, VIX, BIDS or individual clearing venues are disclosed.
- The net-SGD overlay is not part of CS. It remains a final-assembly requirement. Any later net-SGD bridge must retain `PE`, the same scenario operating paths and exit multiples, and must not introduce a post-P/E net-debt adjustment.

6. Hard-Veto and Threshold Test Audit

All twelve hard-veto statuses were checked. Vetoes 1, 2, 5, 7 and 11 appropriately remain `INSUFFICIENT_EVIDENCE` or `WATCH`; 3, 4, 6, 10 and 12 are supported passes. Hard veto 8 is a supported `FAIL` because the 20% case needs a 38.32x exit P/E, materially above the 23.38x comparable normalized current P/E. Hard veto 9 is also a supported `FAIL`: Base earns only 8.35% and even the sealed Bull earns 17.06%, so today's price needs performance beyond the defined Bull or major multiple expansion to reach the target.

The threshold audit also fails every investable-now test: total 56 is below 80, Business Quality 55 is below 65, Valuation 1 is below 15, ROIIC plus runway is 28 rather than 35 because Category 1 is 11 and runway is 17, Base IRR is below 20%, Bear IRR is below 8%-10%, hard vetoes exist, and the 20% case requires major multiple expansion. The score-implied classification is therefore unambiguously `Reject`; the below-70 rule alone is sufficient.

7. Final 20% Hurdle Pass/Fail

FAIL. The best sealed scenario reaches 17.0647% gross USD, while the probability-weighted result is 7.4396%. The zero-distribution diagnostic is conservative, but the missing dividend schedule is too small to close the gap to 20% without unsupported assumptions. Cboe is not a 20% return investment at USD 293.33 under the locked scenario set.

8. Dream Business / Dream Investment Classification

Neither under this strict rubric. Cboe is a good, durable and cash-generative business, and its Moat gate passes. It is not yet a dream business because group ROIIC is unmeasured, acquisition history is poor, the proprietary profit pool is concentrated around rights renewed in 2032-2033, and Management remains YELLOW. It is not a dream investment because current valuation produces an 8.35% Base return and a negative Bear return.

The single biggest reason it does not qualify is the starting price: even the sealed Bull operating outcome fails to reach 20%, while the Base case would require an unsupported 38.32x exit P/E.

9. Stage 7 Scorecard Notes

- **Compounder Score note:** 56/100; a durable derivatives franchise is outweighed by unmeasured ROIIC, acquisition scars and a return profile far below 20%.
- **Business Quality Score note:** 55/80; SPX/VIX rights, liquidity, scale and cash conversion are strong, but ROIIC evidence is incomplete and renewal/capital-allocation risk remains.
- **20% Return UW Score note:** 1/20; Base earns 8.35%, Bear loses value and the 20% case requires major expansion to about 38.32x.

10. Auditor JSON

The companion `compounder_score_audit.json` preserves the full-precision returns, audited subscores, preflight binding, hard-veto replay, method checks, insurer-not-applicable fields and pending net-SGD requirement.

Appendix RT - Red Team

Cboe Global Markets — Red Team

Information date: September 9, 2026 **Financial basis:** TTM ended June 30, 2026; valuation horizon June 30, 2031; USD unless stated **Red-team conclusion: Conditional.** Cboe's operating thesis survives, but the security does not survive as an investable 20% compounder at USD 293.33. The concentrated Options franchise can remain excellent while shareholders earn only a single-digit Base return, and the 2031 exit sits uncomfortably close to the 2032–2033 SPX renewal window.

1. The most fragile assumption

The most fragile Stage 5 assumption is **Options Base net-revenue growth of 9.1866% annually**, from USD 1,755.4 million TTM to USD 2,724.1 million in 2031. It is the one line that matters most: Options supplies roughly 76% of Base segment operating income, and the synthesis sensitivity shows that a two-point reduction in Options CAGR lowers Base EPS from USD 19.0476 to USD 17.8096, a USD 1.238 or 6.5% hit. Applying the locked 23x Base P/E, terminal value would fall about USD 28.47 per share before distributions.

The assumption is not absurd—Q2 2026 Options net revenue rose 30% year over year and index ADV rose 32%—but its apparent conservatism depends on choosing the TTM average rather than the latest run-rate. Annualized Q2 net revenue was already USD 1,895.6 million; growth from that run-rate to the Base endpoint is 7.51%, not 9.19%. That makes the forecast defensible, not safe. The quarterly drivers already show cyclicality: total Options RPC fell from USD 0.343 in Q1 to USD 0.317 in Q2 while record volume masked the giveback. Multi-listed share was only 23.5%, down from 27.1% in FY2021, and 0DTE was already 59% of SPX volume in 2025. The Base requires index ADV to compound 9%, multi-listed ADV 4%, total RPC 1.5%, and data/access demand 7% for five years. A quiet-volatility period, 0DTE maturation, or simultaneous volume and RPC pressure would invalidate several of those drivers at once.

The model's own sensitivity understates this concentration because it moves only Options revenue CAGR while holding its 75.5% terminal margin fixed. In a real shortfall, adverse proprietary mix and license or rebate economics would likely hit both revenue and margin. A two-point CAGR miss plus a 200-basis-point margin miss would reduce terminal Options operating income by roughly USD 145–150 million versus Base, before tax, not merely the USD 92–96 million single-variable effect in the segment appendix.

2. The most-likely-to-be-optimistic Stage 5 number

The single number most likely to be revised down is **Base 2031 Options operating income of USD 2,056.7 million**. It combines the fragile USD 2,724.1 million revenue endpoint with a 75.5% net-revenue margin, 166 basis points above the already exceptional 73.84% TTM margin. The margin increment alone contributes only about USD 45 million, but the combined number assumes that index mix, RPC, data/access and fixed-cost leverage all remain favorable while Cboe funds 24/5 access, new products, cyber resilience, compliance and renewal-related economics.

The case leans on broad segment KPIs because product revenue and profit for SPX, VIX, 0DTE, multi-listed options and Options-related data are not disclosed. This prevents an independent proof that the fastest-growing contracts carry the assumed incremental margin after S&P royalties, market-maker incentives and distribution costs. It also makes SPX concentration impossible to translate into a clean profit-at-risk number. USD 2,056.7 million is therefore a precise output built on an unobservable mix bridge.

3. Strongest bear case

Cboe is not five independent growth engines; it is a proprietary derivatives rent pool wrapped in several more competitive venues. Options and Futures generate about 80% of segment profit, while SPX exclusivity expires at year-end 2032 and the broader S&P agreement at year-end 2033. By the June 2031 valuation date, investors will be pricing the renewal rather than waiting for expiry: worse royalty terms, non-exclusive rights, or credible substitution by ETF options, futures and OTC products can compress both EPS and the exit multiple before any contract is lost. If index ADV and RPC weaken together over the next two years, the 9.19% Options CAGR breaks, the 75.5% margin loses its mix support, and a 23x Base or 26x Bull terminal multiple becomes untenable.

The adverse mechanism is reinforced by regulation and concentration. 0DTE's share of SPX volume invites suitability, margin and access scrutiny; exchange data/access fees face continuing regulatory challenge; and the top ten customers generated

about 57% of FY2025 revenue. In fungible markets, customers multi-home and route dynamically. North American Equities share has already fallen from 14.2% in FY2021 to 9.4% in Q2 2026, while BIDS capture fell from USD 0.120 to USD 0.058 per 100 touched shares. A sophisticated router or liquidity-provider shift can therefore erode capture even if industry volume remains healthy. The earliest confirmation would be two consecutive quarters in which proprietary index ADV and RPC both decline, rather than a one-quarter volatility normalization.

4. Cross-examination of management commentary

- **"Mid-to-high teens" organic net-revenue growth**—Q2 2026 call, Jill Griebenow, as recorded in `data_package.md` Section 6. The upgrade followed a quarter in which total company net revenue rose 25% and Options rose 30%. Management has not yet guided this team through a quiet-volume year, and Q2 Futures ADV already reversed Q1's spike while FX ADNV normalized. If the guide is regime-assisted rather than durable, the first evidence will be Options ADV slowing while RPC stays at or below USD 0.317, followed by organic growth dropping below the modeled 12% first forecast-year cadence.

- **Data Vantage at "low teens."** The claim is supported by current sales momentum and management said nearly 90% of incremental Q3 2025 revenue came from new units and new sales, not pricing. That is encouraging, but there is no consistent subscriber count, churn, retention, cohort, or segment allocation. Data Vantage is a cross-segment layer whose scarcity partly derives from the venues; it is not an independent sixth moat. The claim first fails if reported access/capacity and market-data growth drops below 6% for two quarters while transaction volumes remain positive, implying customer rationalization or data substitution rather than a cyclical venue issue.

- **"Clearing as an enabler"**—Q2 2026 call, Craig Donohue. European cash clearing has real scale, but the Base assumes 8% Cboe Clear Europe growth and a segment margin rise from 35.1% to 39.1% while the package discloses neither SFT revenue nor member adoption. Cboe Clear U.S. and securities-finance clearing also require capital, liquidity, surveillance and default-management resources. The statement is overpromising until Cboe reports members, eligible collateral, daily activity and return on required capital. The first failure signal is strong cleared-trade counts without proportional segment net revenue or with margin below the staged Base path.

5. Stage 5 tie-out reverification

The recency anchor is sound. The TTM bridge is FY2025 less H1 2025 plus H1 2026, and the operating calibration uses four non-overlapping quarters from Q3 2025 through Q2 2026. There is no stale annual anchor or double-counted quarter. The latest trend is also not a hidden sharp deceleration: total net revenue was USD 728.9 million in Q1 and USD 731.6 million in Q2, with Options rising from USD 467.6 million to USD 473.9 million. The red flag is beneath the aggregate—Options RPC, Futures ADV and FX ADNV all fell sequentially—so the model's stepped deceleration is necessary.

The share-count bridge is arithmetically realistic but economically awkward. It begins at 105.0 million diluted shares, retires 1.666848 million through USD 110 million annual buybacks, adds 0.806148 million for SBC, and ends at 104.139300 million in every scenario. That modest 0.82% cumulative net reduction is close to recent experience and is easily funded even by Bear FCF of about USD 1.06 billion. However, using the same repurchase cash and a purchase price rising from USD 300 to USD 364.65 in Bear, when Bear terminal value is only USD 200.01, assumes management destroys value through overpriced repurchases. This does not flatter EPS—the higher assumed price retires fewer shares—but it exposes weak capital-allocation logic. Buybacks should not be credited as automatically accretive merely because FCF covers them.

The most questionable non-Options growth exceeds its own clean history in Futures: Base core transaction and clearing grows 5.0% despite FY2021–FY2025 ADV being roughly flat and RPC growing only 1.2%. The driver is only USD 129.2 million by 2031 and cannot rescue the group. North American Equities Base gross revenue CAGR of 3.05% also exceeds its FY2021–FY2025 1.6% history, requiring BIDS net-fee recovery after capture roughly halved. Europe Base assumes 8% clearing and 9% data/access growth plus 400 basis points of margin expansion while exact exit-bucket and stranded-cost dollars are undisclosed. These are secondary forecast risks, but together they show that the non-core portfolio is more execution-dependent than the blended revenue CAGR suggests.

Portfolio pruning is two-sided. The model correctly removes Australia, Canada, Japan and CEDX operations and credits no sale proceeds, gain or special buyback; that is conservative. Yet segment margin paths assume meaningful cost removal and better retained mix despite management's USD 100–120 million eventual savings depending partly on sale timing and stranded-cost separation. With a new CEO, derivatives head, data head, COO and equities/spot head arriving within roughly

thirteen months, execution risk is real. A delayed sale may temporarily support revenue while prolonging duplicated technology and personnel; a quick sale may reveal that more shared cost remains than the segment models assume.

6. Score-derived 20% return claim

The audited score does **not** claim that 20% is plausible; the red team agrees. The audited 56/100 equals 55/80 Business Quality plus 1/20 valuation underwriting and classifies Cboe as **Reject**. Base earns 8.3533%, Bear loses 7.3730% annually, and even Bull earns only 17.0647%. A 20% Base return requires USD 31.7347 terminal EPS, a 19.84% EPS CAGR from reported TTM USD 12.84, or a 38.3197x exit P/E on modeled Base EPS. The first assumption that would have to break is terminal EPS, especially the Options revenue/margin combination; share count, dividends or modest tax help cannot bridge an USD 12.69 per-share EPS shortfall.

7. Two-sided valuation challenge and return-model status

The preflight is valid against its evidence files and hashes exactly to `45d0b7f03a76be9e412f4c347ec8d5b50b8a0fc5dc3a98074b94284668a7bfd9`. It locks P/E consistently, normalized current P/E of 23.3799731834564x, and Bear/Base/Bull exits of 18x/23x/26x. CS/CSA use the same statutory diluted EPS perimeter, and no post-P/E cash, debt, lease, clearing or NCI adjustment is made. The reproduced bridge is:

Case	Probability	Terminal EPS	Exit P/E	Terminal value	Audited gross USD IRR
Bear	25%	11.111463	18x	200.006334	(7.3730309049%)
Base	55%	19.047596	23x	438.094708	8.3533404872%
Bull	20%	24.803520	26x	644.891520	17.0647216430%

Probability-weighted terminal wealth is USD 419.9319769 and its five-year CAGR is 7.4396272303%; the scenarios are weighted by wealth, not by averaging IRRs.

Too optimistic: the 26x Bull exit is granted only eighteen months before SPX exclusivity expiry while Bull also assumes 12.17% Options revenue growth and a 78% margin. That multiple is historically supportable, but it stacks peak-quality operating evidence with a renewal cliff that could already dominate the stock. A 23x Bull exit, equal to Base and slightly below current normalized P/E, would reduce Bull terminal value by USD 74.41 per share and Bull IRR by about 2.84 percentage points. This is a legitimate non-controlling sensitivity, not a repair to the locked method.

Too bearish: Bear stacks only 2.4% Options growth, a 68% Options margin, 30% tax, zero investment earnings, higher debt cost, no distributions and an 18x exit even though exclusivity remains in force through the horizon and the company starts net cash. At the low end of clean Cboe history, 21.81x, Bear terminal value would be USD 242.34 and IRR negative 3.75%, 3.63 points better than audited Bear. The 18x remains defensible for a joint operating/renewal stress, but it should not be mistaken for the only conservative outcome.

The explicit zero-distribution diagnostic is conservative but **not material under a supportable dividend path**. Starting from current DPS of USD 3.02, flat Bear dividends produce USD 15.10 cumulative; 10.12% Base growth, consistent with 2021–2025 aggregate dividend growth, produces USD 20.38; and a 15% Bull path produces USD 23.48. Those add approximately 1.36, 0.99 and 0.84 percentage points to Bear/Base/Bull IRRs; probability-weighted distributions of USD 19.65 add about 0.99 point. A full +2 points would require USD 22.55, USD 41.95 and USD 57.00 per share by scenario, or USD 40.57 probability-weighted. Bear would need roughly 15% annual dividend growth despite falling EPS; the other thresholds are far outside the observed payout path. Therefore no mandatory S→CS→CSA repair loop is triggered. A future synthesis refresh should still add a scenario distribution schedule, then CS/CSA should replay it.

RETURN_MODEL_OBJECTION_STATUS: IMMATERIAL. No VP foundation is wrong, and no arithmetic-only correction can move a scenario or probability-weighted annual return by at least two points on supportable evidence.

8. P&C insurer bridge applicability

Cboe is an exchange operator and clearing-infrastructure provider, not a property-and-casualty insurer or reinsurer. No insurer return bridge is required. Clearing liquidity, default funds and regulatory capital are operating constraints and tail-risk exposures, but they do not transform Cboe into a risk-bearing insurer; the P/E method appropriately leaves those claims inside statutory EPS and makes no post-P/E adjustment.

9. Signal that forces an exit

Exit if, in any two consecutive reported quarters through 2028, Cboe index-options ADV declines at least 10% year over year and index-options RPC is below USD 0.90 per contract. Both conditions must occur together to avoid selling on ordinary volume cyclicality. The threshold attacks the thesis directly: Base requires 9% index ADV growth and positive total RPC progression, while the moat depends on simultaneous proprietary volume and pricing power. Two quarters of double-digit volume decline plus sub-USD 0.90 index RPC would indicate substitution, maturity, regulatory pressure or degraded renewal economics, not merely a quiet month. The operating model should then be rewritten around a lower-growth utility-like Options franchise rather than waiting for the 2032 contract date.

10. Conviction after red team

Conditional. The operating franchise survives because exclusive SPX rights, VIX intellectual property, liquidity, source data, regulated infrastructure and current cash generation are real. The valuation thesis does not survive as a BUY at USD 293.33: Base return is only 8.35%, Bear loses value, the 20% claim fails even in Bull, and the most important profit pool approaches a contractual renewal shortly after the horizon. Position sizing should remain zero under a 20% mandate unless price falls toward the audited maximum-buy-price region or new evidence supports materially higher EPS without relying on a premium exit multiple. The best rebuttal to the bear is that the model omits dividends and sale proceeds and uses a punitive 18x Bear multiple; the best rebuttal to that rebuttal is that none of those items can repair the starting-price problem.

Appendix D - Data Package (Raw Historicals)

Cboe Global Markets (CBOE) — Production ER2 Data Package

Run ID: `pulse-cio-20260909T040508+0800` **Information date:** 2026-09-09 **Reporting basis:** U.S. GAAP; USD millions unless stated otherwise **Fiscal year-end:** December 31 **TTM base:** Q3 2025 + Q4 2025 + Q1 2026 + Q2 2026, ending 2026-06-30 **Forward horizon:** 2031-06-30, exactly five calendar years after the TTM endpoint **Sealed valuation anchor:** USD 293.33 close on 2026-09-08; quote-packet SHA-256 `81b74a7318cc8ae00d4660f43c7b307a277d95cf8c163cc7a9d9f63e8ed6b70e` **Sealed statutory bridge:** SHA-256 `fed38c48503d96b1b8db579a514485710836c90ec2a989f76c0ad47984ae74bc`

The two packet hashes were recomputed before research and matched the QFR seals. Neither packet was modified. Quantitative statement values below start from the QFR-cleared `quant_foundation.md` and are re-anchored to live FMP pulls and newly fetched SEC filings in this D-stage run. Material FMP classification errors remain overridden by the SEC: FY2025 statutory operating income is $1,467.1m, not FMP's $1,514.1m; FY2025 operating cash flow is $1,752.6m, not FMP's $1,224.1m; and interest-bearing debt is $1,442.9m, not FMP's broader $1,684.7m liability grouping.

0. Source key and control hierarchy

Source ID	Live source and covered period	Local raw evidence
SEC25	[FY2025 Form 10-K](https://www.sec.gov/Archives/edgar/data/1374310/000162828026010013/cboe-20251231.htm)	`raw/D-pulse-cio-20260909T040508+0800/sec_cboe_2025_10k_live.htm`
SEC24	[FY2024 Form 10-K](https://www.sec.gov/Archives/edgar/data/1374310/000162828025006984/cboe-20241231.htm)	`raw/D-pulse-cio-20260909T040508+0800/sec_cboe_2024_10k_live.htm`
SEC23	[FY2023 Form 10-K](https://www.sec.gov/Archives/edgar/data/1374310/000155837024001277/cboe-20231231x10k.htm)	`raw/D-pulse-cio-20260909T040508+0800/sec_cboe_2023_10k_live.htm`
SEC22	[FY2022 Form 10-K](https://www.sec.gov/Archives/edgar/data/1374310/000155837023001489/cboe-20221231x10k.htm)	`raw/D-pulse-cio-20260909T040508+0800/sec_cboe_2022_10k_live.htm`
SEC21	[FY2021 Form 10-K](https://www.sec.gov/Archives/edgar/data/1374310/000155837022001386/cboe-20211231x10k.htm)	`raw/D-pulse-cio-20260909T040508+0800/sec_cboe_2021_10k_live.htm`
SEC25Q3	[Q3 2025 Form 10-Q](https://www.sec.gov/Archives/edgar/data/1374310/000162828025047680/cboe-20250930.htm)	`raw/D-pulse-cio-20260909T040508+0800/sec_cboe_2025q3_10q_live.htm`
SEC26Q1	[Q1 2026 Form 10-Q](https://www.sec.gov/Archives/edgar/data/1374310/000162828026029112/cboe-20260331.htm)	`raw/D-pulse-cio-20260909T040508+0800/sec_cboe_2026q1_10q_live.htm`
SEC26Q2	[Q2 2026 Form 10-Q](https://www.sec.gov/Archives/edgar/data/1374310/000162828026051239/cboe-20260630.htm)	`raw/D-pulse-cio-20260909T040508+0800/sec_cboe_2026q2_10q_live.htm`
EX25Q3–EX26Q2	Four SEC-filed earnings-release Exhibits 99.1	`raw/D-pulse-cio-20260909T040508+0800/sec_ex991_*_release_live.htm`
FMP-A	Live annual income, balance sheet, cash flow, key metrics, ratios, product and geographic endpoints	`raw/D-pulse-cio-20260909T040508+0800/fmp_*_annual.json`
FMP-Q	Live quarterly income and product endpoints	`raw/D-pulse-cio-20260909T040508+0800/fmp_*_quarter.json`
TR25Q3–TR26Q2	Live FMP earnings-call transcript endpoint for the four latest fiscal quarters	`raw/D-pulse-cio-20260909T040508+0800/fmp_transcript_*.json`

The machine-readable `source_manifest.json` records exact URLs, timestamps, absolute raw paths, hashes, period coverage, freshness, and official-source precedence. No local investing data warehouse file was opened or used.

0a. Industry classification and disclosure inventory

Cboe is an exchange and market-infrastructure financial company. It is a U.S. domestic filer operating regulated trading venues, an institutional FX ECN, futures and options exchanges, and clearing houses. The Asset Managers / Wealth /

Exchanges checklist is therefore triggered even though the ordinary FMP segment fields contain some values. FMP product and geographic data are sparse and taxonomy-inconsistent: the live annual product endpoint mixes gross revenue captions, business categories, and cost-of-revenue captions across years; the live FY2025 geographic endpoint returns only North American Equities and Europe and Asia Pacific; and Q2 2026 product data omit Q1 2026 and are incomplete. Controlling evidence is consequently the SEC segment note, operating-statistics tables, and SEC-filed earnings releases.

Sources searched live in this run were FY2021–FY2025 Forms 10-K, Q3 2025 and Q1/Q2 2026 Forms 10-Q, four SEC-filed earnings releases, four live FMP transcripts, SEC submissions, and the FMP statement/product/geographic endpoints. Search terms included `average daily volume`, `ADV`, `ADNV`, `contracts`, `market share`, `revenue per contract`, `RPC`, `net capture`, `transaction and clearing fees`, `access and capacity`, `market data`, `Data Vantage`, `subscriber`, `customer count`, `Cboe Clear Europe`, `trades cleared`, `net settlement`, `regulatory capital`, `minimum requirement`, `clearing facility`, `geography`, `strategic realignment`, `guidance`, and `capital expenditures`.

Dataset / table family	Official source searched	Years available	Included?	Omission status	Downstream relevance
Segment revenue and `Operating income (loss)`	Segment notes in SEC21–SEC26Q2	FY2021–FY2025 plus TTM	Yes	None	Five segment appendices and statutory synthesis
Volume, ADV/ADNV, market share, RPC and net capture	Operating-statistics tables in SEC21–SEC25 and EX26Q2	FY2021–FY2025 plus Q2 2026	Yes	Some venue metrics changed definitions; boundaries noted	Revenue and pricing drivers
Recurring data/access/capacity revenue	Revenue-caption and business-category tables in SEC21–SEC26Q2	FY2021–FY2025 plus Q2 2026	Yes	Subscriber counts are a true non-disclosure	Data Vantage durability
Cboe Clear Europe activity	Operating-statistics tables and clearing discussion	FY2021–FY2025 plus Q2 2026	Yes	FY2022 trades use later comparable presentation	Europe/APAC and clearing moat
Regulatory capital	Regulatory-capital notes in SEC21–SEC25	FY2021–FY2025	Yes	Subsidiary tables are annual snapshots; the aggregate minimum series below is calculated where FY2021/FY2022 do not print a total	Capital mobility and tail-risk capacity
Geographic/venue mix	Segment note and FMP geography endpoint	FY2021–FY2025 plus TTM	Yes, via reportable-venue segments	Pure country revenue is not separately disclosed	Mix, FX and regulatory sensitivity
Recent trend and guidance	SEC25Q3–SEC26Q2, four releases and transcripts	Last four quarters	Yes	No distinct 2025/26 investor day; March 2026 investor presentation was identified, not needed for numeric overrides	Recency and forecast controls

Material KPI family history

KPI family	Granularity	FY2021	FY2022	FY2023	FY2024	FY2025	Latest interim	Source
Options multi-listed ADV, m contracts	Venue/product	10.1	10.8	10.8	10.9	13.5	15.654 in Q2 2026	SEC21–SEC25; EX26Q2
Options index ADV, m contracts	Venue/product	2.0	2.8	3.8	4.1	4.9	6.208 in Q2 2026	SEC21–SEC25; EX26Q2
Total options RPC, USD/contract	Pricing	0.192	0.234	0.276	0.293	0.297	0.317 in Q2 2026	SEC21–SEC25; EX26Q2
Total options market share	Venue	30.8%	33.2%	33.1%	30.8%	30.3%	30.0% in Q2 2026	SEC21–SEC25; EX26Q2
Canada equities matched ADV, m shares	Venue	49.4	91.8	136.1	147.6	167.5	185.8 in Q2 2026	SEC21–SEC25; EX26Q2
Europe matched ADNV, EUR bn	Venue	7.7	10.8	9.4	9.8	12.8	Industry ADNV 63.4; Cboe share 24.4% in Q2 2026	SEC21–SEC25; EX26Q2
Cboe Clear Europe trades cleared, m	Clearing	1,244.2	1,499.9 comparable	1,172.0	1,229.2	1,464.6	422.482 in Q2 2026	SEC21–SEC25; EX26Q2
Cboe Clear Europe net settlements, m	Clearing	9.9	10.3	10.0	11.2	13.6	3.964 in Q2 2026	SEC21–SEC25; EX26Q2
Futures ADV, k contracts	Venue	230.4	218.2	223.3	238.6	227.2	222.7 in Q2 2026	SEC21–SEC25; EX26Q2
Futures RPC, USD/contract	Pricing	1.641	1.674	1.755	1.760	1.723	1.664 in Q2 2026	SEC21–SEC25; EX26Q2

KPI family	Granularity	FY2021	FY2022	FY2023	FY2024	FY2025	Latest interim	Source
Global FX ADNV, USD bn	Venue	33.9	40.9	44.7	46.7	52.8	60.6 in Q2 2026	SEC21–SEC25; EX26Q2
Global FX capture, USD per $1m	Pricing	2.73	2.69	2.64	2.68	2.85	2.96 in Q2 2026	SEC21–SEC25; EX26Q2

FY2022 Cboe Clear Europe trades are shown at 1,499.9m from SEC23's later comparative presentation rather than the 1,493.3m printed in SEC22; the later issuer presentation controls comparability. No smoothing was applied. Latest-interim values are quarterly, not annualized.

The selected table above is supplemented below with the price, share, capture, and capital series needed to avoid treating venue volume as the only exchange driver. FY2022 and FY2023 BIDS/Cboe Clear values use the later comparative presentation where the issuer updated a prior-year observation. Futures RPC is consistently defined as total net transaction fees divided by contracts traded; no definition break exists in FY2021–FY2025.

Additional venue KPI	FY2021	FY2022	FY2023	FY2024	FY2025	Q2 2026	Source
Multi-listed options RPC, USD/contract	0.067	0.063	0.060	0.063	0.066	0.064	SEC21–SEC25; EX26Q2
Index options RPC, USD/contract	0.832	0.879	0.893	0.902	0.924	0.953	SEC21–SEC25; EX26Q2
Multi-listed options market share	27.1%	28.2%	26.8%	24.5%	24.2%	23.5%	SEC21–SEC25; EX26Q2
U.S. equities industry ADV, bn shares	11.4	11.9	11.0	12.2	17.6	20.2	SEC21–SEC25; EX26Q2
U.S. equities exchange market share	14.2%	13.6%	12.8%	11.4%	10.0%	9.4%	SEC21–SEC25; EX26Q2
U.S. equities exchange net capture, USD/100 touched shares	0.020	0.021	0.018	0.022	0.015	0.019	SEC21–SEC25; EX26Q2
BIDS U.S. off-exchange ADV, m touched shares	83.0	90.4	79.5	79.0	155.1	237.5	SEC21–SEC25; EX26Q2
BIDS U.S. off-exchange net capture, USD/100 touched shares	0.120	0.113	0.124	0.132	0.075	0.058	SEC21–SEC25; EX26Q2
Canada equities net capture, CAD/10,000 touched shares	7.822	4.966	3.994	4.069	4.133	4.355	SEC21–SEC25; EX26Q2
European equities market share	18.1%	23.5%	24.0%	23.6%	25.0%	24.4%	SEC21–SEC25; EX26Q2
European equities net capture, EUR bps	0.267	0.231	0.226	0.255	0.269	0.289	SEC21–SEC25; EX26Q2
Cboe Clear Europe fee per trade, EUR	0.011	0.008	0.009	0.008	0.009	0.008	SEC21–SEC25; EX26Q2
Cboe Clear Europe net fee per settlement, EUR	0.871	0.881	0.917	1.033	1.012	1.042	SEC21–SEC25; EX26Q2
Aggregate minimum regulatory capital, USD m	115.2	138.2	145.7	166.7	189.5	Not updated in Q2 filing	SEC21–SEC25 regulatory-capital notes

The FY2021 and FY2022 minimum-capital totals are the arithmetic sums of the issuer's subsidiary rows: $115.2m and $138.2m, respectively. The issuer prints the aggregate directly for FY2023–FY2025. These are regulatory minima, not immediately distributable capital and not additive to holding-company liquidity.

Recurring data and access economics

Revenue family, USD m	FY2021	FY2022	FY2023	FY2024	FY2025	Q2 2026	Source
Access and capacity fees, gross	280.7	324.2	347.5	369.8	408.7	115.6	SEC21–SEC25; EX26Q2
Market data fees, gross	252.1	282.2	293.7	294.8	326.6	91.8	SEC21–SEC25; EX26Q2

Revenue family, USD m	FY2021	FY2022	FY2023	FY2024	FY2025	Q2 2026	Source
Data and Access Solutions / Data Vantage net revenue	419.3	487.8	530.1	565.7	622.9	177.8	SEC22–SEC25; EX26Q2

Access and capacity plus market data grew from $532.8m in FY2021 to $735.3m in FY2025, an 8.4% CAGR. These revenues are not purely subscriptions: access and connectivity demand can expand with market activity and port capacity. The filings and releases were searched for `subscriber`, `client count`, `customer count`, `data subscribers`, `ports`, and `subscriptions`; no consistent numeric subscriber or customer series was disclosed. That absence is a true non-disclosure, not an FMP omission. Management instead disclosed that roughly half of Q2 2026 data sales came from outside the U.S., an important geographic demand indicator.

Regulatory-capital and clearing capacity snapshot

Regulated subsidiary at 2025-12-31	Regulator	Actual capital, USD m	Minimum, USD m	Excess, USD m	Source
Cboe Trading	FINRA/SEC	16.9	0.8	16.1	SEC25 Note 18
BIDS Trading	FINRA/SEC	11.7	0.2	11.5	SEC25 Note 18
Cboe Fixed Income	FINRA/SEC	2.4	0.1	2.3	SEC25 Note 18
Cboe Europe	FCA	71.2	36.6	34.6	SEC25 Note 18
Cboe NL	AFM	21.1	10.3	10.8	SEC25 Note 18
Cboe Clear Europe	DNB	128.1	76.0	52.1	SEC25 Note 18
CFE	CFTC	104.5	40.3	64.2	SEC25 Note 18
Cboe SEF	CFTC	10.8	2.5	8.3	SEC25 Note 18
Cboe Clear U.S.	CFTC	35.1	12.1	23.0	SEC25 Note 18
Cboe Australia	ASIC	17.9	5.9	12.0	SEC25 Note 18
Cboe Japan	JFSA	6.8	4.6	2.2	SEC25 Note 18

The complete Note 18 table also lists Cboe Chi-X Europe at $0.1m actual and minimum and Cboe Digital Exchange at $21.6m actual with no numeric minimum after its spot-market exit. Aggregate minimum regulatory capital disclosed by management was $189.5m. Cboe Clear Europe's default waterfall begins with dedicated own resources equal to 35%–50% of its capital requirements, followed by member clearing funds and then capped pro-rata assessments. The clearing house also had a EUR1.2bn committed liquidity facility. These resources support resilience but constrain immediate parent distributability; regulated-subsidiary capital is not the same as excess holding-company cash.

1. Reporting structure and taxonomy

The CODM is the CEO. Cboe reports five segments and evaluates performance primarily on the exact issuer metric `Operating income (loss)`. `Cash and Spot Markets`, `Data Vantage`, and `Derivatives Markets` are cross-segment revenue categories, not reportable segments and must not be substituted for the five statutory segment lines.

Reportable segment	Business scope	FY2025 gross revenue, USD m	Share of total
Options	U.S. listed options exchanges, proprietary index products, multi-listed options, access/data and related regulatory fees	2,433.6	51.6%
North American Equities	U.S. on-exchange and off-exchange equities, Canadian equities and related data/access services	1,672.3	35.5%
Europe and Asia Pacific	European equities and clearing, Australia and the then-existing Japan platform	378.6	8.0%
Futures	CFE futures and, from 2025, remaining Digital futures activities	135.9	2.9%
Global FX	Institutional spot FX trading on Cboe FX	93.8	2.0%

Taxonomy investigation found one material boundary. Effective 2025-01-01, Cboe prospectively folded the Digital segment into Futures following closure of the U.S. digital spot market; pre-2025 Digital revenue and losses were not recast into

Futures. Digital had operating losses of $491.4m in FY2022, $46.7m in FY2023, and $112.4m in FY2024. Accordingly, five-segment FY2025/TTM comparisons are clean, but Futures FY2021–FY2024 excludes Digital and is not fully perimeter-comparable to FY2025 onward. The October 2025 strategic realignment and 2026 shutdown/sale actions changed business scope but did not create a new reportable-segment taxonomy through Q2 2026.

The five segments are also the best disclosed venue/geographic mix. Options and Futures are predominantly U.S.; North American Equities includes U.S. and Canada; Europe and Asia Pacific includes Europe clearing/equities plus Australia and Japan; Global FX serves global institutional users. Pure revenue by country is not separately disclosed. The live FMP geographic endpoint's two-row output is incomplete and is not used as a country-revenue schedule.

2. Consolidated historicals

Metric	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue, USD bn	3.495	3.959	3.774	4.095	4.714	SEC21–SEC25; live FMP tie-out
Operating income, USD bn	0.806	0.490	1.058	1.098	1.467	SEC override
Operating margin	23.1%	12.4%	28.0%	26.8%	31.1%	Calculated
Net income, USD bn	0.529	0.235	0.761	0.765	1.100	SEC21–SEC25
Diluted EPS, USD	4.92	2.19	7.13	7.21	10.42	SEC21–SEC25
Diluted share count, m	107.2	106.7	106.2	105.5	105.1	SEC21–SEC25
Capex, USD bn	0.051	0.060	0.045	0.061	0.071	SEC cash-flow statements
Free cash flow, USD bn	0.546	0.591	1.031	1.040	1.682	SEC OCF less capex
Point-in-time ROIC	12.5%	5.7%	15.9%	16.5%	23.8%	Calculated below

ROIC is statutory operating income multiplied by one minus the effective tax rate, divided by year-end stockholders' equity plus interest-bearing debt less cash and short-term investments. Effective tax rates were 30.0%, 45.7%, 27.3%, 29.4%, and 29.8% for FY2021–FY2025. The FY2022 denominator and numerator include the Digital impairment/loss year and therefore are not normalized. FY2025 NOPAT was $1,030.2m; invested capital was $4,328.6m using $5,138.3m equity + $1,442.9m interest-bearing debt – $2,216.5m cash – $36.1m short-term investments; ROIC was 23.8%. This is a conservative point-in-time measure rather than an average-capital calculation.

The exact TTM statutory base is revenue $5,061.3m, operating income $1,755.7m, pretax income $1,892.0m, net income $1,353.1m, common-allocated net income $1,347.4m, diluted shares 104.95m, and diluted EPS $12.84. TTM operating cash flow was $1,962.8m, capex was $88.3m, and FCF was $1,874.5m. No quarterly EPS values were summed.

3. Segment historicals

Options

Options	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue, USD bn	1.505	1.823	1.940	2.003	2.434	SEC23; SEC25
YoY	n/a	21.1%	6.4%	3.3%	21.5%	Calculated
Operating income (loss), USD bn	0.538	0.741	0.851	0.878	1.113	SEC23; SEC25
Margin on gross revenue	35.7%	40.6%	43.9%	43.9%	45.7%	Calculated

North American Equities

North American Equities	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue, USD bn	1.571	1.682	1.353	1.547	1.672	SEC23; SEC25
YoY	n/a	7.1%	(19.5%)	14.3%	8.1%	Calculated
Operating income (loss), USD bn	0.156	0.147	0.118	0.169	0.188	SEC23; SEC25
Margin on gross revenue	9.9%	8.7%	8.7%	10.9%	11.2%	Calculated

Europe and Asia Pacific

Europe and Asia Pacific	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue, USD bn	0.240	0.265	0.281	0.324	0.379	SEC23; SEC25
YoY	n/a	10.1%	6.3%	15.3%	16.8%	Calculated
Operating income (loss), USD bn	0.056	0.038	0.033	0.042	0.054	SEC23; SEC25
Margin on gross revenue	23.3%	14.4%	11.6%	12.9%	14.2%	Calculated

The forecast-base perimeter is the TTM ended 2026-06-30. It is constructed as FY2025 less H1 2025 plus H1 2026 from the QFR-cleared SEC25 and SEC26Q2 segment tables; no FMP allocation is used.

Europe and Asia Pacific TTM bridge	TTM ended 2026-06-30, USD m	Exact basis / provenance
Gross revenue	423.7	QF_TTM_ARITHMETIC from SEC25 less H1 2025 plus H1 2026 in SEC26Q2
Transaction-based expenses	(115.0)	Exact signed segment cost-of-revenues / transaction-based-expense value from the QFR-cleared TTM schedule
Net revenue	308.7	Gross revenue $423.7m plus transaction-based expenses $(115.0)m
Operating income (loss)	108.4	Exact issuer metric and value in the sealed TTM statutory bridge

Futures

Futures	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue, USD bn	0.121	0.120	0.129	0.141	0.136	SEC23; SEC25
YoY	n/a	(0.7%)	7.7%	9.4%	(3.7%)	Calculated
Operating income (loss), USD bn	0.066	0.055	0.086	0.099	0.074	SEC23; SEC25
Margin on gross revenue	54.7%	46.1%	66.7%	70.1%	54.4%	Calculated

FY2025 includes the prospective Digital combination; earlier periods do not. Do not infer a deterioration in the legacy futures venue from the perimeter change alone.

Global FX

Global FX	FY2021	FY2022	FY2023	FY2024	FY2025	Source
Revenue, USD bn	0.058	0.069	0.075	0.080	0.094	SEC23; SEC25
YoY	n/a	18.6%	8.7%	6.7%	17.4%	Calculated
Operating income (loss), USD bn	0.003	0.009	0.025	0.033	0.046	SEC23; SEC25
Margin on gross revenue	4.6%	12.8%	33.0%	41.6%	49.0%	Calculated

3a. Historical statutory-profit bridge and forecast-driver ledger

The common metric is the issuer-disclosed `Operating income (loss)`. Values and signs below exactly reproduce the QFR-sealed packet; no classification was changed.

FY2025 bridge

Bridge line	Classification	Value, USD m	Source ID	Running subtotal, USD m
Options	Segment profit	1,113.3	SEC_2025_10K	1,113.3
North American Equities	Segment profit	188.1	SEC_2025_10K	1,301.4
Europe and Asia Pacific	Segment profit	53.9	SEC_2025_10K	1,355.3
Futures	Segment profit	73.9	SEC_2025_10K	1,429.2
Global FX	Segment profit	46.0	SEC_2025_10K	1,475.2

Bridge line	Classification	Value, USD m	Source ID	Running subtotal, USD m
Sum of reportable segment profit	Subtotal	1,475.2	SEC_2025_10K	1,475.2
Corporate Items and Eliminations - operating income (loss)	Corporate unallocated	(8.1)	SEC_2025_10K	1,467.1
Consolidated segment profit metric	Subtotal	1,467.1	SEC_2025_10K	1,467.1
Statutory operating income	Statutory subtotal	1,467.1	SEC_2025_10K	1,467.1
Interest expense	Interest	(52.3)	SEC_2025_10K	1,414.8
Interest income	Interest	49.4	SEC_2025_10K	1,464.2
Earnings on investments, net	Other non-operating	92.8	SEC_2025_10K	1,557.0
Other income, net	Other non-operating	9.6	SEC_2025_10K	1,566.6
Pretax income	Statutory subtotal	1,566.6	SEC_2025_10K	1,566.6
Income tax provision	Tax	(466.6)	SEC_2025_10K	1,100.0
Net income	Statutory subtotal	1,100.0	SEC_2025_10K	1,100.0

TTM ended 2026-06-30 bridge

Bridge line	Classification	Value, USD m	Source ID	Running subtotal, USD m
Options	Segment profit	1,296.1	QF_TTM_ARITHMETIC	1,296.1
North American Equities	Segment profit	229.0	QF_TTM_ARITHMETIC	1,525.1
Europe and Asia Pacific	Segment profit	108.4	QF_TTM_ARITHMETIC	1,633.5
Futures	Segment profit	76.4	QF_TTM_ARITHMETIC	1,709.9
Global FX	Segment profit	56.5	QF_TTM_ARITHMETIC	1,766.4
Sum of reportable segment profit	Subtotal	1,766.4	QF_TTM_ARITHMETIC	1,766.4
Corporate Items and Eliminations - operating income (loss)	Corporate unallocated	(10.7)	QF_TTM_ARITHMETIC	1,755.7
Consolidated segment profit metric	Subtotal	1,755.7	QF_TTM_ARITHMETIC	1,755.7
Statutory operating income	Statutory subtotal	1,755.7	QF_TTM_ARITHMETIC	1,755.7
Interest expense	Interest	(53.1)	QF_TTM_ARITHMETIC	1,702.6
Interest income	Interest	65.6	QF_TTM_ARITHMETIC	1,768.2
Earnings on investments, net	Other non-operating	109.3	QF_TTM_ARITHMETIC	1,877.5
Other income, net	Other non-operating	14.5	QF_TTM_ARITHMETIC	1,892.0
Pretax income	Statutory subtotal	1,892.0	QF_TTM_ARITHMETIC	1,892.0
Income tax provision	Tax	(538.9)	QF_TTM_ARITHMETIC	1,353.1
Net income	Statutory subtotal	1,353.1	QF_TTM_ARITHMETIC	1,353.1

For Europe and Asia Pacific, the TTM segment profit line above is supported by the same QFR-cleared revenue bridge: gross revenue $423.7m plus `Transaction-based expenses` of $(115.0)m equals net revenue $308.7m, and the issuer's exact segment profit metric `Operating income (loss)` is $108.4m. Provenance is `QF_TTM_ARITHMETIC`, computed from SEC25 less H1 2025 plus H1 2026 in SEC26Q2; the sealed statutory packet is unchanged.

Forecast-driver schedule

Historical bridge line	FY2025	TTM	Forecast treatment	Driver and source	Bear / base / bull rule
Corporate Items and Eliminations - operating income (loss)	(8.1)	(10.7)	Independently forecast corporate expense	Sealed bridge; SEC segment note	Larger loss / TTM loss / operating-leverage improvement
Interest expense	(52.3)	(53.1)	Debt schedule	$1,443.8m debt at 2026-06-30; SEC26Q2	Higher rate or debt / stable debt / repayment benefit

Historical bridge line	FY2025	TTM	Forecast treatment	Driver and source	Bear / base / bull rule
Interest income	49.4	65.6	Average liquid assets × yield	$2,276.2m cash at 2026-06-30; SEC26Q2	Lower cash/yield / normalize / higher retained cash/yield
Earnings on investments, net	92.8	109.3	Separate investment-return schedule	SEC statement line; market-sensitive gains	Zero-to-low / normalized / favorable realization
Other income, net	9.6	14.5	Conservative fixed amount	SEC statement line	Zero / FY–TTM range / TTM amount
Income tax provision	(466.6)	(538.9)	Effective tax-rate schedule	Q2 guide 27.5%–29.5% adjusted ETR	30% / 29% / 27.5% subject to mix

No operating bridge adjustment exists between the five segment profit lines plus Corporate Items and statutory operating income. Investment gains must not be capitalized as operating income. Interest income is cash-balance sensitive and must not be forecast as a fixed percentage of revenue.

`STATUTORY_BRIDGE_STATUS: VERIFIED — CLEARED FOR FORECASTING`

4. Product and sub-segment historicals

The finest consistently dollar-disclosed cross-segment categories are Cash and Spot Markets, Data Vantage, and Derivatives Markets. They are revenue categories, not reportable segments.

Gross revenue category, USD m	FY2021	FY2022	FY2023	FY2024	FY2025	TTM 2026-06-30	Source
Cash and Spot Markets	1,660.5	1,777.6	1,445.1	1,670.0	1,834.8	1,908.8	SEC22–SEC25; SEC26Q2
Data and Access Solutions / Data Vantage	427.7	497.0	539.2	576.6	635.5	687.6	SEC22–SEC25; SEC26Q2
Derivatives Markets	1,406.6	1,683.9	1,789.2	1,847.9	2,243.9	2,464.9	SEC22–SEC25; SEC26Q2
Total revenue	3,494.8	3,958.5	3,773.5	4,094.5	4,714.2	5,061.3	SEC21–SEC26Q2

Segment	Product or venue	Dollar disclosure?	Available disclosed history	Modeling use
Options	SPX, SPX 0DTE, XSP, VIX options, multi-listed options	Product revenue not separately disclosed	Volume, ADV and RPC only	Build volume × rate scenarios; do not fabricate product dollars
North American Equities	U.S. exchange, BIDS/off-exchange, Canadian exchange	Segment dollars disclosed; venue dollars not consistently disclosed	ADV, share and capture by venue	Use segment dollars and venue KPI mix
Europe and Asia Pacific	Europe equities, Cboe Clear Europe, Australia, Japan	Segment dollars disclosed; individual venue dollars not consistently disclosed	ADNV, clearing trades/settlements, share and capture	Separate KPI drivers; reflect disposals/closures
Futures	VIX futures and other futures	Product dollars not separately disclosed	ADV and RPC	Volume × RPC driver
Global FX	Institutional spot FX	Segment dollars disclosed	ADNV and net capture	ADNV × capture driver
All segments	Access, capacity and market data	Aggregate dollar captions disclosed	FY2021–FY2025 and Q2 2026	Recurring-revenue cross-check

No back-solved product dollar figures are used. SPX, 0DTE, XSP, VIX, venue-specific equities and individual market-data product dollars are true non-disclosures after searches of SEC21–SEC26Q2 and four releases for the product names plus `revenue`, `net revenue`, and `fees`. Their volume and rate disclosures are retained instead.

5. Most recent quarterly trend

Cboe's FY ends December 31. The most recently completed fiscal quarter at time of writing is FY2026 Q2, covering April–June 2026, reported 2026-07-31 via the [SEC-filed earnings release](https://www.sec.gov/Archives/edgar/data/1374310/000162828026051217/cboe-20260731xex991.htm).

Margin below is issuer `Operating income (loss)` divided by net revenue, the economically meaningful post-liquidity-payment denominator. Gross-revenue amounts remain available in the filings and Section 3.

Segment	Q3 2025 net revenue	Q4 2025 net revenue	Q1 2026 net revenue	Q2 2026 net revenue	Q2 YoY	Q2 OI / net revenue	Source
Options	380.8	433.1	467.6	473.9	30%	72.0%	EX25Q3–EX26Q2; SEC filings
North American Equities	103.5	110.7	111.2	114.7	17%	57.6%	EX25Q3–EX26Q2; SEC filings
Europe and Asia Pacific	69.1	69.9	84.9	84.8	20%	49.1%	EX25Q3–EX26Q2; SEC filings
Futures	29.6	33.7	35.8	30.6	2%	52.6%	EX25Q3–EX26Q2; SEC filings
Global FX	22.5	23.7	29.4	27.6	17%	56.2%	EX25Q3–EX26Q2; SEC filings
Total	605.5	671.1	728.9	731.6	25%	65.1%	EX25Q3–EX26Q2

Q2 2026 Options gross revenue was $743.1m and operating income was $341.0m. The largest segment's 30% net-revenue growth appears explicitly in the live SEC exhibit, satisfying the load-bearing recency check. Options index ADV rose 32% YoY to 6.208m contracts; Global FX ADNV was $60.6bn with $2.96 capture per $1m; Cboe Clear Europe cleared 422.5m trades and processed 4.0m net settlements during the quarter. The broad-based growth was not purely volatility: access capacity, proprietary data, international distribution and clearing activity also contributed.

The same Q2 2026 SEC exhibit publishes the prior four quarters on one consistent table, allowing the volume/rate drivers to be checked without mixing releases. These observations are quarterly and are not annualized.

Operating driver	Q3 2025	Q4 2025	Q1 2026	Q2 2026	Source
Total Cboe options ADV, k contracts	18,775	19,419	20,076	21,862	EX26Q2
Total options RPC, USD/contract	0.281	0.317	0.343	0.317	EX26Q2
U.S. equities exchange market share	9.8%	9.4%	9.8%	9.4%	EX26Q2
U.S. equities exchange net capture, USD/100 touched shares	0.015	0.018	0.017	0.019	EX26Q2
BIDS U.S. off-exchange ADV, m touched shares	202.3	197.0	249.2	237.5	EX26Q2
Canada equities ADV, m matched shares	163.8	195.9	215.8	185.8	EX26Q2
European equities market share	25.4%	24.8%	25.5%	24.4%	EX26Q2
Cboe Clear Europe trades cleared, m	329.293	322.339	434.717	422.482	EX26Q2
Futures ADV, k contracts	200.7	239.2	283.3	222.7	EX26Q2
Futures RPC, USD/contract	1.745	1.717	1.649	1.664	EX26Q2
Global FX ADNV, USD bn	49.9	53.3	70.4	60.6	EX26Q2
Global FX capture, USD per $1m	2.89	2.95	2.87	2.96	EX26Q2

The sequence shows why one quarter should not be extrapolated mechanically: Q2 options ADV set a record while total RPC eased from Q1; Futures volume reversed from Q1's spike; and Global FX notional normalized while capture improved. U.S. on-exchange share remained competitive but below prior-year levels, whereas off-exchange activity stayed well above Q2 2025.

6. Management commentary on forward growth

Each quote below was checked against a live FMP transcript or SEC-filed release fetched in this run. Short excerpts are used; interpretation is separated from management's words.

Options and derivatives

- **Q3 2025 call, 2025-10-31 — Craig Donohue, CEO:** “global derivatives leader.” The portfolio realignment explicitly concentrates capital and people on derivatives rather than preserving every venue.

- **Q4 2025 call, 2026-02-06 — Jill Griebenow, CFO:** “highest returns on organic investments.” Management prioritized product development and distribution ahead of large M&A.
- **Q1 2026 call, 2026-05-01 — management guidance:** “low double-digit to mid-teens.” This was the raised 2026 organic net-revenue range at that date.
- **Q2 2026 call, 2026-07-31 — Jill Griebenow, CFO:** “mid-to-high teens.” The further upgrade was based on the existing product base and excluded notable incremental event-contract revenue.
- **Q2 2026 call, 2026-07-31 — Rob Hocking, Global Head of Derivatives:** “natural extension of our derivatives business.” Event and prediction products are an option on distribution, not a mature revenue stream.

North American Equities

- **Q3 2025 call, 2025-10-31 — Craig Donohue:** “better opportunities to drive meaningful growth for Cboe in other areas.” The planned Canada sale reflects capital prioritization rather than venue failure.
- **Q4 2025 call, 2026-02-06 — management:** “small contribution contemplated.” Early prediction/event contracts were not a material 2026 guide component.
- **Q2 2026 call, 2026-07-31 — management:** “broader engagement.” Retail order counts increased while average order sizes declined, supporting a customer-breadth interpretation.
- **Model implication:** forecast core U.S. exchange/off-exchange economics separately from the pending Canadian divestiture. Do not extrapolate Q2 volume directly without a volatility normalization.

Europe and Asia Pacific and clearing

- **Q3 2025 call, 2025-10-31 — Craig Donohue:** “future growth potential.” Management specifically highlighted European equities and clearing after deciding Australia/Japan were non-core.
- **Q4 2025 call, 2026-02-06 — management:** “healthy secular tailwinds.” This supports long-run clearing/equities demand but is not numeric guidance.
- **Q2 2026 call, 2026-07-31 — Craig Donohue:** “clearing as an enabler.” U.S. clearing is positioned for product innovation, while European clearing targets securities-financing transactions.
- **Model implication:** isolate continuing Europe/Clear economics from Australia sale and Japan closure. The FY2025 segment perimeter is not the horizon perimeter.

Futures and Global FX

- **Q3 2025 call, 2025-10-31 — management:** “organic opportunity.” Management framed new event products as using existing infrastructure, which tempers near-term capex but does not eliminate launch risk.
- **Q4 2025 call, 2026-02-06 — management:** “disciplined expense management.” Futures remains high margin but volume-sensitive; Digital integration complicates the annual comparison.
- **Q2 2026 call, 2026-07-31 — management:** “doesn't incorporate anything incremental.” The latest revenue upgrade should not be interpreted as a forecast for unproven products.
- **Model implication:** Futures requires a normalized VIX/contract-volume path and RPC; Global FX requires ADNV × capture. Neither should be forecast from total-company revenue growth alone.

Data Vantage and company guidance

- **Q3 2025 call, 2025-10-31 — Craig Donohue:** “nearly 90% ... new unit and new sales.” Only a minority of incremental Data Vantage revenue was attributed to pricing at that point.
- **Q4 2025 call, 2026-02-06 — management:** “mid to high single-digit.” That was the initial FY2026 Data Vantage organic target.

- **Q1 2026 call, 2026-05-01 — management:** “low double-digit.” The target was upgraded after Q1.
- **Q2 2026 call, 2026-07-31 — management:** “low teens.” This was the second upgrade, after 15% Q2 growth.
- **Q2 2026 SEC release, 2026-07-31 — Craig Donohue:** “We’re investing in opportunities that will define Cboe’s future.” The release named event contracts, Cboe Clear U.S. and around-the-clock access; these are explicit investment areas but not quantified revenue commitments.

Current FY2026 guide controls are organic total net-revenue growth in the mid-to-high teens, Data Vantage organic net-revenue growth in the low teens, adjusted operating expenses of $838m–$853m, adjusted effective tax rate of 27.5%–29.5%, D&A excluding acquired-intangible amortization of $54m–$58m, and capex of $98m–$108m. The capex range was raised from $73m–$83m in Q2, a forecast-relevant change.

7. Capital allocation history

R&D is not separately reported. Technology support is embedded in operating expenses, so inserting an analyst-created R&D number would be false precision.

Year	Capex, USD bn	Capex / revenue	R&D	Buybacks, USD bn	Dividends, USD bn	Business acquisitions, USD bn	Source
2021	0.051	1.5%	True non-disclosure	0.088	0.193	0.152	SEC21; live FMP cash flow
2022	0.060	1.5%	True non-disclosure	0.110	0.209	0.708	SEC22; live FMP cash flow
2023	0.045	1.2%	True non-disclosure	0.098	0.224	0.000	SEC23; live FMP cash flow
2024	0.061	1.5%	True non-disclosure	0.234	0.249	0.004	SEC24; live FMP cash flow
2025	0.071	1.5%	True non-disclosure	0.097	0.284	0.000	SEC25; live FMP cash flow

At 2025-12-31, $614.5m remained under buyback authorizations. FY2025 open-market repurchases were 305,317 shares at a $213.74 average, totaling $65.3m; the larger cash-flow buyback figure includes employee withholding. The rise in FY2026 capex guidance signals investment acceleration despite disposals. Cash and liquid resources should not be treated as entirely distributable because minimum regulatory capital, clearing liquidity, revolver commitments and operating-subsidiary restrictions apply.

In Q2 2026 Cboe paid $75.7m of common dividends, or $0.72 per share, and spent $32.6m to repurchase approximately 127,000 shares at an average $256.61. Remaining authorization was $536.8m at June 30, 2026. These executed amounts are distinct from authorization capacity and should be counted once in any shareholder-distribution bridge. Source: EX26Q2, Capital Management.

Capital allocation has shifted from acquisition-led expansion toward portfolio pruning and organic product investment. FY2021 acquisitions included Cboe Asia Pacific and Chi-X Asia Pacific-related expansion; FY2022 included NEO, ErisX/Digital and related transactions. The subsequent Digital impairment and exit demonstrate that acquisition spend did not uniformly earn the exchange's target returns. By FY2025, Cboe generated $1.68bn of statutory FCF, paid $284m of dividends, spent $97m on repurchases including employee withholding, and ended net cash. Downstream models should therefore separate recurring maintenance/product capex from acquisition consideration and should not assume that all surplus cash is immediately returned.

8. Balance sheet snapshot

Item at FY2025	USD bn	Source
Cash and equivalents	2.217	SEC25
Short-term investments	0.036	Live FMP balance sheet; immaterial to adjusted-cash bridge
Interest-bearing debt, current plus long term	1.443	SEC25 override
Net debt / (net cash)	(0.774)	Calculated before short-term investments
Net debt / EBITDA	approximately (0.49)x	Net cash divided by statutory OI plus segment D&A

Item at FY2025	USD bn	Source
Goodwill plus intangible assets	4.448	Live FMP tie to SEC balance sheet
Tangible book value	0.691	Stockholders' equity $5.138bn less goodwill/intangibles

At 2026-06-30, cash was $2,276.2m, interest-bearing debt $1,443.8m, lease liabilities $136.5m, and cash plus current financial investments $2,390.7m. The quarter-end balance was net cash of $832.4m before investments and $946.9m including current financial investments. A new $400m five-year revolver with a $200m accordion was completed after quarter-end. FMP's debt total is not used because it includes liabilities outside the issuer's interest-bearing debt definition.

Goodwill and intangibles equal about 86.6% of reported stockholders' equity. Tangible book is therefore a weak standalone valuation anchor even though cash generation is strong. The balance sheet also carries clearing-related and regulatory assets and liabilities whose gross presentation can distort generic provider leverage fields. For this reason, downstream leverage and return analysis should use issuer-defined interest-bearing debt, statutory cash, and explicit clearing/regulatory restrictions rather than FMP total liabilities.

9. Recent corporate actions

- **2025-10-31:** Cboe announced a sales process for Cboe Australia and Cboe Canada, discontinued U.S./European corporate listings, reduced ETP-listing and selected analytics investment, and sharpened focus on derivatives, clearing and Data Vantage. Source: EX25Q3 and TR25Q3.
- **2026-02-06:** Management established initial FY2026 guidance and described event/prediction contracts plus securities-financing clearing as organic investment priorities. Source: EX25Q4 and TR25Q4.
- **2026-05-01:** Cboe expanded strategic realignment, including Japanese-equities and CEDX wind-down effects, lowered expense guidance, and raised organic revenue expectations. Source: EX26Q1 and TR26Q1.
- **2026-06:** Heidi Fischer joined as Global Head of Equities and Spot Markets; Scott Johnston became COO, completing a material leadership refresh under CEO Craig Donohue. Source: TR26Q2 and SEC filings.
- **2026-06-15:** Cboe launched XSP yes/no event contracts. Management described the launch as early-stage with three market makers; Schwab was expected to add access. Source: TR26Q2.
- **2026-07-28:** Cboe entered a $400m five-year revolving credit facility with a $200m accordion. Source: SEC26Q2 subsequent-event disclosure and SEC 8-K accession 0001104659-26-087625.
- **2026-07-31:** The company raised FY2026 organic total net-revenue and Data Vantage growth targets and raised capex guidance while holding adjusted opex guidance. Source: EX26Q2.

These actions create a perimeter problem rather than a statutory reconciliation problem. The sealed bridge correctly reflects the FY2025 and TTM legal perimeter, while horizon forecasts must remove exited Japan/CEDX activities and separately treat any sale of Australia/Canada once transaction terms and closing dates are known. No sale proceeds or disposal gains are embedded in this data package. Event contracts, Cboe Clear U.S. expansion and around-the-clock access remain investment options, not booked revenue commitments.

10. Open data gaps and classification

Gap	Classification	Sources and search terms checked	Downstream treatment
Market-data subscriber/customer count	True non-disclosure	SEC21–SEC26Q2 and EX25Q3–EX26Q2; `subscriber`, `customer count`, `data subscribers`, `subscriptions`	Use revenue, overseas-sales mix and access-capacity trends; no invented accounts
Product revenue for SPX, 0DTE, XSP, VIX and individual index licenses	True non-disclosure	Same filings/releases; product names plus `revenue`, `net revenue`, `fees`	Use ADV/RPC and segment revenue; no back-solved dollars
Venue-level revenue for Europe clearing, Australia, Japan, Canada and BIDS	True non-disclosure on a consistent five-year basis	Segment notes and operating-statistics tables	Model segment total with venue KPIs and explicit disposal/perimeter adjustments
Pure country revenue	True non-disclosure	Segment note, geographic searches and live FMP geography endpoint	Use reportable venue/geographic segment mix

Gap	Classification	Sources and search terms checked	Downstream treatment
R&D expense	True non-disclosure	Income statements and operating-expense notes; `research and development`, `R&D`	Do not substitute technology support as R&D
March 2026 investor presentation	Not fetched / omitted	Cboe IR events page identified it	No numeric forecast relies on it; current earnings guidance is newer and controlling

The previously omitted FY2021–FY2023 Futures RPC observations and five-year aggregate minimum-regulatory-capital history have been backfilled from SEC21–SEC25. The remaining `Not fetched / omitted` item is a non-controlling March 2026 investor presentation; no numeric forecast relies on it, and the July 2026 release supplies the newer guidance and operating-statistics table. All five reportable segments, their FY2025 and TTM `Operating income (loss)`, the entire statutory bridge, major volume/share/capture/rate families, recurring data/access economics, clearing activity, venue/geographic mix, and five-year regulatory-capital minima are included.

The market-data subscriber gap is not evidence that subscriber growth is absent. It means the company reports revenue and sales-mix outcomes instead of a stable installed-base count. The country-revenue gap similarly does not justify treating the Europe and Asia Pacific segment as a single regulatory jurisdiction. Europe, Australia and Japan had different regulators and different strategic outcomes. Downstream appendices must preserve that heterogeneity qualitatively even when the segment profit line is aggregated.

11. Load-bearing self-verification

Check	Live source repeated in this D run	Result
Largest segment latest-quarter growth	EX26Q2 SEC-filed release	Options net revenue $473.9m, +30% YoY, appears in Table 2
Management quote	EX26Q2 SEC-filed release and TR26Q2 live transcript dated 2026-07-31	CEO investment statement and latest guidance wording matched
Latest full-year revenue	FMP stable annual income statement, live pull	FY2025 revenue $4,714.2m, exact tie to SEC25

Transcript dates were 2025-10-31 for Q3 2025, 2026-02-06 for Q4 2025, 2026-05-01 for Q1 2026, and 2026-07-31 for Q2 2026. Each falls within the expected call window for a December-year-end issuer, so no stale fiscal-period mismatch was detected. The FMP annual revenue tie is exact, while material statement classification differences remain visibly overridden rather than averaged.

Industry completeness result: VERIFIED COMPLETE. The exchange/market-infrastructure checklist was triggered and completed for volumes/ADV/contracts, RPC/capture/take-rate equivalents, transaction-and-clearing economics, recurring data/access/capacity revenue, geographic/venue mix, clearing activity, and disclosed regulatory capital. True non-disclosures and the one nonmaterial omitted presentation are explicitly classified; there is no silent FMP-as-non-disclosure substitution.