Financial Market Infrastructure Sector View 2025

Rocky Geopolitics, Solid Fundamentals

S&P Global Ratings

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This report does not constitute a rating action

Key Takeaways

- We expect rated FMIs to report solid performance for 2024, and to repeat it in 2025. Treasury income (on reinvested client margins and deposits) is likely to fall this year, but many FMIs should benefit from their growth initiatives and continued moderate volatility across asset classes. Short-term risks to ratings therefore remain idiosyncratic.
- Market volatility could rise in 2025, for example due to geopolitical risks or a repricing of key asset classes. If so, it would have a mixed impact on FMIs but is unlikely to be damaging for several reasons: (i) most FMIs' volumes benefit from manageable market volatility, (ii) over the past several years, earnings in this cyclically-resilient industry have become more diverse and repeatable, and (iii) clearinghouse risk management has improved.
- Leverage-fueled acquisitions have been a recurrent feature of the sector, and, after a hiatus in 2024, one or more FMIs could announce large transactions in 2025. Nevertheless, they appear less likely to weigh negatively on ratings since (i) key players like ICE, Nasdaq, Deutsche Börse, and Euronext continue to deleverage after previous deals, and (ii) for acquisitive players that have somewhat delevered, our ratings take account of their stated (higher) leverage appetite.
- The sector remains dynamic in terms of competition, regulation, and secular growth opportunities. We remain mindful also of the shift to decentralized finance and adoption of new technologies, which bring some opportunities but also risks if this subverts the franchise and dominance of these highly regulated centralized institutions.

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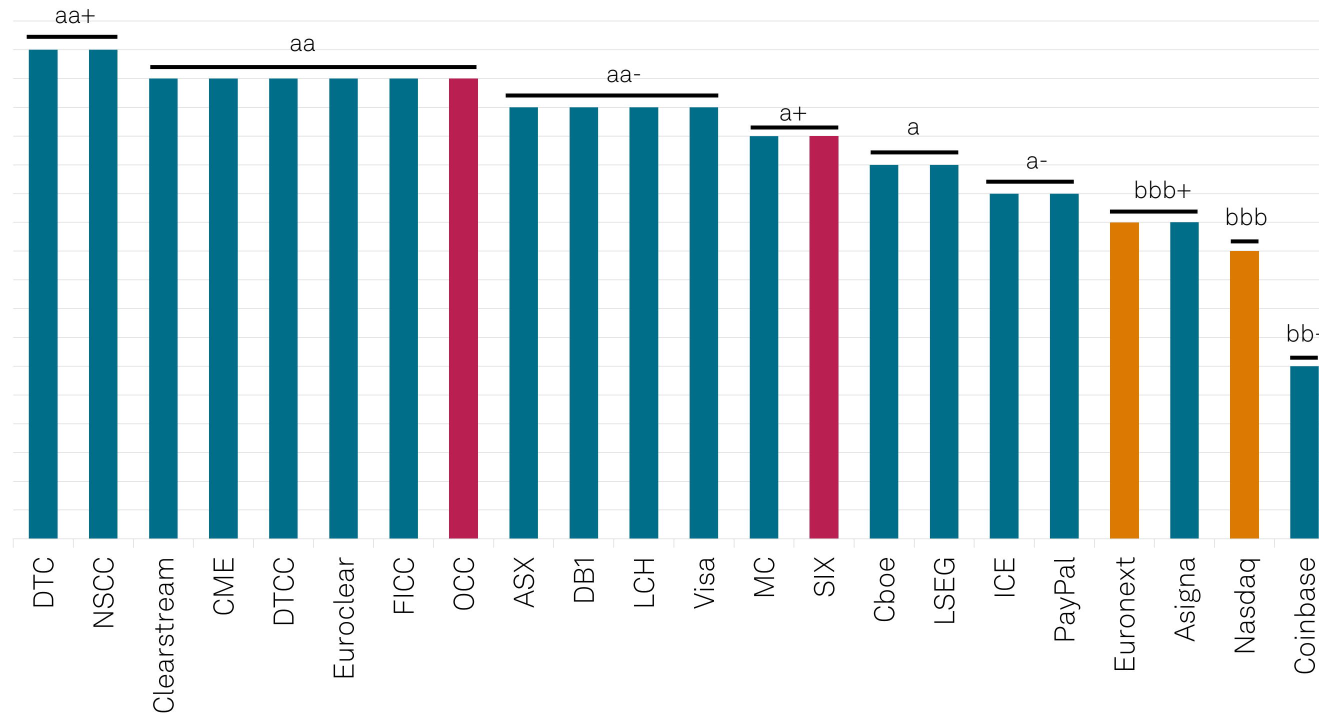
Sector Overview: Strong Issuers With Modest Refinancing Needs

- Our issuer credit ratings (ICRs) on two FMIs currently carry a negative outlook (OCC, SIX), two have a positive outlook (Euronext, Nasdaq), and the rest have a stable outlook.
- Sector financial performance in 2024 is likely to have been solid: FMIs with exposure to interest rates fared well, whereas equity market primary and many commodities were cyclically weaker, as were equity trading volumes in Europe. Many leading FMIs benefited from diversified asset class exposure, a solid base of annuity-like revenues, and secular growth.
- Given that we expect 2024's deleveraging trend to extend into 2025, total debt load among rated players may cease its gradually upward trend.
- Although the volume of sector debt maturities will rise to $14 billion in 2025, sector refinancing risk is low, even if wholesale markets snap shut. We expect that issuers will refinance most of these maturities but pay some down from free cash.
- Irrespective of the macroenvironment, drivers of rating actions in 2025 will likely follow those of previous years--idiosyncratic factors or, occasionally, sovereign rating events. Those idiosyncratic events would most likely be acquisitions that materially change leverage trajectory, weaker performance, or risk management mistakes.

FMI Sector Ratings Distribution

A highly rated sector

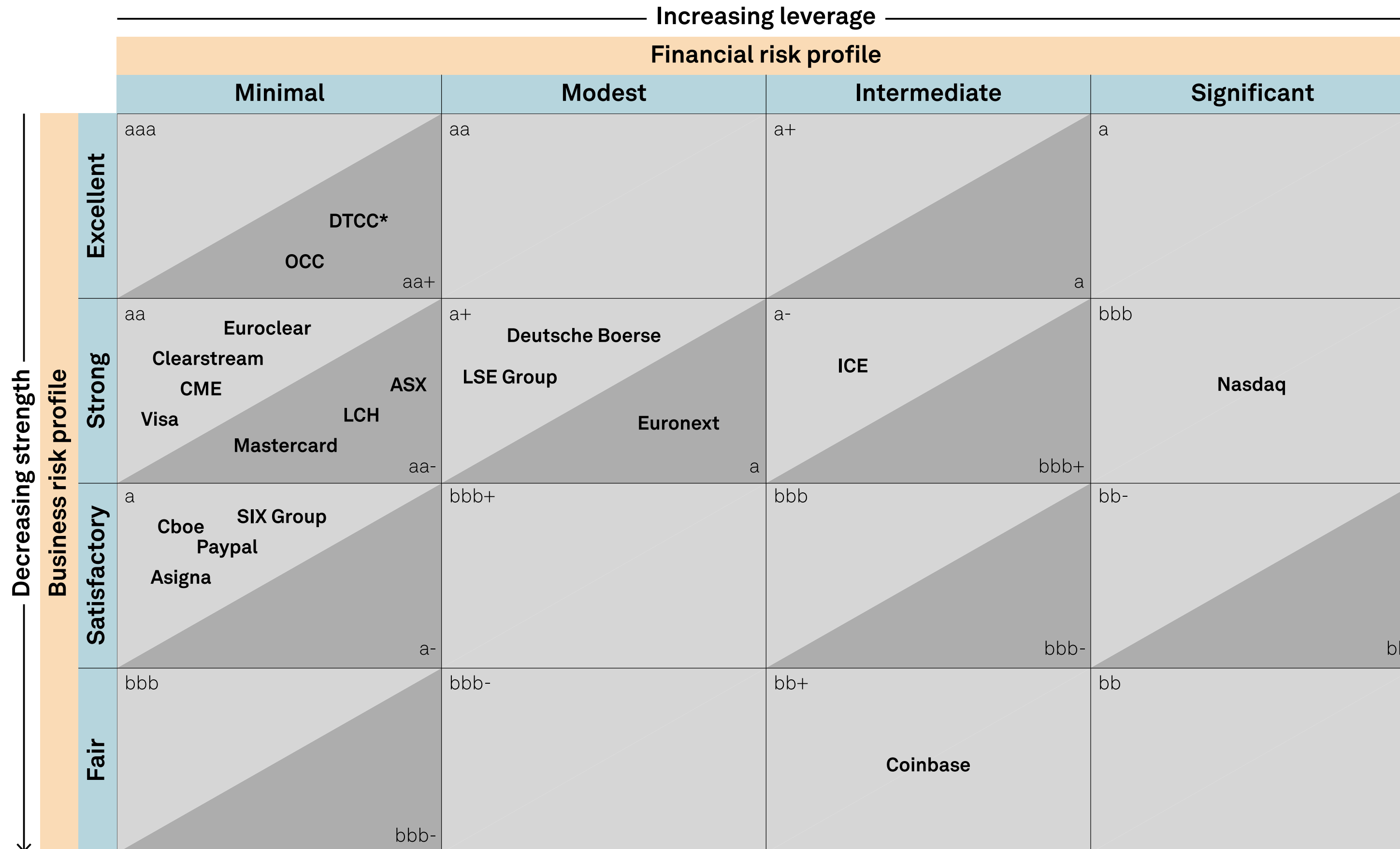


Data as of Jan. 16, 2025, reflects the group credit profile (GCP) or stand-alone credit profile (SACP) as appropriate. Bars indicate; gold where our outlook on related issuer credit ratings is positive, blue for stable, red for negative. Source: S&P Global Ratings.

- We assign stand-alone credit profiles (SACPs) to 22 groups or companies in the sector and assign ICRs to a further handful of group members.
- Some entities' ICRs are in line with the SACP or group credit profile (GCP); some are one notch below, due to structural subordination of the holding company.
- The negative outlook on OCC reflects the risk that its corrective measures may be delayed or prove insufficient to mitigate rising liquidity and intraday risks and move OCC's risk framework in line with leading peers.
- The negative outlook on SIX reflects that its leverage would rise close to our thresholds if it acquires Aquis Exchange.
- The positive outlook on Euronext and Nasdaq reflects their continued deleveraging after acquisitions in 2021 and 2023, respectively.

Rated FMIs Have A Bias To The Most Favorable BRP Assessments

Leverage risk appetite is central to the anchor outcome



Data as of Jan. 16, 2025, reflects the anchor assessment for each group before considering our view of clearing and settlement risk management and other rating modifiers. *Reflects the assessment for DTCC and also its three rated subsidiaries (DTC, FICC, NSCC). Source: S&P Global Ratings.

- Ratings in the sector benefit from a high starting point due to our view of “low” industry risk. The sector is characterized by high margins, good through-the-cycle earnings, generally favorable regulatory trends, and high barriers to entry (for regulated activities).
- Rated FMI groups are among the largest global players, having dominant market positions in their sphere of operations. Strongest groups also benefit from earnings sourced across asset classes, across the value chain, and sometimes across regions.
- All FMIs tend to have high operating leverage (most costs are fixed), but the best have a substantial element of recurring or stable revenues.
- Leverage appetite differs, notably among the most acquisitive players--Deutsche Börse, Euronext, ICE, LSEG, and Nasdaq.

FMI Sector Industry Risk Remains Low

From a credit perspective, FMIs compare well with other financial and nonfinancial corporate sectors

Industry	FMIs	Asset managers	Financial services finance companies
Cyclicality assessment	**Low risk**	**Low risk**	**Moderately high risk**
	2	**2**	**4**
CRAG environment assessment	**Low risk**	**Intermediate risk**	**Moderately high risk**
	2	**3**	**4**
Effectiveness of barriers to entry	Low risk	Medium risk	High risk
Level and trend of industry profit margins	Low risk	Low risk	Medium risk
Risk of secular change and substitution of products, services, and technologies	Medium risk	Medium risk	Medium risk
Global industry risk assessment	**Low risk**	**Intermediate risk**	**Moderately high risk**
	2	**3**	**4**

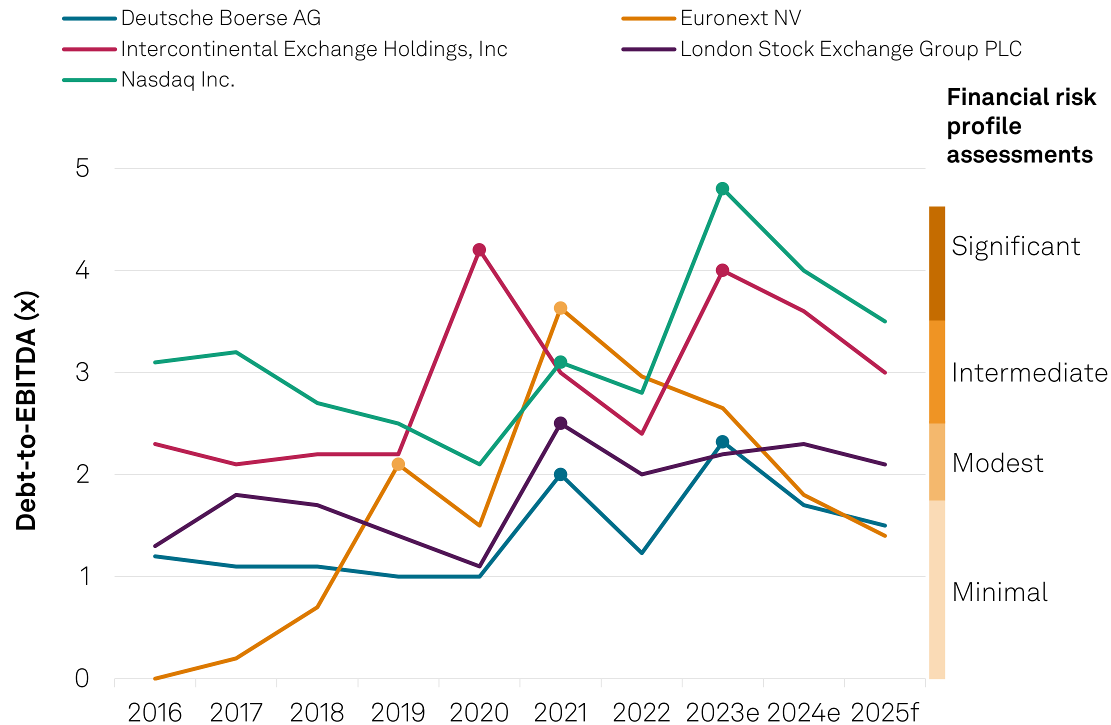
Source: S&P Global Ratings "Industry Risk Sector And Industry Variables Updated", published Dec. 26, 2024 and "Methodology: Industry Risk", published Nov. 19. 2013. Looking beyond the "financial services" corporate sectors above, we assess only 6 of 38 nonfinancial corporate sectors to be low cyclicality risk / low CRAG risk or better.

- In December 2024, we published an update to our industry sector and risk variables. This followed a review of our industry risk assessments for the financial and nonfinancial corporate sectors following observations on these sectors' performance during the COVID-19-related recession of 2019-2021.
- For the FMI sector, the industry risk assessment remains unchanged at low risk (2), which continues to position the FMI industry among the least risky sectors. This reflected:
  - No change to the cyclicality assessment (low risk)
  - No overall change to the competitive risk and growth (CRAG) environment assessment (low risk).
- However, we revised two subfactors within CRAG.
  - We lowered the "level and trend of industry profit margins" to low risk from medium risk, as we expect that the global FMI industry will likely continue to generate strong profit margins and operating cash flows over the medium term, aided in part by the increasing weight of annuity-like revenues.
  - We raised the "risk of secular change and substitution" to medium risk from low risk, as while we see the global FMI industry as more protected from secular change than many other industries, we cannot rule out that for an industry that is built on centralization, decentralization (DeFi) trends could yet lead to disadvantageous changes for some players, particularly in post-trade.

Leverage Path: Remains Sensitive To M&A Activity

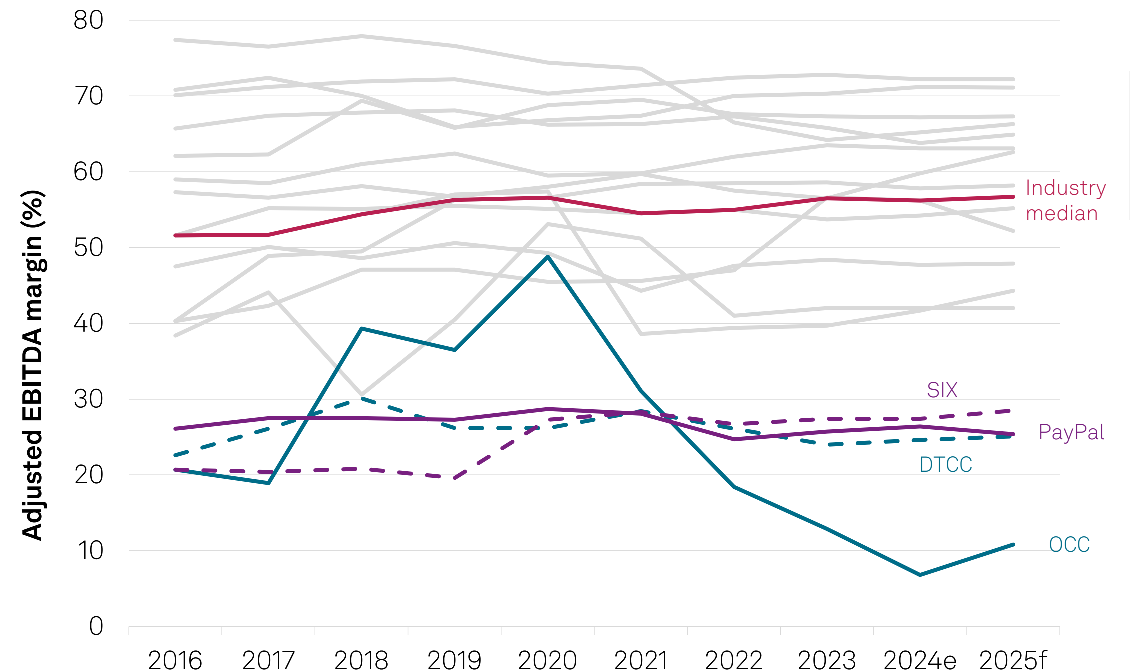
But EBITDA margins tend to remain steady

Leverage sensitivity primarily depends on M&A deal size and financing choice.



Source: S&P Global Ratings. Data as of Jan. 16, 2025. Markers represent major deals completed: 2019 – Euronext-Oslo Bors; 2020 – ICE-Ellie Mae; 2021 – Euronext-Borsa Italiana, LSEG-Refinitiv, DB1-ISS, Nasdaq- Verafin; 2023 – DB1-SimCorp, ICE-Black Knight, Nasdaq-Adenza. e--Estimate. f--Forecast.

Sector margins tend to remain steady, even for acquisitive firms. Among them, four operate with margins below the long-term typical range for the industry of 43%-66%: two member-owned utilities (DTCC, OCC) and two others with weaker than peer structural profitability (PayPal, SIX).



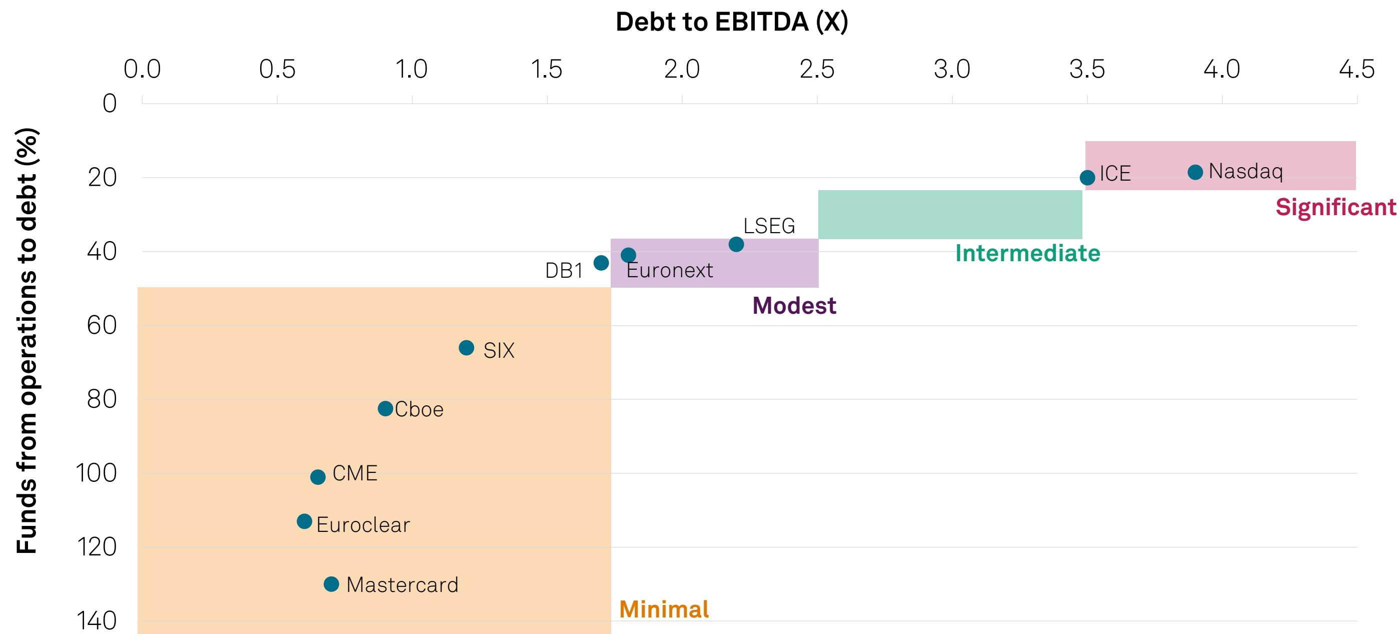
Source: S&P Global Ratings. Data as of Jan. 16, 2025. e--Estimate. f--Forecast.

Leverage Appetite Varies In The Sector

Metrics will further improve in 2025, absent further dealmaking

Expected end-2024 leverage ratios

Colored boxes reflect standard ranges for the indicated financial risk profile assessments



Data as of Jan. 16, 2025. Under our base case, Asigna, Clearstream, Coinbase, DTCC, LCH Group and OCC will continue to have zero net debt on our adjusted basis. ASX, Visa and PayPal all have some leverage but remain far inside the thresholds for a "minimal" assessment. Source: S&P Global Ratings.

- Using our two favored core metrics, many rated FMIs are lightly leveraged.
- Our financial risk profile assessments (FRP) are strongly guided by our expectations for these FMIs' leverage metrics over the 2024-2025 period.
- 2024 was a year of improving metrics. Euronext continues to delever after its Borsa Italiana deal in 2021. Nasdaq and, to a lesser extent, ICE have further delevered after their deals in 2023.
- For some FMIs, we also apply negative financial policy modifiers to reflect that the forecast metrics (on which the FRP assessment is based) are below their long-term leverage appetite.
- Coinbase has no net debt (so is omitted from this chart), but our "intermediate" FRP assessment incorporates the risk that the company's cash flow and leverage ratios could worsen if volatility exceeds our expectations.

Supplementary FRP Metrics Come Into View (I)

Higher cost of refinanced debt, shareholder distributions

Coverage ratios:

- **FFO cash interest cover:** Measures how many times EBITDA, deducting cash interest paid and cash tax paid, covers a company's interest expense.
- **EBITDA to interest:** how many times a company's earnings covers the interest expense.

Payback ratios:

- **CFO to Debt:** Provides a comparison of a company's full debt position compared to its operating cash flows before capex.
- **FOCF to Debt:** Measures a company's ability to repay debt from its main business activities, after capex
- **DCF to Debt:** How much cash a company has left after paying for capital investments and dividends to shareholders to use to repay debt.

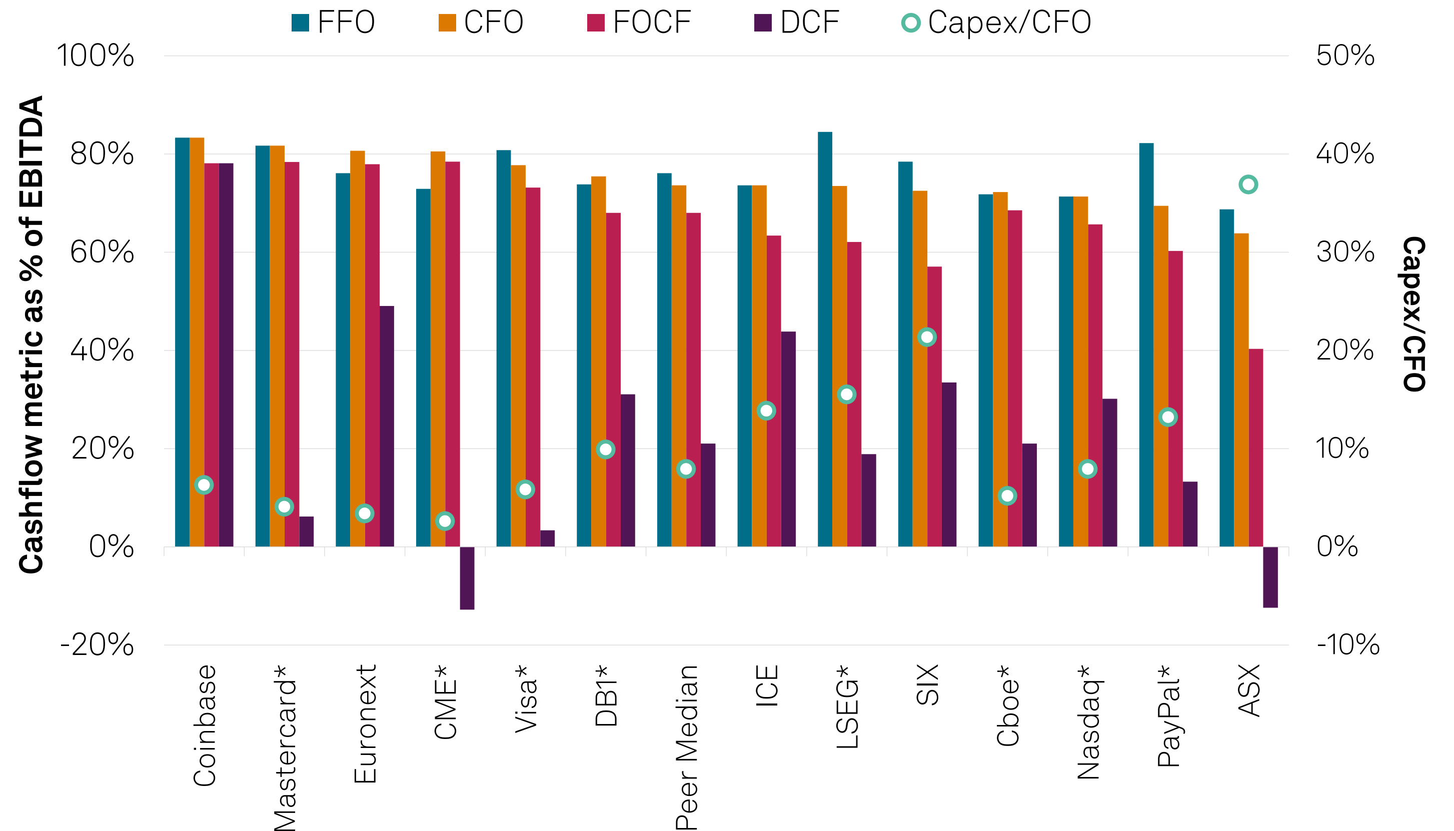
- Debt to EBITDA and FFO to debt are our core leverage ratios that heavily guide the FRP assessment.
- Still, supplementary debt servicing coverage and debt payback ratios provide additional insight on financial risk since EBITDA is a rough proxy for cash generation.
- Among the leveraged FMIs, these ratios have long painted a healthier picture than our core leverage ratios thanks to FMIs' low cost of debt and high conversion of EBITDA to operating cashflow--itself a function of typically modest capitalized expenditure needs.
- If FMIs maintain their leverage rather than reduce it, coverage ratios will continue to weaken moderately as pre-2022 debt is refinanced at higher rates.
- More broadly, FMIs' individual characteristics and operational and financial priorities all influence the various cashflow measures.

CFO--Cash from operations. DCF--Discretionary cashflow. FFO--Funds from operations. FOCF--Free operating cash from operations.
See Annex for the standard calculation of the adjustments we make when calculating earnings and cashflow metrics.

Supplementary FRP Metrics Come Into View (II)

Capex and shareholder distributions will have a heavy influence in FY2025

- The gap between CFO and FOCF is primarily influenced by relative investment needs, though also accounting policy in expensing versus capitalizing. There's a big difference across FMIs here--e.g., SIX vs Euronext.
- ASX's heavy investment while maintaining the dividend is depressing its FOCF/DCF. They've raised debt to supplement cashflow. Given that ASX did this from a position of having previously had zero leverage and we view this investment peak as transitory, this has not weighed on the rating.
- DCF varies significantly. While it can be very low, it may not weigh on the rating when an FMI is highly cash generative and maintains sizable financial flexibility (e.g., because they retain high practical optionality to flex their distributions).



CFO--Cash from operations. DCF--Discretionary cashflow. FFO--Funds from operations. FOCF--Free operating cash from operations. FRP--Financial risk profile. *Our forecast assumes that the FMI makes material share buybacks and/or extraordinary dividends in FY2025. Data as of Jan. 16, 2025. Source: S&P Global Ratings.

Rated Sector Debt Continues To Move Beyond $100 Billion

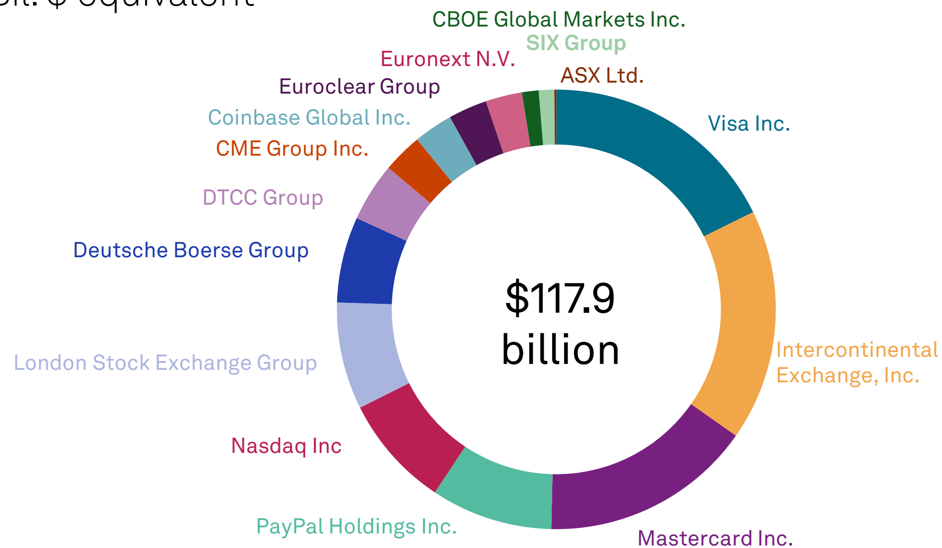
U.S. dollar and euro issuance dominates

The sector's major issuers can be broadly grouped:

- Payments players that acquire emerging fintechs to extend their product suite: Visa, Mastercard, and PayPal.
- Markets-centric FMIs that diversify or consolidate through acquisitions: ICE, LSEG, Nasdaq, Euronext, Deutsche Börse, and SIX.
- Post-trade FMIs that issue debt to meet regulatory requirements, notably to boost stressed liquidity resources: Euroclear, NSCC, and Clearstream.

Outstanding FMI sector debt by issuing group

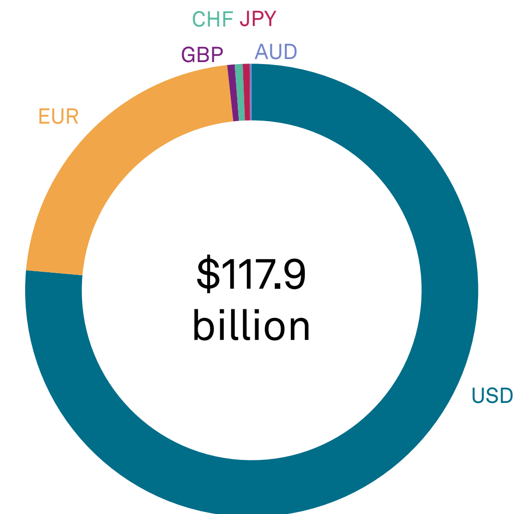
Bil. $ equivalent



Data as of Dec. 31, 2024. Revolving credit facilities and commercial paper are not included in this chart. Converted using foreign exchange rates as of Dec. 31, 2024. Source: S&P Global Ratings.

Outstanding FMI sector debt by currency

%



Data as of Dec. 31, 2024. Revolving credit facilities and commercial paper are not included in this chart. Converted using foreign exchange rates as of Dec. 31, 2024. CHF--Swiss franc. Source: S&P Global Ratings.

Debt Maturities Pick Up In 2025

Some debt will be refinanced, some paid down as issuers deleverage

Group	Currency	2025	2026	2027	2028	Thereafter	Total	Foreign exchange rate	Total (USD)
ASX Ltd.	AUD			275			275	0.619	170
Cboe Global Markets Inc.	USD			650		800	1,450	1.000	1,450
CME Group Inc.	USD	750			500	2,200	3,450	1.000	3,450
Coinbase Global Inc.	USD		1,400		1,000	1,000	3,400	1.000	3,400
DTCC Group	USD	2,150	625	600	600	1,125	5,100	1.000	5,100
Deutsche Boerse AG	EUR	850	1,500		600	4,200	7,150	1.041	7,443
Euroclear Group	EUR	500	600	500		1,050	2,650	1.041	2,759
	USD		600				600	1.000	600
Euronext N.V.	EUR	500	600			1,950	3,050	1.041	3,175
Intercontinental Exchange Inc.	USD	2,500		2,000	1,600	14,000	20,100	1.000	20,100
London Stock Exchange Group	GBP					500	500	1.254	627
	EUR	500	700	1,100	500	1,200	4,000	1.041	4,164
	USD		1,000	500	1,000	2,000	4,500	1.000	4,500
Mastercard Inc.	USD	750	750	1,000	2,000	12,150	16,650	1.000	16,650
	EUR			800		900	1,700	1.041	1,770
Nasdaq Inc.	USD	500	500		1,000	5,100	7,100	1.000	7,100
	EUR					2,565	2,565	1.041	2,670
PayPal Holdings Inc.	USD	1,000	1,250	500		7,250	10,000	1.000	10,000
	JPY	30,000	23,000		37,000	0	90,000	0.006	576
SIX Group	EUR	650					650	1.041	677
	CHF		150			450	600	1.106	664
Visa Inc.	USD	4,000		2,750		11,000	17,750	1.000	17,750
	EUR		1,350		1,000	650	3,000	1.041	3,123
Total in USD									**117,917**

Data as of Dec. 31, 2024. The table reflects only bonds and term loans, so does not capture commercial paper, certificates of deposit, or drawings on revolving credit facilities. Foreign exchange rate as of Dec. 31, 2024, from XE.com Inc. Source: S&P Global Ratings.

- Sector players took advantage of favorable debt markets in 2020 and 2021 to push out debt maturities and fix in highly attractive spreads, as far as 2060 in some cases.
- As a result, the industry faced minimal debt maturities in 2022-2024, but sector maturities will rise to $14 billion in 2025.
- Absent major new debt-financed acquisitions, we expect 2025 activity to be a mix of refinancing and some debt pay-down, as many sector players continue to accumulate cash.
- Even if markets become dislocated, these are strong names in a sector that is not very cyclical, so we would expect market access to remain intact or else return after a short hiatus (if severe dislocation).

After A Solid 2024, 2025 Promises More Volatility

- 2024 was a supportive year for FMIs. Volatility, lower than its peak in 2022 but still meaningful, supported derivatives activity in many asset classes--rates, equities, commodities. However, with policy rates falling, equity valuations typically held up or improved.
- Primary equity markets saw a pick-up in activity in 2024, though this was most prevalent in the U.S. and India, and less so elsewhere. Secondary volumes saw a similar pattern – a sizable year-on-year pick-up in the U.S. and India, also Japan, but a weaker trend in European markets. China market activity was a rollercoaster, initially of decline followed by explosive growth after the government's stimulus package in September.
- Falling policy rates and mixed trends in derivatives open interest likely spurred a year-on-year decline in treasury income for many CCPs and ICSDs.
- The year generally saw moderate volatility, but the sell-off in the Japanese market in August was a reminder that sentiment can change quickly and be so coordinated that market pricing may overshoot.
- For 2025, geopolitics and continued unpredictability in monetary policy shifts are likely to buoy volatility and so derivatives volumes. The outlook for primary equity markets appears good, but sentiment could sour if policy rate cuts stall or economic growth underwhelms.
- Amid a continued tightening of money supply, collateral and liquidity will remain critical to the efficient functioning of the financial system--an opportunity for some FMIs.

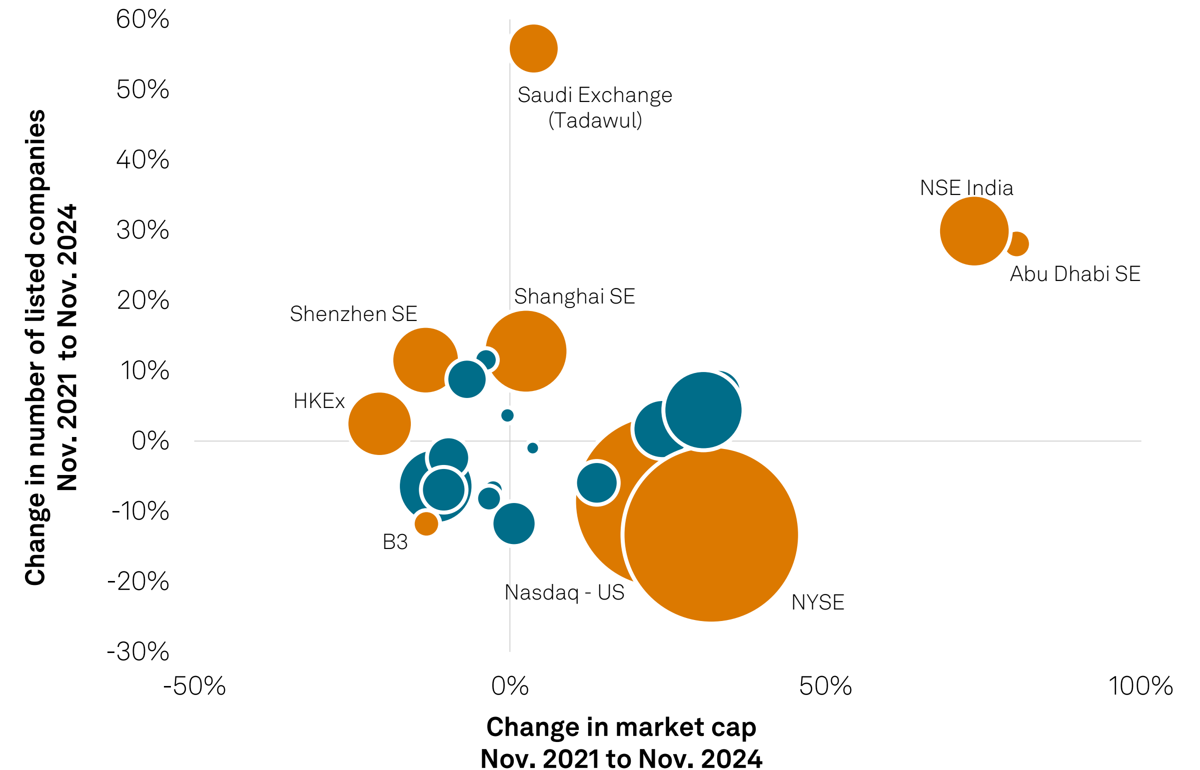
Mixed Trends In Equity Market Valuations And Listings

India and the Middle East stand out as leading growth regions

- Looking at developments since the post-pandemic peak in late 2021, India, Saudi Arabia, and Abu Dhabi stand out as markets showing strong growth in size and valuation.
- The picture is more mixed for historical growth markets in Greater China, where listings have held up but valuations have suffered.
- The U.S. shows the opposite trend--a slide in overall listings, but stronger market capitalization (thanks to solid sentiment around the U.S. economy and price spikes in some marquee stocks).

Markets' capitalization generally remains below 2021 peaks

But some are bucking the trend



Data as of Nov. 30, 2024. Exchanges selected are among the largest globally. Bubble size represents Nov. 2024 market capitalization in US dollars. Period to period changes are in local currency. Sources: S&P Global Ratings, WFE.

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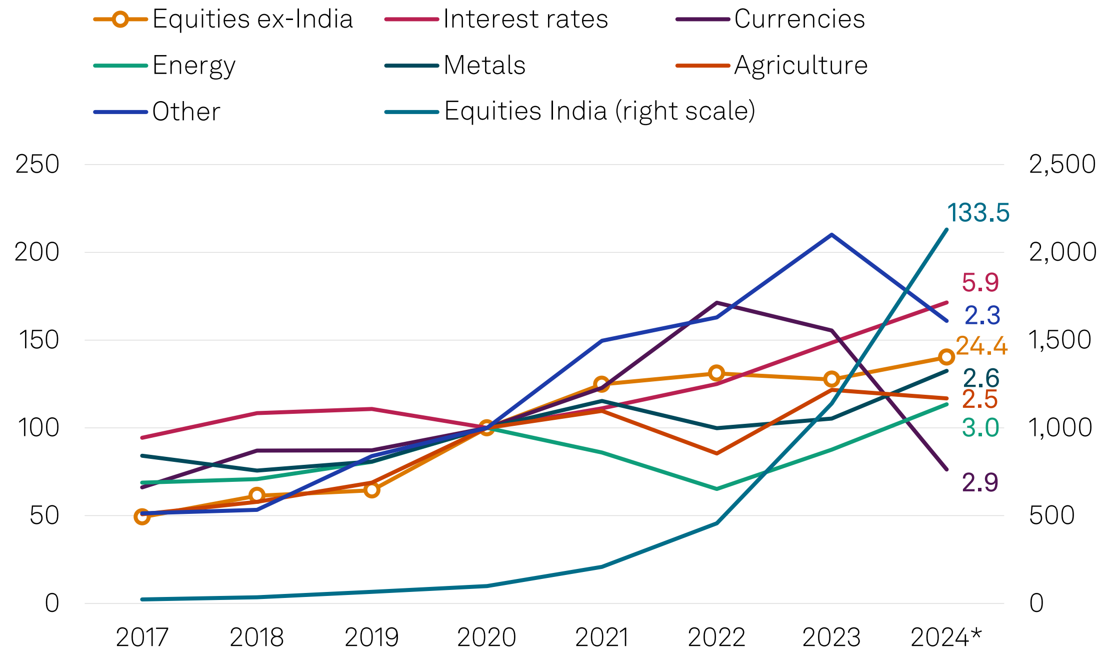
Derivatives Volumes Trends Were Mixed In 2024

Equities led the way, rates, energy, and metals held up well, currencies suffered

Global Equity Derivatives Volumes Continue To Dominate

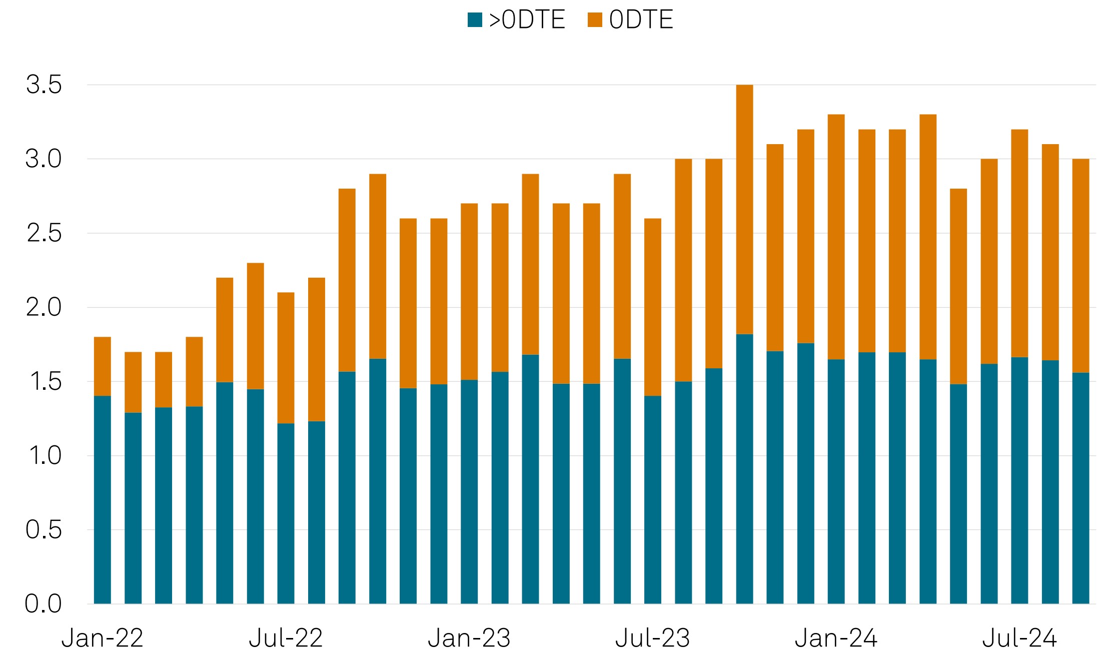
But the boom is coming from one key market--India



Data represents volumes of exchange traded futures and options contracts indexed to 2020. *Annualized estimate for 2024 is taken as 10 months to October x 12/10. Absolute numbers in colors on the right are volumes in the first 10 months of 2024 in billions of contracts. “India” data include volumes at the NSE and BSE. Sources: Futures Industry Association, S&P Global Ratings.

SPX Futures Volumes Remain Robust

Aided by a striking rise in 0DTE contracts



Volumes are in millions of contracts. 0DTE—zero days to expiry contracts. >0DTE—contracts with longer expiries. Source: Cboe.

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Incumbents' Robust Liquidity Hubs Face Competitive Tensions (I)

Market structure and activity remain dynamic

Superficially, **FMI incumbents' product sets and franchises look impregnable--and to a large degree they are**. The market benefits from liquidity (i.e., price formation) being centralized on one or a very few hubs, and the lion's share of derivatives volumes continues to arise from some key contracts in each asset class. But innovation is a constant, and from time-to-time bubbling competitive tensions erupt. In 2025, **we have our eye on the following developments:**

- **CME plays offense and defense:** CME's strategic focus on its core business and its formidable leadership position in U.S. rates, equity, currency, and commodity futures allow it to generate some of the best profit margins in the industry. But it doesn't have everything its own way. It has long faced stiff competition from ICE in U.S. gas futures, and Nodal proved able to win over sizable open interest in U.S. power futures. Market-leader LCH proved to be a robust competitor when CME sought to build a U.S. interest rate swaps clearing franchise, and ICE and Eurex appear to have retained their dominance in euro rates, despite CME initially stealing a march in €STR futures. While we expect CME's core business to remain the bedrock of its profitability in 2025, we have our eye on the following initiatives:
  - **FMX:** it's not novel for derivatives exchange/CCP behemoths to face upstart competitors. But the demise of CurveGlobal, NY Portfolio Clearing, and others demonstrates the formidable challenge they face to build a profitable pool of liquidity. FMX Futures Exchange, backed by Cantor/BGC, launched in September 2024. It will vie with CME's complex in cash treasuries and SOFR futures, aided by LCH's clearing service. By end-2025, we'll know whether it can pull sustainable, profitable market share from CME.
  - **Bond/repo clearing**: CME could in future have a complex relationship with FICC, the incumbent U.S. monopoly clearer of bonds and repos. CME currently has a partnership "co-CCP" agreement with FICC whereby it offers some margin offset benefits for treasury futures (cleared at CME) and cash treasuries (cleared at FICC). This is currently limited to clearing members' house positions but could in future be expanded to client positions. However, while FICC's incumbency means that it stands to gain most from a mandated expansion of treasury bonds and repo clearing in the U.S., CME has filed an application for CME Securities Clearing Inc. to start to clear cash treasuries, potentially putting it in direct competition with FICC.
  - **Nickel futures:** CME has long had a sizable liquidity pool in derivatives on gold, copper, silver, platinum, and palladium--metals that trade in several liquidity pools globally. Following the disruption in the London Metal Exchange's nickel market in 2022, CME hopes to build a meaningful U.S. liquidity pool in this metal, and also in lithium.
  - **FCM licence**: CME has now received its FCM licence--highly novel for a market operator. Is this a precautionary measure, or an active play to build liquidity, e.g. in crypto?
- **ETF boom:** with no sign of a let-up in the long-term shift toward cheap, traded, and liquid ETFs away from actively-managed mutual funds, ETFs are likely to continue their boom in 2025 across equity, credit, and other asset classes--benefiting many of our rated FMIs.

€STR--Euro short-term rate, a new benchmark. FCM--Futures commission merchant. FICC--Fixed Income Clearing Corporation. SOFR--Secured overnight financing rate, the replacement for U.S. dollar LIBOR.

Incumbents' Robust Liquidity Hubs Face Competitive Tensions (II)

Market structure and activity remains dynamic

- **The rise and rise of "zero-day to expiry" (0DTE) options:** a boon for market operators, but a risk management challenge. Daily-expiring index options volumes have boomed in the U.S. over the past three years, driven partly by retail demand, but also institutional activity. These zero-day options now account for about 50% of SPX volume. Outside the U.S,. 0DTE trading has exploded in India, but remains muted elsewhere. For example, Eurex launched daily-expiring options in August 2023, but the modest take-up reflects the European markets' lack of vibrancy in terms of the weight of retail activity. However, these 0DTE contracts pose significant intraday clearing risks that require related CCPs to measure and manage risks in real time. In the U.S., the OCC--the monopoly options clearer--is taking corrective steps to measure positions and market parameters in real time and change its rules around the collection of intraday margin. Concurrently, OCC is under pressure after it saw increased breaks in its liquidity backtesting around monthly/quarterly options expiry, and it took on more responsibility for liquidity risk mitigation under its revised accord with NSCC that underpins their co-CCP arrangement.

- **Private markets:** the U.S. equity market's deep liquidity and strong valuations remain a magnet for stock listings. But exchanges everywhere continue to face a strong delisting threat from the private market. For 2025, the door between public and private markets may revolve a little faster, as private equity funds not only explore further acquisitions among public companies but hope to accelerate stalled exits of investees via IPOs. Incumbent FMIs will retain the public market focus, but some initiatives like the Nasdaq Private Market, the U.K's PISCES, Forge in the U.S., and Finstreet in Abu Dhabi show opportunities for incumbents and new entrants to create liquidity solutions.

- **24-hour markets:** cash markets have largely retained their traditional opening hours, with the bulk of daily trading activity still centred on the closing auction and periodic intraday auctions. By contrast, some derivatives markets have extended their hours. Via its Globex platform, CME already operates the most global futures market—being open nearly 24 hours a day, five days a week. While this is immaterial from a sector earnings perspective, we expect further initiatives like new "24-hour exchange" 24X in the U.S. allied with ongoing debate in 2025 about the perceived benefits of extending trading hours versus the drawbacks of unreliable price discovery in thin markets and infrastructural changes to cope with extended hours.

- **GCC ambitions:** Middle East countries like Saudi Arabia want to build their domestic capital markets, but others like Abu Dhabi have loftier ambitions--to build a global financial center that reduces economic reliance on the energy sector. They will be heled by a favorable regulatory environment and heightened focus on sanctions risk in Europe.

- **European shifts**: after Nasdaq signalled its intention to exit Nordic power derivatives clearing, we look to see whether Euronext can leverage its Nord Pool franchise and revamped clearing arrangements to make itself the leading European competitor to Deutsche Boerse's EEX/ECC business.

ETF--Exchange-traded fund. GCC--Gulf cooperation countries. IPO--Initial public offering. PISCES--Private Intermittent Securities and Capital Exchange System. SPX--S&P 500 index.

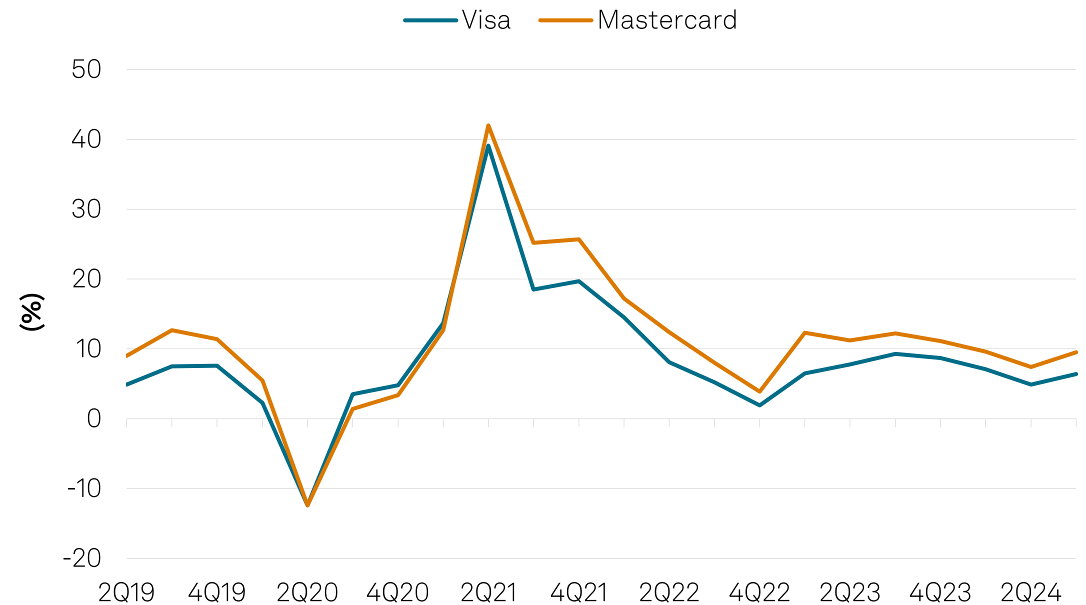
Payment Processing Companies Growth Stabilized In 2024

We expect the pace of total revenue growth to remain around 10% in 2025

- We believe that cross-border payment volume growth will start to moderate in 2025 compared with 2023 and 2024 but remain high (>10%).
- An ongoing shift to electronic payments from other payment forms globally, most notably cash, should partly offset the pressure from the potential economic slowdown, but geopolitical risks remain high.
- Ancillary services now account for over one-third of Mastercard's net revenue, over 20% for Visa, and about 10% for PayPal. We expect their contribution to grow in the coming years.
- We expect litigation on interchange rates to continue for both Mastercard and Visa, given a federal judge's June 2024 rejection of a settlement both companies reached with U.S. merchants. In addition, the DOJ's 2024 antitrust suit added to Visa's legal risks.
- PayPal faces more revenue headwinds from slower e-commerce growth and their 2024 re-focus on profitability/updated strategy initiatives, but its exposure to litigation remains negligible.

After the post-lockdown bounce, payments volume growth has steadied

Quarterly global purchase volume (y-o-y change)



Source: Visa and Mastercard quarterly filings.

Markets Could Pose Financial Stability Risks

Market shocks could stem from political or policy interventions, and be amplified by structural changes

	Cause	Possible mitigants	Potential consequences
Disorderly asset repricing exposes financial vulnerabilities	• Fast markets, fragile confidence, and external/geopolitical shocks • 'Herd' (dis)investment patterns • Spillover from private to public markets • Decreased liquidity in some key markets, amplified by banks' reduced market intermediation capacity • Margining transforms counterparty credit risk into potential liquidity risk	• Central bank intervention to avoid disorderly markets • Private credit sector tends to have low leverage and locked in capital • Antiprocyclicality reduces volatility in CCP margins • Switch to T+1 cash equity clearing cuts required margin	• Drawdown of liquidity by bank clients and to meet own obligations • Materialization of market tail risks lead to margin spikes • Possible counterparty default events among troubled clearing clients and trading counterparts
What to look out for in 2025	• Policy rate changes could be unpredictable and unaligned • Geopolitical event risk could be high • Ongoing QT further cuts large buyers from bond markets and bank reserves • Deregulatory political agenda in U.S. could facilitate more risk-taking • Market concentration and pyramid of investment in new technologies could deepen, or the investment thesis breaks	• Reform of U.S. treasury market to expand central clearing • Expansion of central bank repo access to some nonbanks • Regulatory monitoring of NBFI risks via banks could evolve into direct oversight • Collateral mobilization/reuse capacity continues to rise	• Banks further expand investment in sovereign bonds • Sustained bank provision of liquidity/credit to core clients, reduced lines to marginal clients • Margin spikes increase banks' liquidity consumption • Banks term out IRRBB duration but restrain traded market risk

CCP--central counterparty / clearinghouses. FI--Financial institution. IRRBB--interest rate risk in the banking book. NBFI--Nonbank financial institution. QT--Quantitative tightening. TPI--The EU's transmission protection instrument.

Sector Top Trends

1. **How do FMIs seize growth opportunities?** They are, in essence, specialized technology and data companies. Their strong franchises are built on serving the market with highly regulated and reliable services, and centralization benefits of deep liquidity pools and multilateral netting.

- Most rated FMIs serve developed economies and capital markets, where growth has slowed. Growth opportunities remain in the traditional value chain notably through novel products, but acquisitive growth is a standard strategy for these highly cash-generative players --adding scope (broader range of products/services) and sometimes scale (cost efficiencies).
- FMIs are typically highly cash-generative, so able to deploy ample cash flow into capital investments as they seize the capability and efficiency advantages of new technologies and enhance risk management.
- Some FMIs are reinventing the meaning of market infrastructure as they push heavily into adjoining but faster-growing services in data, analytics, and technology. These aid diversification and increase fee-based annuity-like income.

2. **Policy and regulation** retain a huge influence on market dynamics, but we see no seismic shifts that will catalyze or undermine incumbent FMIs in developed markets.

3. **Indian capital markets** have boomed in recent years, boosted by solid economic prospects and a frenzy of activity by retail and proprietary traders. Now regulators are proposing curbs. This could massively deflate market activity, as happened in Korea in 2012.

4. **Digital assets** (cryptocurrencies and related derivatives, stablecoins, and beyond) are a major growth trend, and institutional interest continues to grow. Incumbent FMIs compete with each other and new entrants to identify market demand and build liquidity.

Trend 1 | How To Find Growth In A Mature Industry? (I)

Multifaceted growth strategies have moved FMIs beyond the traditional value chain

- Structural growth trends, seized organically and through acquisitions, remain a key earnings driver for the FMI sector.
- Some FMIs have benefited much more than others, due to a mix of existing franchise strength and breadth, strategic thinking, M&A budget, and leverage appetite.
- Within traditional FMI activity, consolidation opportunities are now rare. Euronext is pre-eminent here in having heavily boosted scale efficiencies and diversification across asset classes and the value chain.
- Several of the largest FMIs have moved into neighboring lines of business, including through some marquee deals (Ellie Mae, Black Knight, Refinitiv, Verafin, Adenza). Often these are less-regulated businesses and offer greater annuity-like income.

Traditional Value Chain Growth Trends

1. **Growing and maturing economies:** stimulate deeper and more active capital and financial markets
2. **Benchmark indices:** linked in large part to the upswing in passive investment
3. **Regulation:** policy decisions that push trading activity and clearing from bilateral / OTC to electronic venues and central clearing
4. **Collateral:** enhanced services to improve mobilization and efficiency for market intermediaries
5. **Buy-side:** expanded direct relationships with large buy-side players who prefer to access markets/infrastructure directly
6. **Asset class extension:** e.g., funds, commodities, digital assets, private markets, often enabled by technological innovation

Ancillary Businesses

7. **Data and analytics:** expanded products and services related to ESG investing, novel trading-linked data, broader analytics capabilities and data platforms.
8. **Technology as a service:** including FMI-centric and post-trade technology, but also adjacent markets like U.S. mortgage servicing and compliance

Trend 1 | FMI Sector Remains A Highly Acquisitive One (II)

With a key focus on data and analytics and infill trading businesses | Sector trend 1

	Post-trade / risk management	Market / scheme operator	Data, analytics and workflow	Tech	Other	Deal count
B3-Brasil Bolsa Balcao	**Cetip**		Neoway	Datastock , Neurotech		4
CBOE Holdings	EuroCCP	Hotspot, **BATS**, Chi-X Asia-Pac, Bids Trading, MatchNow	Trade Alert, Hanweck, FT Options			9
CME Group		**NEX Group**				1
DTCC	CMRS			Securrency		2
Deutsche Borse Group	UBS Fondcenter, Crypto Finance	360T, Nodal, GTX, Nasdaq Futures	Stoxx/Indexium, Axioma, Kneip, Discovery Data, **ISS, SimCorp**			13
Euroclear	MFEX, Inversis					1
Euronext	VPS, Oslo Bors, **Borsa Italiana**	FastMatch, ISE, NordPool	Acupay, GRSS, Substantive Research		iBabs	10
Ice		BondPoint, TMC, AFX	**IDC**, BAML Indices, MERS, Simplifile, **Ellie Mae**	**Black Knight**		9
JPX		Tokyo Commodity Exchange	SCRIPTS Asia			2
London Stock Exchange Group	Acadia, Quantile, Veris	**Refinitiv**	Mergent, Citi Yield Book Indices, Maystreet, GDC	TORA		9
Mastercard		Adaptive, Vocalink, **Nets Corporate Services**	RiskRecon, Ekata, Dynamic Yield	DukaConnect, Finicity, Aiia, Baffin Bay, Minna, **Recorded Future**		12
NASDAQ		**ISE,** Puro.earth, LeveL	eVestment, Qdiligence, Metrio	Cinnober, **Verafin, Adenza**		9
PayPal			Simility	Xoom, TIO, **iZettle**, Hyperwallet, Simility, GoPay, Curv, **Paidy**	Honey	10
SGX		Baltic Exchange, BidFX, MaxxTrader	Scientific Beta			4
SIX Group	REGIS-TR, **BME**	**Aquis Exchange**	FactEntry		**Aduno**, Swiss Euro Clearing Bank, Ultumus	7
TMX			Trayport, Wall St Horizon, VettaFi, Newsfile		AST	5
VISA		**VISA Europe**		**Earthport, Tink**, Currencycloud, YellowPepper, **Pismo,** Featurespace		7

Note: Bold text indicates deals greater than $1 billion in value. Figure reflects deals completed since 2015; data may not be exhaustive. It includes rated FMIs and selected unrated FMI peers for comparison. Source: S&P Global Ratings and S&P Market Intelligence.

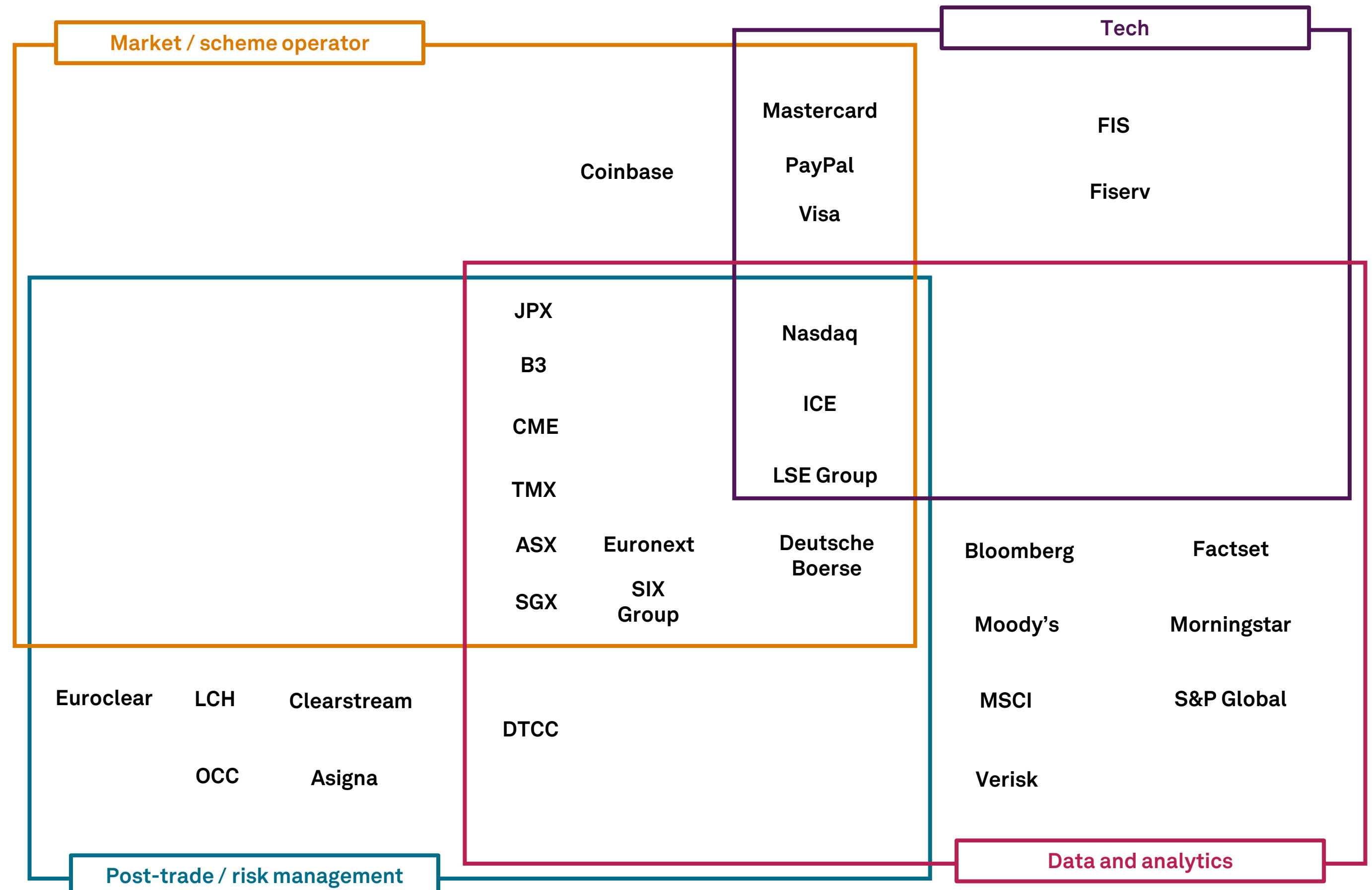
S&P Global Ratings

Trend 1 | Redefining The Vision Of Market Infrastructure (III)

Expansion invites comparison with a broader set of corporates | Sector trend 1

- The strategic shift of some FMIs beyond their traditional core competence areas has resulted in increased differentiation with FMI peers in scale and scope.
- This evolution also demands comparison with some nonfinancial corporates, notably those active in data, analytics, payments, and technology.
- From a credit perspective, we see these acquisitions as supportive where:
  - Leverage remains within appetite
  - They materially improve diversification or deepen competitive advantage (for in-market consolidation)
  - They materially increase the weight of recurring, annuity-like revenues, like subscriptions
  - Acquired businesses are strongly cash-generative and have established a robust competitive position in their sphere of operations.

FMIs now have highly variable dependence on traditional value chain business



Trend 2 | Regulatory / Policy Initiatives: Important But Not Game Changers (I)

Overall, these continue to provide a modest tailwind to incumbent FMIs

Key initiative	Overview	Our base case
U.S. Treasury market reform	Mandate to widen central clearing activity could increase competition among CCPs active in treasury markets business. Implementation is staggered, with clearing of cash treasury trades set to go live in December 2025 and repo trades in June 2026. This should improve treasury market resiliency, increase dealer balance sheet capacity, keep a lid on leverage in the financial system, while raising trading costs.	As for any pending regulatory initiative, this could yet be changed or nixed by the incoming Administration. If it remains on track, FICC would be the main beneficiary, albeit it is anyway run as a market utility. It has until March 2025 to explain the rule changes it would need to make. CME and other FMIs could also enter the business, however.
	European policymakers have so far not mandated clearing of OTC repo activity.	European policymakers adopt a wait-and-see approach, with a successful rollout in the U.S. making it more likely that the EU will follow suit.
U.S. review of equity market microstructure	In September 2024, the SEC adopted changes to the U.S. equity market structure. Key changes include reducing the minimum tick size from 1 cent to half a cent and reducing access fee caps (from 0.3 cents to 0.1 cents per share for stocks priced above $1). Nasdaq has taken a legal action against the access fee cap rule.	Reduction in the minimum tick size could benefit exchanges' trading volumes, as this could make them more competitive with wholesale market-makers. But these benefits could be offset by a reduction in access fee caps. (Exchanges charge an access fee to those who take liquidity and rebate a portion of that to those providing liquidity.) While lowering the access fee caps could also lower rebates to liquidity providers, exchanges could potentially experience some modest compression in net fees. We do not view these changes as a game-changer given cash equities represented 3% of total revenue for ICE, 6% for Cboe, and 10% for Nasdaq.
Standardized approach to counterparty credit risk (SA-CCR)	SA-CCR marks a toughening in the prudential capital requirements for banks and brokers, making it more capital intensive for banks to face nonbank counterparts. SA-CCR has now been implemented across many jurisdictions.	SA-CCR is a tailwind for CCPs since it incentivizes banks to push more derivative trades into central clearing.
European Market Infrastructure Regulation review (EMIR 3.0)	EU policymakers continue to push EU firms to decrease reliance on systemically relevant ("tier 2") non-EU CCPs, such as ICE Clear Europe and LCH Ltd.	Policymakers persist with a carrot-and-stick approach (such as mandatory active accounts) to effect behavioral change, rather than a ban on the use of these non-EU CCPs. ICE and LCH's franchises with EU clients remain substantially intact, but Deutsche Boerse wins more euro rates business. There is no broader policy push beyond the EU to deglobalize OTC liquidity pools.
	Policymakers push through changes after the liquidity squeeze in European energy markets in 2022 and partial drift of activity from exchanges to OTC.	Policymakers remain cautious about changes that may undermine the soundness of clearinghouses. They rather push principally for CCPs to further enhance APC margin measures and enhance transparency (and so predictability) for participants.

APC--Anti-procyclicality. CCP--Central counterparties, i.e. clearinghouses. EC--European Commission. ESAP--European single access point. FICC--Fixed Income Clearing Corp. MTF--Multilateral trading facilities. OTC--over the counter. PFOF--Payment for order flow. SI--Systematic internalizer.

Trend 2 | Regulatory / Policy Initiatives: Important But Not Game Changers (II)

Overall, these continue to provide a modest tailwind to incumbent FMIs

Key initiative	Overview	Our base case
T+1 settlement	In May 2024, the U.S. cash equity market moved from T+2 to T+1 settlement, following India's move in 2023. This shorter cycle reduces credit-related settlement risks and cuts margin requirements but requires substantial preparations for market participants to be able to reliably avoid settlement failures and could mean that they need to dedicate higher excess liquidity to smooth settlement funding requirements. EU and U.K. regulators have indicated that they will follow suit by end-2027.	European markets will undergo a synchronized move to T+1 before end-2027 Greater resource efficiency (if it arises) could cut all-in costs, and in theory may spur higher trading activity and so boost exchange revenues. If so, CCP revenues could also rise, even if total margins fall. Asset mobilization and efficiency become ever more essential, boosting demand for related services.
EU Investments & Savings Union (I&SU)	I&SU is a rebadged Capital Markets Union--the longstanding political ambition to harmonize, strengthen, and develop EU capital markets. In practice, this demands numerous supply and demand side legal, regulatory, fiscal, and structural changes. Political intent to deliver appears stronger after the Draghi, Letta, and Noyer reports of 2023, and its central placement in the mission for the incoming Commission.	A fully-fledged I&SU would be positive for major European FMIs. But in practice we expect further slow progress through a combination of fragmented legislative changes at the EU level, targeted harmonization initiatives among groups of member states, and FMIs' strategic actions. It's possible that ESMA could be given a mandate as the single supervisor of EU CCPs, but harmonization of EU securities markets supervision otherwise remains unlikely.
EU Markets in Financial Instruments Directive and Regulation (MiFID / MiFIR) review	15 years after MiFID, five years after MiFID II, and post-Brexit, EU policymakers are making tweaks to improve transparency, and address level-playing-field issues in EU capital markets. Possible changes to commodity derivatives market will depend on the EC's follow-up assessment	End of open access obligation for exchanged-traded derivatives supports incumbent exchanges. Creation of post-trade consolidated tape, ESAP and economic regulation of market data will have a modest revenue impact for exchanges. Outright ban of PFOF reinforces exchanges/MTFs, but they continue to face substantial competition from lighter-regulated venues like SIs.
CSD Regulation (CSDR) refit	The original CSDR came into effect in 2014. Following the Commission's 2020/2021 review, a handful of targeted legislative changes take effect between mid-2024 and 2026.	Tweaked regulations represent an easing in areas like settlement discipline and ancillary banking services and streamlined regulatory cooperation. No material impact for CSDs/ISCDs.

CCP--Central counterparties, i.e. clearinghouses. CPSA--Clarity of Payment Stablecoins Act. FIT21--Financial Innovation and Technology for the 21st Century Act. ICSD--international central securities depository. MTF--Multilateral trading facilities.

Trend 2 | Regulatory / Policy Initiatives: Important But Not Game Changers (III)

Overall, these continue to provide a modest tailwind to incumbent FMIs

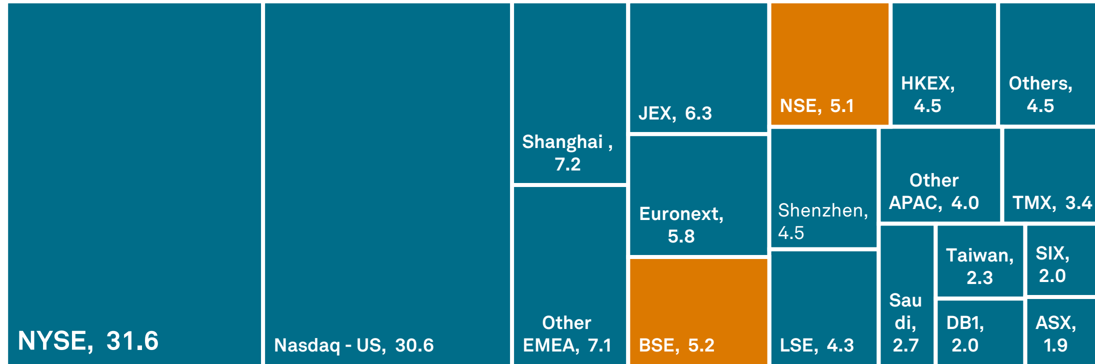
Key initiative	Overview	Our base case
Crypto and digital asset regulation	National-level initiatives have created regulation to support the development of digital assets in markets like Switzerland, the EU, and Singapore. Regulatory clarity for the digital asset industry in the U.S. has lagged other regions. It could now emerge under a crypto-friendly Trump administration. Senate passage of the FIT21 Act and 2023's CPSA--both approved already by the House--may top the legislative agenda given Republican party's success in sweeping both the House and Senate.	Strong legal and regulatory frameworks are a necessary but not, by themselves, sufficient stimulus for institutional adoption of these technologies and related financial innovation. Nevertheless, institutional interest in crypto and other digital assets continues to grow, boosting demand for trading and post-trade services from trusted providers such as FMIs and custodians. Specifically in the U.S., expectations of a favorable regulatory framework have propelled crypto prices, providing tailwinds to a sector that has been dogged by litigation. It remains unclear if the ongoing court case between SEC and Coinbase will be reevaluated under the new regulations or withdrawn under the new SEC leadership.
Recovery and resolution	CCPs are almost always systemically important. Having developed bank-focused standards for recovery and resolution, at a global level standard-setters like the FSB continue to promulgate guidelines for CCP-centric frameworks. Many jurisdictions are now expanding or developing their national level CCP resolution frameworks, and working with CCPs to enhance their financial resilience, notably through additional loss-absorption mechanisms.	We anticipate relatively few new developments to enhance resilience to member default losses; many changes were made already, including the mandatory second tranche of skin in the game in the EU and fairly routine inclusion of margin gains haircutting and tear-ups. The debate is hotter around non-default loss resilience. Measures that improve CCP resilience are likely to be supportive for our ratings in the sector, unless they obliged CCPs to take on material leverage.
Central bank access for CCPs	Policymakers continue to acknowledge the likely greater resilience of FMIs that have access to central banks--whether for placements or collateralized lending. While CCP and ICSD access remains commonplace in Europe--including prospectively in Sweden--it is rarer elsewhere.	CCPs' central bank access is commonplace but uneven in the EU, relying on national level laws/regulatory approaches. Whether under the I&SU banner or otherwise, it's possible that policymakers will seek to harmonize this--giving CCPs' equal access under a common regulatory framework.

CCP--Central counterparties, i.e. clearinghouses. CPSA--Clarity of Payment Stablecoins Act. FIT21--Financial Innovation and Technology for the 21st Century Act. FSB--Financial Stability Board. ICSD--international central securities depository. I&SU--the EU's Investments & Savings Union initiative.

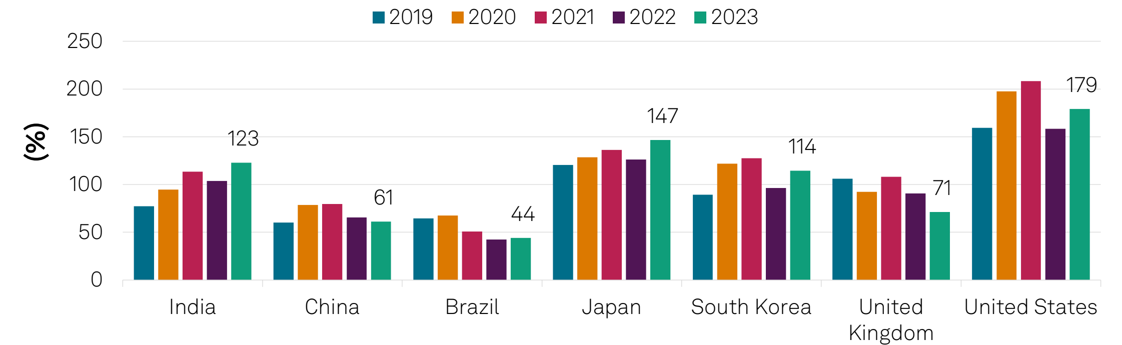
Trend 3 | The Rise Of Indian Markets (I)

Equity market is now one of the largest outside the U.S.

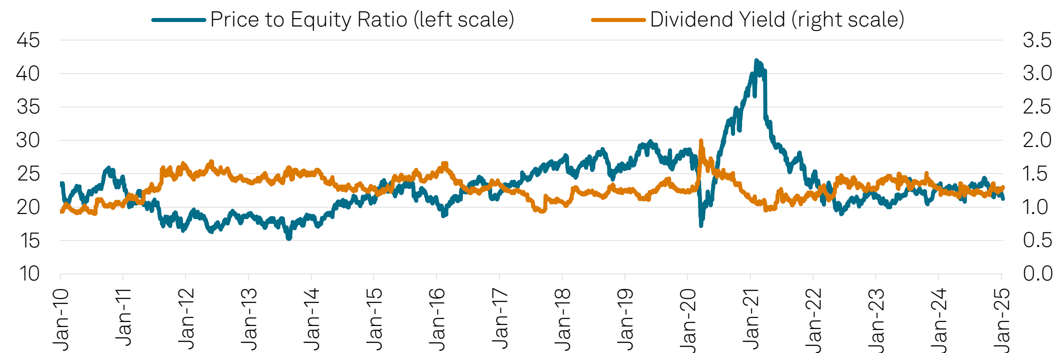
1. Global equity market capitalization in U.S.$ trillion (Dec. 2024)



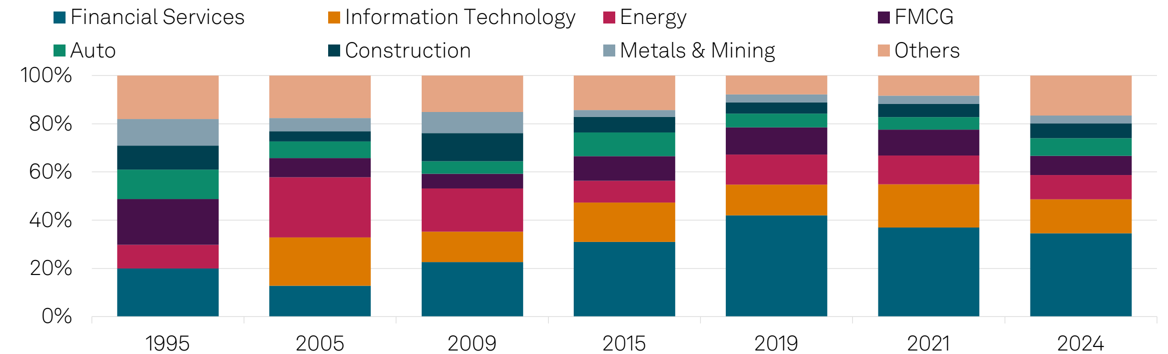
3. Market capitalization to GDP ratio during the last five years



2. NIFTY 50 price to equity and dividend yield trend



4. Evolution of sector weights in the Nifty 50 Index



Sources: 1. WFE--World Federation of Exchanges 2. National Stock Exchange Of India (NSE). 3. NSE and CEIC Data. 4. FMGC--Fast Moving Consumer Goods. Auto--Automobile and Auto Components. IT--Information Technology. Source: NSE.

S&P Global Ratings

Trend 3 | The Rise Of Indian Markets (II)

National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) dominate

Difference	National Stock Exchange (NSE)	Bombay Stock Exchange (BSE)
Definition	NSE is the biggest stock exchange in India established in 1992. It was the front runner in the introduction of fully automated electronic trading system	BSE is the first stock exchange in India and is Asia's oldest exchange established in 1875
Benchmark Index	NIFTY 50	SENSEX
Index Value	23,645	78,139
Companies Listed	2,671	5,564
Market Capitalization	$5.1 trillion (Dec. 31, 2024)	$5.2 trillion (Dec. 31, 2024)
Liquidity	Higher liquidity as compared to BSE	Low liquidity
Products Traded	Equities, Derivatives, Fixed Income & Debt, Currency, Exchange Traded Funds, Indices, Mutual Fund, Sovereign Gold Bonds, Initial Public Offerings (IPO), Offer For Sale, Institutional Placement Program	Equity, Derivatives, Mutual Funds, ETFs, Bonds, Initial Public Offerings (IPO), Derivatives, Offer for Sala
Network	NSE is in more than 1,500 cities	BSE has a network covering 450 cities
	Global Positioning	
By Market Capitalization	World's 7th largest by market cap	World's 6th largest by market cap
Derivatives	#1 derivative exchange in terms of contract volume - 74% share in eq. F&O in June 2024 #1 in equity index options with 98% market share	
Equity	#3 equity exchange (no. of trades, 18% share in June 2024)	9% equity market share globally

Total turnover across segments at NSE (gross notional basis) - NSE and MCX have been key beneficiaries of the options boom in the Indian markets

$ Billion	Cash Equity		Equity Derivative		Currency Derivative		Interest Rate Derivative		Commodity Derivative			
Year/ Entity	NSE	BSE	NSE	BSE	NSE	BSE	NSE	BSE	NSE	BSE	MCX	NCDEX
FY 19	1,147	112	34,276	0	1,229	1,061	35	16	0	5	977	64
FY 20	1,200	88	45,937	35	1,301	891	48	13	1	6	1,159	59
FY 21	2,117	144	88,494	4,821	1,664	704	13	6	4	84	1,136	44
FY 22	2,184	176	223,518	8,712	2,792	851	3	6	3	101	1,158	60
FY 23	1,619	125	465,017	4,175	4,634	763	3	3	2	1	1,798	25
FY 24	2,410	195	958,333	96,260	4,214	281	4	3	24	0	3,316	25
FY 25-YTD	2,367	172	728,234	222,097	127	4	2	0	79	0	4,175	12

Sources: Securities and Exchange Board of India (SEBI). Financial year ends March 31. #Data for FY25 is as of Nov. 30, 2024.

- NSE dominates with domestic market share of 93% in cash equity and 90% in equity options.
- BSE's market share in derivatives increased to 17% for 12 months ending March 2024 from less than one percent – driven by relaunch of derivative products.
- Multi Commodity Exchange (MCX) retains contracts in various metals, but its open interest in silver and gold F&O has boomed since 2019.

S&P Global Ratings

Trend 3 | The Rise Of Indian Markets (III)

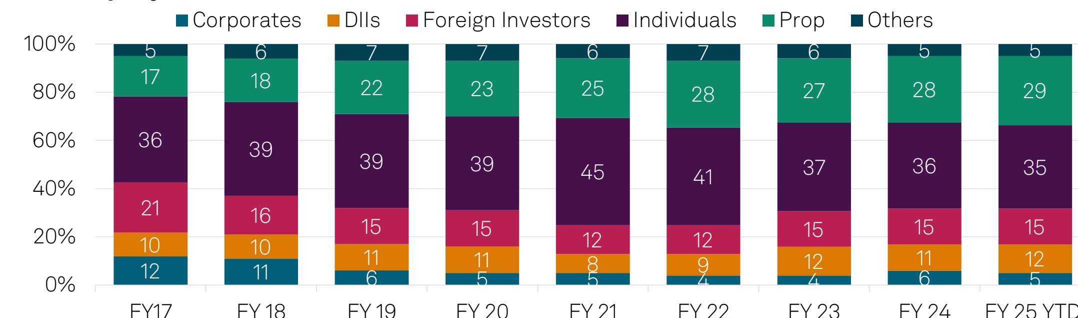
NSE continues to dominate equity index options (zero-day-to-expiry) segment

No. of contracts (mil.)	FY19	FY20	FY21	FY22	FY23	FY24	FY25TD
NSE							
Equity Futures	**325**	**351**	**380**	**359**	**389**	**411**	**434**
Stock Futures	256	257	253	266	284	325	343
Index Futures	70	94	128	94	105	86	91
Equity Options	**2,839**	**4,774**	**8,154**	**18,301**	**41,377**	**94,790**	**87,419**
Stock Options	187	198	330	678	835	1,138	1,109
Index Options	2,652	4,576	7,824	17,623	40,542	93,652	86,310
BSE							
Equity Futures	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.3**	**0.4**
Stock Futures	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Index Futures	0.0	0.2	0.1	0.0	0.0	0.3	0.4
Equity Options	**0.0**	**2.5**	**338**	**671**	**373**	**11,300**	**23,161**
Stock Options	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Index Options	0.03	2.5	338	671	373	11,300	23,161

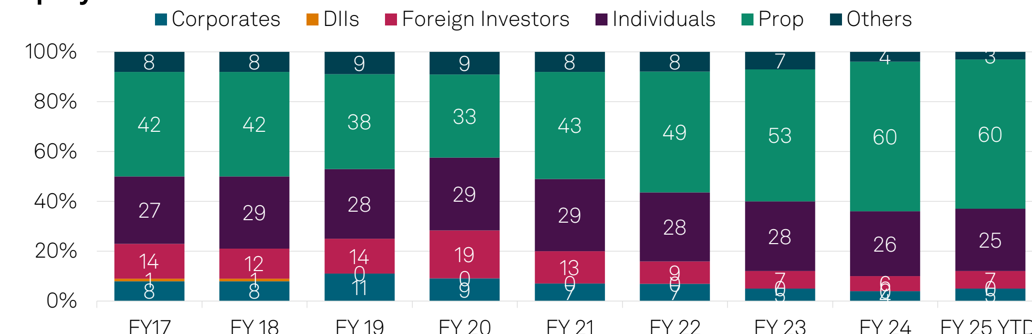
- BSE witnessed a huge surge in index options in FY2024.
- Surge in equity derivative turnover is led by proprietary traders.
- No. of retail investors participating in the futures & options (F&O) segment increased by 40% Y/Y to 9.6 million in FY2024. The F&O volume attributable to retail traders then rocketed from 2% in 2018 to 41% in FY2025. However, retailers are mostly small ticket transactions.

Share of client participation (notional turnover) (%)

Cash Equity



Equity Derivatives



Data for FY25 is as of Nov. 30, 2024. "DIIs" include Banks, Mutual Funds, Insurance Companies, NBFCs, VC Funds, AIFs. "Prop" are Proprietary Traders. "Individual investors" are individual domestic investors, NRIs, sole proprietorship firms and HUFs, "Others" include Partnership Firms/LLPs, Trust / Society, Depository Receipts and Statutory Bodies. Sources: SEBI, NSE EPR.

Trend 3 | The Rise Of Indian Markets (IV)

Regulators plan curbs on futures and options

What's driving the options boom in India?

- Higher market volatility
- Rise of low-cost online trading platforms and increasing smart phone penetration
- Greater financial awareness among Gen Z
- Introduction of weekly-expiring contracts in 2019
- Securities transaction tax (STT) / Commodities transaction tax (CTT) is levied only on the option premium (and not the notional value) unlike futures or cash equity
- Lower margin requirement for options compared to other instruments (Peak Margin Rule)

What curbs are regulators proposing?

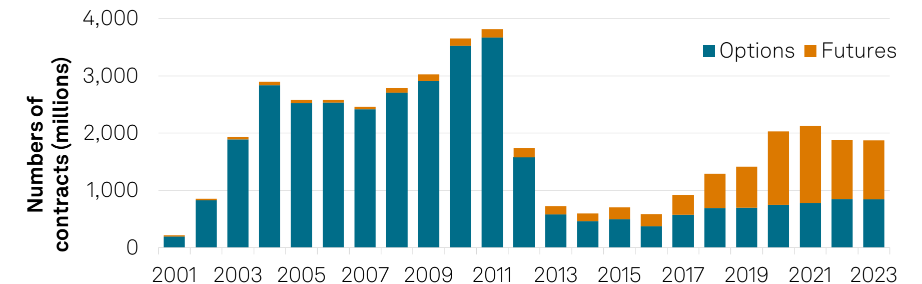
1. **Increase in minimum contract size for index derivatives:** From ₹5-10 lakh to ₹15 lakh-₹20 lakh and Rs 20-30 lakh after six months
2. **Collection of of option premiums from the option buyers:** To avoid any undue intraday leverage and discourage any position beyond collateral at the client level
3. **Restriction on weekly options expiries:** One expiry per stock exchange per week could mean some of the volume moving from NSE to BSE
4. **Rationalizing the index option strike price:** The strike price should be <4% from the spot price
5. **Increased margin requirements near expiry:** One day before expiry, additional 3% extreme loss margin (ELM) will be imposed. And on the expiry day another 5% ELM to be imposed
6. **Intra-day monitoring of position limits:** Traders must now adhere to intra-end of day limits.
7. **Change in tax policy:** STT hiked on both futures and options trades from Oct. 1, 2024

Why are regulators worried?

- 9 out of 10 individual traders in equity F&O incur losses, according to a SEBI study
- The average loss for these traders was approx. ₹1.1 lakh in FY22
- By contrast, trading firms made outsized gains--Jane Street reportedly made a profit of $1 billion in FY2023 from the Indian market

What happened when Korean regulators acted?

- Korea was the largest global derivatives market (by contract volume) until regulators acted in 2011 to quash speculative retail activity. Volumes in KOSPI 200 options tanked as investors switched to neighbouring markets in China and Japan.



Sources: Futures Industry Association, Financial Times, S&P Global Ratings.

Trend 4 | Digital Markets: Build It, But Who Will Come, And When? (I)

Crypto derivatives continue to lead the way

- **Can highly centralized traditional FMIs harness decentralized technology** and develop digital asset franchises to grow new revenues and avoid being disintermediated? But how fast will market actors adopt digital assets? The jury is out.
- Leading global FMIs have substantial investment capacity, regulated status, and long-established connections with the buy- and sell-side. And even when fintechs innovate first, FMIs are often able to reach to their M&A wallets to acquire the capability. Deutsche Boerse, DTCC, and many others have made bolt-on capability acquisitions in this space. So **they are well-positioned as second-movers, and even first-movers**. But where is the revenue opportunity?
- For crypto, **traditional FMIs still have limited interest in becoming spot exchanges** (where Binance, Coinbase and Kraken hold substantial incumbency). But **they are active in cash-settled crypto derivatives**--a regulated business that offers trade and post-trade revenues--and related ETFs. **CME has gained traction with its Bitcoin and Ether futures and options**, and joined Coinbase Financial Markets as having CFTC approval to operate as a FCM. Coinbase (cleared by Nodal) and CBOE (self-cleared) compete with CME in futures. They compete with Bitnomial, which won a CFTC DCO licence and is set to launch its CCP, allowing cross-margining of crypto exposures, and crypto as margin collateral. **The SEC started to approve spot crypto ETFs in January 2024 and they have since burgeoned** in the U.S. This offers revenue opportunities for exchanges (as well as leading fund managers), but also players like Coinbase who could earn sizable custody fees.
- In the U.K. GFO-X is similarly set to launch crypto futures (cleared by LCH) in Q1 2025. SIX is backing the nascent AsiaNext digital asset exchange in Singapore aimed at institutional clients.
- Beyond crypto, Switzerland moved early to create a legal framework to support DLT-enabled markets, and **SIX's digital exchange (SDX) remains ground-breaking as a fully-digital securities exchange**. However, it has yet to build volume. **Our base case** is that global digital bond issuances will continue to grow slowly, but that the prospect of a wholesale switchover from the traditional to digital environment for equity and debt securities remains remote.
- For historically illiquid assets (like real estate, fine art, private equity), Singapore's SDAX Exchange and AsiaNext have market operator licences for the listing and trading of tokenized digital assets. However, the volume of tokenized real-world assets remains small, so the size of **the revenue opportunity remains unclear**.
- However, **stablecoins have gained huge interest--**amounting to a modest but impressive $193 billion as of December 2024. Once aided by a swathe of proven use cases and widespread underpinning by regulation, **this market appears likely to swell significantly**. The rollout of wholesale CBDCs and other digital settlement solutions could influence the eventual market size, however.

CCP--central counterparty / clearinghouse. CFTC--Commodity Futures Trading Commission. DCO--derivatives clearing organization.

Trend 4 | Digital Markets: Build It, But Who Will Come, And When? (II)

DLT will serve a broader use than crypto

- **Distributed ledger technology (DLT) is far from new but** is still evolving. So how will the public sector, market, and FMIs harness this decentralized technology?
- While digital bond issuance remains modest for now, the two worlds are coexisting and becoming intertwined--for example, Deutsche Boerse's D7 platform uses security tokens to support post-trade efficiency for traditional bond issuances.
- More broadly, **DLT is a game-changing technology for post-trade efficiency--to shorten settlement cycles and reduce operational costs***. Incumbent FMIs are building and acquiring capability in DLT-enabled systems, working with the industry and public sector. **Already proven DLT solutions include:**
  - **Distributed Ledger Repo (DLR)**, which now has around $1.5 trillion of monthly volumes, and has started to allow the cross-chain settlement with JP Morgan's **Kinexys** repo platform**. Digital Financing** has recently proven the capability of programmable intraday repo on the Kinexys platform
  - **HQLAx,** the tokenized collateral optimization solution backed by Deutsche Boerse
  - **Fnality** (a wholesale digital cash payment ecosystem) for post-trade
  - **FundsDLT**, Deutsche Boerse group's decentralized DLT-based platform for end-to-end fund issuance and commercialization. More broadly, mutual funds and money market funds (MMFs) appear to be a highly promising candidates for tokenization. Notably, tokenized MMFs could be on-chain collateral for stablecoins.
- Numerous pilot regimes, sandboxes, and other initiatives remain in play globally--some highly active, some less so. In 2025/2026, we will be watching:
  - After its September 2024 launch, whether the BoE/FCA **U.K. FMI-centric digital securities sandbox** for tokenized securities and DLT applications generates more interest than the **EU DLT** pilot regime (which has been running since March 2023, but with minimal take-up in its first year)
  - The success of efforts to improve interoperability between digital platforms and payment systems, for example via the **BIS' Project Agorá** , the financial industry's **Canton Network** initiative, and **the Monetary Authority of Singapore's Global Layer 1 initiative**
  - **Multi-faceted initiatives under Project Guardian,** including the asset tokenization and DeFi sandbox under the MAS
  - The **evolution of policymaker support for tokenization**. So far, central banks and public authorities appear highly supportive of initiatives in this space, but will this support be sustained as proven use cases graduate from their sandboxes and into the real world?

BoE--Bank of England. FCA--UK Financial Conduct Authority. MAS--Monetary Authority of Singapore. wCBDC--wholesale central bank digital currency. *See for example "Advancing the Digital Asset Era, Together" and "Building the Digital Asset Securities Ecosystem" industry papers from DTCC, Clearstream & Euroclear, published Sept. 2023 and May 2024 respectively. Also" Beyond Faster Horses: Wholesale Financial Markets in the Digital Age", Bank of England, Nov. 2024.

Issuer Report Card

Issuer Report Card (1/6)

Company	LT Rating and outlook	Primary analyst	Comment
Asigna Compensacion y Liquidacion	BBB+/Stable	Gabriela Torillo	We expect Asigna's liquidity will remain strong, supported by its unrestricted cash position, cash flow generation, and the lack of debt. We consider the company will maintain a conservative financial risk profile with no debt on its balance sheet while its high amount of cash financial resources continue to enable it to pass our sovereign stress test for Mexico. We expect that Asigna will maintain its leading market position in the Mexican derivatives market as the sole domestic central counterparty (CCP). Nevertheless, the company will continue facing notable competition from international financial market infrastructure (FMI) companies. Finally, we anticipate Asigna will continue to have significant concentrations in terms of margins and clearing members compared to other rated CCPs.
ASX Ltd.	AA-/Stable	Nico DeLange	We expect ASX's profitability will remain strong in the coming two years, with margins remaining high relative to peers. This is despite earnings taking a hit as ASX continues to invest in its systems and regulatory requirements. We expect ASX's asset class diversification and high interest rates to help sustain group revenues. We expect ASX to maintain its dominant market position in key financial markets in Australia. The company's margins and cash flow continue to benefit from high barriers to entry (regulatory and structural). The company's replacement of its equities clearing and settlement platform, CHESS, will be critical in improving its operational resilience and services for stakeholders. In February 2024, the company issued A$275 million in corporate bonds. We view ASX's balance sheet as strong, and its leverage assessment remains unchanged. Unlike many peers in the FMI sector, it has not pursued an acquisitive growth strategy.
Cboe Global Markets	A-/Stable	Prateek Nanda	Cboe's operating performance in 2024 was likely solid. We expect revenue growth in 2024 to have surpassed the higher end of its guidance of 7%-9%, primarily reflecting a higher average daily volume for index options (up 8%), market share gains in Australia and Japan, higher interest income at Cboe Clear Europe, and an increase in proprietary market data fees. A notable exception was the Cboe Digital segment that has been loss making as Cboe recorded an $81 million noncash impairment of intangible assets related to the announced wind-down of its spot crypto market business. Overall, we expect the strong performance to continue in 2025 as market participants continue to rely on index options as a tool to hedge risks stemming from the uncertainty around the Fed's decision about the size of its rate cuts and the implications of President-elect Donald Trump's legislative agenda. We expect the ongoing focus on organic growth and disciplined expense management to support modest expansion in EBITDA margins (was approximately 68% in the 12 months ended Sept. 2024). We project leverage to remain below 1.0x over the next 12 months (was 0.8x as of Sept. 30, 2024), aided by strong free cash flow generation.

Cited leverage metrics and margins are all on an S&P Global Ratings-adjusted basis unless indicated.

Issuer Report Card (2/6)

Company	LT Rating and outlook	Primary analyst	Comment
Coinbase Global Inc.	BB-/Stable	Prateek Nanda	Coinbase's operating performance improved in 2024. This is largely owing to strong operational discipline--after lowering operating expenses 45% year over year in 2023 primarily by reducing employee headcount--expansion efforts, and favorable crypto market conditions. In the first three quarters of 2024, Coinbase posted a net income of more than $1 billion after adjusting for gains/losses on crypto assets, versus a net loss of about $180 million in the prior-year period. With crypto market capitalization surging following the U.S. election results and also in anticipation of increased regulatory clarity, Coinbase is positioned to post strong earnings in the fourth quarter and full-year 2024. We expect these tailwinds to persist at least into first-half 2025. Gross debt increased by $1.3 billion to $4.3 billion as of Sept. 30, 2024 compared with year-end 2023 due to debt issuance, while its liquid resources (including cash and unrestricted USDC) increased by $2.7 billion over the same period to $8.2 billion at the end of the third quarter. We estimate the company will continue to operate with zero net debt-to-EBITDA leverage.
CME Group Inc.	AA-/Stable	Prateek Nanda	CME had a solid 2024, after a strong 2023. Average daily volumes across most asset classes had solid growth in 2024, with double-digit increases for interest rates, energy, agricultural, and metal products. Increasing macroeconomic uncertainties stemming from the pace of rate cuts by the Fed and potential impact of President-elect Trump's policies is boosting investors' demand for risk management. This is benefitting CME's derivatives franchise, and we expect this trend to continue through the end of 2025. CME Group's EBITDA margin of over 71% is above most peers, while projected leverage, at below 1x over the next 12 months, is one of the lowest ratios among major FMI peers worldwide.
Depository Trust & Clearing Corp. (The)	AA-/Stable	Prateek Nanda	We expect DTCC to post modest revenue growth for 2025 aided by higher treasury clearing volumes at its FICC subsidiary because of an increase in treasury clearing volumes in anticipation of the central clearing mandate. We expect revenue for NSCC to remain relatively flat. DTCC has very low leverage, with debt-to-EBITDA expected to remain de minimis over the next two years.

Cited leverage metrics and margins are all on an S&P Global Ratings-adjusted basis unless indicated.

Issuer Report Card (3/6)

Company	LT Rating and outlook	Primary analyst	Comment
Deutsche Boerse AG	AA-/Stable	François Monéger	We see Deutsche Boerse (DB1) as well positioned to deliver its "Horizon 2026" plan target, including a 10% compound annual growth rate in net revenue over 2022-2026, or €6.4 billion in 2026. Over the first nine months of 2024, the group reported 18% growth in net revenue and 15% in EBITDA, compared to the same nine-month period a year earlier. We note that this included 11% inorganic revenue growth from the consolidation of SimCorp under the Investment Management Solutions business segment, which took place in the fourth quarter of 2023. While Clearstream's banking revenue has remained elevated in 2024, the group's performance over nine months also reflects sustained secular growth in business income in all segments, including a strong 12% increase in revenue from funds services. DB1's leverage peaked in 2023 following the acquisition of SimCorp for about €3.9 billion. We expect strong cash generation to translate into a steady reduction in net debt but do not rule out that DB1 will engage in further significant acquisitions or shareholder distributions. We expect that over the medium term, FFO to debt will typically be 40%-55% and adjusted debt to EBITDA 1.5x-2.25x, which supports our view of DB1's modest financial risk profile.
Euroclear Bank S.A./N.V.	AA/Stable	François Monéger	We expect Euroclear to report a record-high performance for 2024, with underlying revenue growth close to 5% and with an increase in operating expenses contained at a similar level. Over the first nine months of 2024, the group's net income rose by 8% year-on-year, excluding profits from assets related to international sanctions on Russia. (We look to Euroclear's performance adjusted for profits on assets, because we consider that these profits reflect events beyond Euroclear's normal business operations; therefore, the implementation of the European Commission's regulation on the windfall contribution to the European fund for Ukraine has no effect on our view of the group's financial performance, liquidity, or capital.) Since 2022, Euroclear's underlying profitability has been helped by elevated interest revenue, with the interest and banking income reaching €882 million over the first nine months of 2024 (€65 million over the same period in 2021). We see Euroclear's financial risk profile as minimal and anticipate adjusted net debt to EBITDA of 0.6x-0.7x in 2024. We expect that this metric will increase gradually by 2026, but will remain below 1.0x, balancing a 4%-5% annual growth in business income and a material decline in interest revenue. For the same reasons, we expect that the ratio of funds from operations to debt will peak in 2024, before decreasing progressively to 100% by 2026.
Euronext N.V.	BBB+/Positive	François Monéger	Euronext's (ENXT) EBITDA margin is set to improve to 60%-65%, as it fully achieves the benefit of the integration of Borsa Italiana (BI). We believe the next phase of the group's strategy will be key, notably in terms of the balance between business growth and leverage. In that respect, the strategic plan "Innovate for growth 2027" identifies multiple business initiatives deemed to sustain revenue growth. For full-year 2024, we anticipate high single-digit revenue growth, in line with the performance delivered over the first nine months of the year. Indeed, through September, ENXT reported year-on-year increases of 10% in revenue and over 15% in underlying EBITDA and net profit. This was primarily led by post-trade and trading, along with good cost control. The group has materially reduced its leverage since the acquisition of BI and we view the financial risk profile as modest. For 2024, we anticipate adjusted debt to EBITDA of 1.8x–2.0x and FFO to debt just above 40%, and we expect further deleveraging in 2025-2026, absent any unpredictable large M&A.

Cited leverage metrics and margins are all on an S&P Global Ratings-adjusted basis unless indicated.

Issuer Report Card (4/6)

Company	LT Rating and outlook	Primary analyst	Comment
Intercontinental Exchange Inc.	A-/Stable	Diogenes Mejia	We expect ICE to post good performance for 2025, thanks to its diversity across asset classes. This reflects strength in natural gas trading, interest rate futures, equity index futures, U.S. cash equity and equity options, CDS clearing, and fixed-income execution activity. In its mortgage technology segment, we expect growth in recurring revenue likely remained stable, though transactional fees will have further declined as mortgage origination volumes remain subdued until rates start to decline more meaningfully, which we don't expect in 2025. Nevertheless, ICE's mortgage technology revenue continues to outperform industry origination activity, reflecting the uptake in new solutions, strong retention, and pricing. We estimate the leverage at about 3.4x-3.6x as of year-end 2024. However, we expect leverage to improve to 2.9x-3.1x by the end of 2025, including the recently announced acquisition of the American Financial Exchange, owing to strong cash flow generation, share buyback suspensions, and synergies.
LCH Ltd. and Banque Centrale de Compensation S.A. (LCH SA)	AA-/Stable	Dmitry Nazarov	In 2024, LCH faced significant revenue growth headwinds due to the termination of listed derivatives clearing for Euronext and lower market volatility. Underlying growth remained strong, though, especially in ForexClear, CDSClear, and post-trade services for uncleared OTC derivatives, while SwapClear remained LCH's main revenue contributor. We expect revenue growth will accelerate in 2025-2026 to the mid-to-high single digits supported by growing clearing volumes and higher demand for LCH's post-trade solutions from uncleared derivatives markets. We think that ForexClear and CDSClear, LCH's smaller clearing franchises, will remain an important mid-term source of growth. Post-trade capital management solutions will remain another growth driver. We expect LCH's profitability will remain solid with EBITDA margin recovering to the range of 55%-60% in 2025. The ratings on LCH will continue to benefit from a market-leading risk management framework and diverse membership base. LCH has no debt and we do not expect that position to change.
London Stock Exchange Group PLC	A/Stable	Dmitry Nazarov	We expect LSEG's reported revenue growth to accelerate to 6.5%-7.5% in 2025 from 5.0%-5.5% in 2024, driven by the roll-out of new products from its Microsoft partnership, rising quality and pricing of D&A solutions, and lower drag from the one-off factors that LSEG faced in 2024. In 2025, LSEG will continue to actively invest in its global data and FMI business to enhance the customer experience, to deliver synergies from greater connectivity of its products and platforms, and drive growth. We expect Tradeweb will remain the key driver of growth in 2025-2026 for the Capital Markets division, supported by its growing share on the U.S. fixed income market. Revenue growth in Post-Trade will accelerate, driven by growing fees from OTC derivatives and post-trade services for uncleared products and a lower impact from terminated business with Euronext. With an expected adjusted EBITDA margin of 43%-45% over 2025-2026, LSEG's profitability will remain solid. Nevertheless, strong cash flow generation and a high share of predictable recurring revenue will allow LSEG to keep its high appetite for acquisitions. Furthermore, we expect that LSEG might continue to deploy cash flow on directed share buybacks and material CAPEX. If LSEG does not make large debt-funded acquisitions, we expect it will continue to operate within its target leverage range of 1.5x-2.5x, with the debt-to-EBITDA ratio reducing closer to 2.0x over 2025-2026.

Cited leverage metrics and margins are all on an S&P Global Ratings-adjusted basis unless indicated.

Issuer Report Card (5/6)

Company	LT Rating and outlook	Primary analyst	Comment
Mastercard Inc.	A+/Stable	Brandon Solis	Mastercard performed well in 2024, supported by higher payment volumes, robust cross-border spending, and value-added services. While we expect payments volume and cross-border travel to continue to grow in 2025, we see downside risks from moderating global growth. An economic slowdown beyond what we expect would likely hurt Mastercard's top line. That said, the company's significant market share, large scale, and geographic diversity provide some level of offset. We also believe that Mastercard has the flexibility to pull back on certain expenses, such as marketing and advertising, to preserve profitability. In our base case, we expect Mastercard to maintain debt-to-EBITDA leverage and EBITDA margin of about 0.6x-0.9x and 60%, respectively. We remain mindful of the meaningful regulatory and legal risks the company faces. While Mastercard has managed those risks well, lawsuits and regulatory changes have repeatedly challenged card networks, their rules, and the fees associated with payment processing.
Nasdaq Inc.	BBB/Positive	Michal Selbka	Nasdaq had a solid 2024, benefitting from its strong position in the trading and listing of cash equity in the U.S. and the Nordics, trading of equity options in the U.S. and successfully growing its U.S. index options product. In addition, its business remained supported by a leading franchise in marketplace technology and a very strong position in Capital Access Platforms (e.g., fast-growing index products). Furthermore, Nasdaq has successfully expanded its anti-financial-crime and regulatory technology services, following its November 2023 acquisition of Adenza, a software application provider specializing in capital markets and regulatory reporting. Over time, we expect Nasdaq's EBITDA margin to remain in the mid- to high-50s, in line with FMI peers. Importantly, debt to EBITDA has been reducing quicker than we initially assumed--to below 4.0x already at the end of December 2024. We estimate that Nasdaq's debt-to-EBITDA will be around 3.5x and funds from operations (FFO) to debt above 20% by the end of 2025, with further improvement in 2026, absent any large acquisition. We expect Nasdaq's liquidity to remain robust. Apart from the $500 million senior unsecured notes maturing in 2025 and $500 million notes in 2026, Nasdaq will have no other debt maturities before 2028.
Options Clearing Corp.	AA/Negative	Prateek Nanda	We expect OCC's EBITDA margin to remain subdued in 2025, given increasing operating expenses. However, we do not view profitability as a major rating factor because OCC operates as an industry utility and focuses more on cost recovery than profit maximization. The company also has considerable flexibility to adjust clearing fees based on market conditions, such as during a period of muted volumes amid lower volatility. Intraday clearing risks are rising with the increase in trading volumes of zero-day-to-expiration (0DTE) equity options in the U.S. and the limited capacity of OCC to currently identify and measure these risks in real time. 0DTE options are traded and expire within the same day. The surge in 0DTE options trading in the U.S. has increased clearing risks for OCC. OCC is strengthening its capacity to allow it to measure and mitigate intraday risks, but the implementation of the final phase may take longer than expected.

Cited leverage metrics and margins are all on an S&P Global Ratings-adjusted basis unless indicated.

Issuer Report Card (6/6)

Company	LT Rating and outlook	Primary analyst	Comment
PayPal Holdings Inc.	A-/Stable	Michal Selbka	PayPal has almost completely reshuffled its top management towards the end of 2023 and in 2024. It's too early to say if the company's new leadership, including their updated strategy, will prove successful, in our view. However, we believe PayPal continues to benefit from strong long-term growth prospects in online and digital payments even if it may need to operate with lower profitability compared with peers to defend its market share. PayPal's revenue growth slowed and we expect it to remain between 5% and 9% in 2025. PayPal's profitability, as measured by its EBITDA margin, improved slightly in 2024 if compared with 2023 and we expect it to remain between 26% and 29% in 2025. While that's still solid, it is lower than the margins most rated financial market infrastructure (FMI) companies generate. We expect PayPal's leverage to remain below 1.0x in the next two years thanks to its very strong cash position. We think PayPal will continue to take on manageable credit risk by providing business loans and other consumer loans, as well as protections to merchants and consumers on payments. In our view, PayPal remains one of the key innovators in the payments field; this can be seen in its launch of a stablecoin called PayPal USD (also known as PYUSD), which can be redeemed 1 to 1 for U.S. dollars. PayPal believes PYUSD could facilitate future real-time payments for its customers, globally and at almost no cost (for example, with PayPal's Xoom, an international money remittance service). In addition, the underlying collateral supporting PYUSD can be a source of additional interest income.
SIX Group AG	A/Negative	William Edwards	SIX remains relatively lightly levered in a sector context. The group's leverage picked up after it acquired BME in 2020 but, by end-2023, its debt-to-EBITDA leverage reduced to 1.5x and funds from operations (FFO) to debt improved to 55%. Solid performance in 2024 means that SIX has continued to accumulate cash, such that its leverage was, in our view, likely to reduce to about 1.2x and 66% by year-end. We view SIX's announced acquisition of Aquis Exchange as potentially highly complementary for SIX's exchange business--in terms of footprint expansion, technological capability and efficiency, and offering additional licenses. If completed, it would increase group debt/EBITDA leverage by about 0.5x, taking SIX's leverage close to our 1.75x and 50% thresholds. We anticipate that SIX will then return to its deleveraging path after deal completion, reducing debt-to-EBITDA by about 0.3x per year.
Visa Inc.	AA-/Stable	Michal Selbka	We expect Visa's revenue and earnings to continue to grow, supported by strong growth in value-added services. Its net revenue increased about 10% in the fiscal year 2024 ended Sept. 30, 2024. Our base-case scenario assumes net revenue growth to slightly moderate to 7%-10% in 2025, as a likely global erosion of consumers' financial cushions and spending power (already visible for the lower-income segment) partly offsets the benefits of the shift to electronic payments and growth in value-added services. We expect Visa to maintain debt-to-EBITDA leverage of about 0.3x-0.5x and an EBITDA margin of above 70% in 2025. In addition, Visa has been facing elevated regulatory and legal risks but has managed those risks well so far. New litigation provisions accounted for over 5% of total operating expenses in fiscal 2024 (and 8% in fiscal 2023), which we consider substantial but manageable. Lawsuits and regulatory changes have repeatedly challenged card networks, their rules, and the fees associated with payment processing. We expect litigation costs to remain elevated in the coming years because of the DOJ lawsuit (September 2024), the interchange matter, and other cases.

Cited leverage metrics and margins are all on an S&P Global Ratings-adjusted basis unless indicated.

CCP Annex

Safe As Clearinghouses?

- Clearinghouses act as central counterparties (CCPs). Our ratings acknowledge their robust business models and lack of leverage, but their exposure to, and management of, clearing risks is of crucial importance, and a differentiating factor.
- Post-GFC reforms that encouraged central clearing and exposure collateralization have reduced systemic credit risk and heightened liquidity risk for market participants, but not unmanageably so.
- They have also made CCPs even more critical nodes in the financial ecosystem.
- CCPs (and their major bank clearing members) are now arguably more resilient to stress than ever, but CCPs vary significantly in their structural and behavioral setups.
- Regulators are focused on enhancing CCPs' resilience to member default and non-default losses and developing resolution frameworks that can respond flexibly to unprecedented stress events. Of these, specific risk management techniques and enhancements protect CCPs but push the risk back on their members (margin haircuts, investment loss absorption, contingent liquidity mechanisms, etc) or the market (client portfolio liquidation). Risk is redistributed but not mitigated.
- The lack of central bank placement rights and discount window access remains a key point of addressable weakness for many CCPs globally.

CCPs Are Stronger Now Than At Any Time Previously

CCPs' record even before the post-GFC reforms was already very strong. CCPs exhaust their resources very infrequently, and managed events like Lehman.

Clearing mandates have provided a strong tailwind for the industry. This has boosted volumes (good for business risk) and created deeper liquidity pools of contracts that can be safely risk-managed (i.e., mandates have not pushed illiquid / niche contracts / asset classes into CCPs).

CCPs face reduced inherent risk from their members. The major banks remain the most important, risky (in terms of open interest and stress loss) clearing members. Banks are stronger thanks to years of capital building, and (for many) resolution provides a backstop that does not fuel the sovereign doom loop.

PFMIs and other CPMI-IOSCO work have enhanced global minimum standards, with EMIR regime implementation setting some of the highest standards globally, e.g., insistence on cover 2 for all, ban on use of letters of credit as margin collateral, anti-procyclicality rules etc

Supervisory oversight continues to deepen. Notably, CCP stress testing enhances scrutiny, and explores systemic risks--giving good market transparency.

Risk management tools / models are more sophisticated. In developed markets, CCPs continue to move away from SPAN-style risk-array margining to multi-factor VaR or, better, expected shortfall risk modelling. CCPs also continue to reduce the procyclicality of margin requirements, aiding financial stability.

Greater portfolio margining, aided by changed models and related processes, has generally recognized true risk offsets, enhancing netting / risk-reduction for trading firms, is often better at picking up concentrated positions, and not been used to systematically reduce total margins.

Market events and stresses have provided further insights. **The** industry has learned from events like the 2018 Aas default at Nasdaq Nordic and overlaid extra controls, e.g., around concentrated positions and nonbank CMs.

Focus on enhancing CCP resilience has led to extra layers of loss absorption for clearing risks (e.g. VMGH) and investment risks (e.g. excess of loss), and improved operational resilience (capacity, reliability, continuity).

CCP resolution offers an uncertain path, but these toolkits provide legal capacity and maintain flexibility to diverge from the rulebook in extremis.

CM--Clearing member. CPMI-IOSCO--Global standard setters, the committee on payments and markets infrastructures and international organization of securities commissions. GFC--Global financial crisis. SPAN--CME Group's standardized portfolio analysis of risk methodology. VaR-value-at-risk methodology. VMGH--Variation margin gains haircutting

But CCPs And Their Ecosystems Are Not Riskless (I)

General risks

Some CCPs have meaningful business risk. CCPs tend to be legal monopolies or natural ones (due to the powerful benefits of liquidity pooling / netting). But some CCPs operate in a competitive environment. This risk is heightened for undiversified CCPs that serve low-margin / highly commoditized asset classes (e.g., cash equity in Europe). In practice, the risk may be somewhat mitigated by CCPs being part of integrated siloes or having stronger parents. However, commercial weakness can incentivize a CCP to compete on risk/margin or undermine its investment capacity and longevity.

Even when CCPs appear structurally similar (e.g., on the basis of the items above), CCPs are not homogenous. There are many areas where a CCP's individual risk management standards and practices could render it more or less resilient than peers. Examples include default management routines, margin routines, member monitoring and intervention, clearing service structure, stress testing, and operational resilience.

Risks linked to membership and markets

Some, typically smaller, CCPs have a concentrated and/or low-quality base of clearing members. This is prominent in Europe and the U.S., though can be true for some smaller European CCPs, e.g., in small/novel clearing services or even cash equity. High concentration can exacerbate business risk and challenge default management effectiveness. Related, the increasing concentration of FCMs in the U.S. is notable and could eventually challenge existing assumptions on default management / porting.*

Some CCPs accept nonbank ICMs who may be poorly equipped to self-clear. Some of these players can have highly directional on-exchange positions and can lack the liquidity to meet extraordinary margin calls[§†]. It's arguably better that they go through GCMs or use "sponsored access" arrangements.

The default of the largest GSIBs would affect many CCPs. A few of the largest GSIBs are the most important GCMs (by open interest / IM) for many CCPs across developed markets globally. Even with greater collateralization of exposures outside of central clearing, they are also key counterparts to many FI and non-FI players. Outside a managed resolution scenario, such as for Lehman, a default of one or two of these GSIBs could have an unpredictable systemic network effect, even if each CCP has, in theory, sufficient modelled resources to survive this. ESMA stress testing does explore this risk, however.

ESMA--European Securities & Markets Authority. FCM--Futures commission merchant. GCM--General clearing member. GSIB--Globally systemically important bank. ICM--Individual clearing member. IM--Initial margin. *For example, for CME Clearing, Top 5 / Top 10 GCMs now comprise 60% / 85% of total IM, which is high for such a large CCP. §Exemplified by Nasdaq Nordic event of 2018. †Exemplified by LME nickel event of 2022.

But CCPs And Their Ecosystems Are Not Riskless (II)

Risks linked to membership and markets (cont'd)

Some CCPs accept higher inherent risk through the contracts / asset classes they choose to clear. Clearing effectiveness is greatest in transparent, deep markets that lend themselves to reliable mathematical modelling and default management processes. For example, forex and rates are deep, broad traded markets with cash settlement. But events in U.S. bond/repo markets in 2020 and U.K. LDI / "mini budget" in 2021 highlight the importance of event risk and market structure. Furthermore, some commodities are physically settled with a lot of trading uncleared, leaving a risk of erratic price formation, non-transparent large positions, and short squeezes*. Finally, concentration of client clearing among a small number of GCMs may be a problem in a CM default scenario – either because it could impede porting or, if these positions were closed out, because this would affect a substantial portion of open interest.

Risks linked to clearing risk management standards and concepts

Some very large CCPs continue to be held only to a cover 1 standard. This may be PFMI-compliant for non-international CCPs, but leads to a materially reduced level of protection vs cover 2. Key examples include CCPs in Asia and, to a lesser extent, the U.S. (Some U.S. CCPs anyway deliver a cover 2 level in practice, but some (such as FICC) cannot deliver cover 2 for both credit and liquidity risk.

Some key assumptions might be challenged in an extreme but plausible stress. For example, CME Clearing has historically been able to achieve its assumed 1-day close-out with end-client porting, but would this reliably hold even when two major GCMs failed amid extreme but plausible market moves? By contrast in Europe, CCPs routinely assume that omnibus end-client portfolios would be liquidated (not transferred) if their GCM fails, but this could exacerbate systemic stress. Is this still tenable?

Some innovations have not been deeply tested in practice. In Europe, we have co-CCP arrangements for cash equity (LCH / CboeClear / SIX) and bond clearing (LCH / Euronext Clearing). In the U.S., cross-CCP arrangements (OCC / CME, CME / FICC) seek to better recognize risk offsets (and reduce the margin burden on clients). These arrangements are subject to close regulatory review before approval, ongoing default management dry-run exercises, and some have been tested in practice in a limited way (e.g., Ronin Capital hedge fund default of 2020). But they arguably complexify risk management as opposed to when there is no CCP connectivity.

CB—central bank. DF-default fund. LDI—liability driven investment. PFMI—CPMI/IOSCO principles for financial market infrastructures, 2012. *Exemplified by the Sumitomo copper affair of 1996 and the LME nickel event of 2022.

But CCPs And Their Ecosystems Are Not Riskless (III)

Risks linked to clearing risk management standards and concepts (cont'd)

So far, no surveilled CCP embarked on allowing cross-asset class margin offsets, but the industry's efforts to ease margin burden mean it could happen. Such risk offsets could no doubt be justified mathematically. But they would increase the inherent risk arising from modelling risk (de)correlation. Furthermore, these cross-asset class offsets are to some extent already a feature for CCPs that operate single "general" default funds. These single DFs are rarely sized to address "worst in all cases" risk events, so they attract smaller paid-in resources than if the asset classes were covered by segregated clearing services (each with its own DF). Single DFs also offer a point of direct systemic risk transmission from one asset class to another.

Risks linked to collateral and investments

Some CCPs accept forms of margin collateral that may expose them to heightened credit risk and unnecessary liquidity risk. Eg1: promissory (non paid-up) collateral such as letters of credit remain a feature in the U.S. for energy markets. Eg2: some CCPs accept equities (not only against short positions), which (even with modelled haircuts) might be more vulnerable to unexpectedly sharp price moves and are not easily monetized (e.g., at CB discount window, or else there would be a settlement delay).

Many CCPs do not have central bank (CB) access for placements or for borrowing (discount window). CB access is the norm in some European countries, but often not elsewhere. While CCPs are not credit institutions and are often not directly overseen by the CB, the lack of reliable CB access--in the U.S. for example--is unusual given that CCPs are some of the most systemically important financial institutions, and many are relevant also to money policy transmission.

Some CCPs rely on commercial bank money settlement (CoBM). Central bank money settlement (CeBM) is arguably safer than CoBM since it removes reliance on nodes that may fail, but CoBM is standard for multi-currency CCPs and CeBM is not available in some markets.

CCP resilience may be weaker where there is no deep repo market. For example, in Asia. This means that margin collateral tends to remain heavily weighted to cash (not a risk in and of itself) but the CCP may be forced to place the cash unsecured with commercial banks. Even in jurisdictions with large repo markets, it may be hazardous to rely on the monetization of non-cash collateral in a stress (as repo markets could dry up in a stress scenario).

But CCPs And Their Ecosystems Are Not Riskless (IV)

Risks linked to collateral and investments (cont'd)

Some CCPs' contingent liquidity call on their GCMs could be a procyclical amplifier of stress. CCPs face unequal challenges to meet stressed liquidity needs with liquidity resources. This is heightened for cash products with short settlement periods, e.g., repo and cash equity. As a result, and particularly for CCPs with no CB access, they may rely on committed liquidity calls on their GCMs (either as a standard committed facility, or FICC CCLF, or ASXClear OTA forced repos).

Other risks

CCPs' use of novel technologies (e.g., cloud or other key third party services) may improve resilience but could add new risks.

CCPs remain somewhat vulnerable to tail events linked to non-clearing losses. CCP waterfall resources to absorb clearing risk losses have never been deeper, and loss allocation for investment risks (that some CCPs introduced) provides a key enhancement. Many CCPs (but not all) hold cash capital modelled to absorb other residual losses and to cover a service closure / run-down period. But this equity buffer is typically thin in absolute terms, while remote, these losses could be material*, and most CCPs have no further committed / contingent capital.

Application of resolution tools to CCPs remains untested. Flexibility in these frameworks is a strength and raison d'etre, but could lead to unpredictable or surprising outcomes.

*Exemplified by litigation arising from the LME nickel event of 2022. OTA—offsetting transaction arrangements. CCLF—comminuted contingent liquidity facility.

Data Annex

Key Credit Metrics For Selected Global FMI Companies

		--EBITDA margin (%)--			--Funds from operations to adjusted debt (%)--			--Debt to adjusted EBITDA (x)--			--EBITDA interest coverage (adjusted) (x)--		
Company	FRP assessment	2023a	2024e	2025f	2023a	2024e	2025f	2023a	2024e	2025f	2023a	2024e	2025f
Asigna Compensacion y Liquidacion	Minimal	42	42	42	N.M.	N.M.	N.M.	0.0	0.0	0.0	N.M.	N.M.	N.M.
ASX Ltd.*	Minimal	64	65-66	66-67	>200	>100	>100	0.5	0.4	0.4	N.M.	45-47	49-51
Cboe Global Markets Inc	Minimal	67	67.5-68.5	67.5-68.5	69	80-85	80-85	1.1	<1.0	<1.0	23	30-35	30-35
CME Group Inc.	Minimal	70	72-74	72-74	93	>100	>100	0.7	0.6-0.7	0.6-0.7	22	27-32	27-32
Coinbase Global Inc.	Intermediate	30	46-48	44-46	N.M.	N.M.	N.M.	0.0	0.0	0.0	9	30-35	23-28
Depository Trust & Clearing Corp. (The)	Minimal	24	20-25	20-25	N.M.	N.M.	N.M.	0.0	0.0	0.0	33	35-40	35-40
Deutsche Boerse AG	Modest	48	47-49	47-49	36	42-43	49-51	2.2	1.7-1.8	1.4-1.6	34	20-25	20-25
Euroclear Group†	Minimal	57	55-57	51-53	101	>100	>100	0.7	0.6-0.7	0.7-0.8	53	51-53	43-45
Euronext N.V.	Modest	57	59-61	62-64	33	40-42	52-54	2.4	1.8-1.9	1.4-1.5	23	28-31	31-34
Intercontinental Exchange, Inc.	Intermediate	66	62-65	64-66	16	19-21	23-25	4.3	3.4-3.6	2.9-3.1	6	6.0-6.5	6.5-7.0
LCH Group	Minimal	59	55-60	55-60	N.M.	N.M.	N.M.	0.0	0.0	0.0	27.3	>50	>50
London Stock Exchange Group PLC	Modest	40	41-42	43-44	39	37-39	40-42	2.2	2.1-2.3	1.9-2.1	10	7.5-8.5	8-9
Mastercard Inc.	Minimal	64	64-65	64-65	125	>100	>100	0.6	0.6-0.8	0.5-0.7	27	31-33	33-35
Nasdaq, Inc.	Significant	54	54-56	55-57	16	17-20	20-23	5.0	3.8-4.0	3.4-3.6	7	5-7	6-8
Options Clearing Corp.	Minimal	13	<10	<15	N.M.	N.M.	N.M.	0.0	0.0	0.0	21	11-13	21-23
PayPal Holdings Inc.	Minimal	26	25-27	26-29	194	>100	>100	0.3	0.4-0.7	<1.0	21	20-23	19-23
SIX Group AG	Minimal	27	26-28	27-29	55	>60	>60	1.5	1.1-1.3	<1.0	73	60-70	20-30
Visa Inc.§	Minimal	73	71-73	71-73	320	>200	>200	0.3	0.3-0.5	0.3-0.5	36	35-45	35-45

Data as of Jan. 16, 2025. *Financial year ends in June. §Financial year ends in September. †Figures are on an underlying basis, that is, excluding extraordinary income on assets under Russian sanctions. a--Actual. e--Expected. f--Forecasted. FRP--Financial risk profile. N.M.--Not meaningful. Source: S&P Global Ratings.

FMI Sector Rating Factor Assessments

Company	Business risk profile	Financial risk profile	C&S risk	Anchor	Capital structure	Financial policy	Liquidity	Management and governance	Peer adjustment	GCP*	LT ICR	Outlook
Asigna Compensacion y Liquidacion	Satisfactory	Minimal	-3	bbb	Neutral	Neutral	Strong	Neutral	Favorable	bbb+	BBB+	Stable
ASX Ltd.	Strong	Minimal	0	aa-	Neutral	Neutral	Exceptional	Moderately Neg.	Favorable	aa-	AA-	Stable
Cboe Global Markets, Inc	Satisfactory	Minimal	-1	a-	Neutral	Neutral	Adequate	Positive	Favorable	a	A-	Stable
Coinbase Global Inc	Fair	Intermediate	-1	bb	Neutral	Neutral	Adequate	Moderately Neg.	Negative	bb-	BB-	Stable
Clearstream Banking S.A. / Clearstream Banking AG†	Strong	Minimal	0	aa	Positive§	Neutral	Exceptional	Positive	Neutral	aa	AA	Stable
CME Group Inc.	Strong	Minimal	0	aa	Neutral	Neutral	Strong	Positive	Neutral	aa	AA-	Stable
Depository Trust & Clearing Corp. (The)	Excellent	Minimal	-1	aa	Neutral	Neutral	Exceptional	Positive	Neutral	aa	AA-	Stable
Depository Trust Co. (The)	Excellent	Minimal	0	aa+	Neutral	Neutral	Exceptional	Positive	Neutral	aa+	AA+	Stable
Deutsche Boerse AG	Strong	Modest	0	a+	Neutral	Neutral	Strong	Positive	Favorable	aa-	AA-	Stable
Euroclear Bank S.A./N.V.†	Strong	Minimal	0	aa	Positive§	Neutral	Exceptional	Positive	Neutral	aa	AA	Stable
Euronext N.V.	Strong	Modest	0	a	Neutral	Negative	Strong	Positive	Unfavorable	bbb+	BBB+	Positive
Fixed Income Clearing Corp.	Excellent	Minimal	-1	aa	Neutral	Neutral	Exceptional	Positive	Neutral	aa	AA	Stable
Intercontinental Exchange Inc.	Strong	Intermediate	0	a-	Neutral	Neutral	Adequate	Neutral	Neutral	a-	A-	Stable
LCH Ltd. / And Banque Centrale de Compensation S.A. (LCH SA)†	Strong	Minimal	1	aa	Neutral	Neutral	Strong	Positive	Unfavorable	aa-	AA-	Stable
London Stock Exchange Group PLC	Strong	Modest	0	a+	Neutral	Negative	Strong	Positive	Neutral	a	A	Stable
MasterCard Inc.	Strong	Minimal	-1	a+	Neutral	Neutral	Strong	Neutral	Neutral	a+	A+	Stable
Nasdaq Inc.	Strong	Significant	0	bbb	Neutral	Neutral	Strong	Neutral	Neutral	bbb	BBB	Positive
National Securities Clearing Corp.	Excellent	Minimal	0	aa+	Neutral	Neutral	Exceptional	Positive	Neutral	aa+	AA+	Stable
Options Clearing Corp.	Excellent	Minimal	0	aa+	Neutral	Neutral	Exceptional	Moderately Neg.	Neutral	aa	AA	Negative
PayPal Holdings, Inc.	Satisfactory	Minimal	-1	a-	Neutral	Neutral	Strong	Neutral	Neutral	a-	A-	Stable
SIX Group AG	Satisfactory	Minimal	0	a	Neutral	Neutral	Strong	Neutral	Favorable	a+	A	Negative
Visa Inc.	Strong	Minimal	-1	aa-	Neutral	Neutral	Strong	Neutral	Neutral	aa-	AA-	Stable

Data as of Jan. 16, 2025. In addition to the companies above, we rate certain subsidiaries of ASX Ltd. and SIX Group AG based on our view of their core or highly strategic group status to their parent. *Except for DTC, NSCC, FICC, and Asigna, for which we show the stand-alone credit profile (SACP). †GCP construction reflects our assessment of Clearstream Group, Euroclear Group, and LCH Group, respectively. §No notching benefit, as per Section G of "Corporate Methodology," Jan. 7, 2024. C&S--Clearing and settlement. GCP--Group credit profile. LT ICR--Long-term issuer credit rating. Source: S&P Global Ratings.

FMI Sector Rating Actions 2024

Modest positive revisions, for idiosyncratic reasons

Company	From	To	Date	Rationale
Clearstream Fund Centre SA	--	AA-/Stable/A-1+	04/04/2024	First-time rating on Deutsche Boerse's fund services bank
Euronext NV	BBB+/Stable/A-2	BBB+/**Positive**/A-2	04/29/2024	Outlook revised to positive on integration of Borsa Italiana and deleveraging
Euroclear Holding SA/NV	--	AA-/Stable/A-1+	05/17/2024	First-time rating on Euroclear's ultimate holding company
Coinbase Global Inc.	BB-/Negative/--	BB-/**Stable**/--	05/31/2024	Outlook revised to stable on improving business performance
Euroclear Investments SA	AA-/Stable/A-1+	--	10/01/2024	Withdrawal of rating after corporate reorganization
SIX Group AG	A/Negative/A-1	A/Negative/A-1	11/13/2024	Ratings affirmed on announced Aquis acquisition
Nasdaq Inc.	BBB/Stable/A-2	BBB/**Positive**/A-2	11/21/2024	Outlook revised to positive on integration of Adenza and further deleveraging

Red denotes a negative action. **Green** denotes a positive action. Source: S&P Global Ratings.

Debt Issuance By Rated FMIs, 2024

A quiet year

Rating date	Issuer	Issue credit rating	Instrument	Purpose
02/18/2024	ASX Ltd	AA-	AUD275 mil floating rate senior unsecured notes due 2027	Capital investment / general corporate purposes
03/26/2024	London Stock Exchange Group plc*	A	$500 mil 4.875% callable senior unsecured notes due 2027	Refinancing of bond maturity
05/06/2024	Intercontinental Exchange Inc	A-	$1 bil 3.625% callable senior unsecured notes due 2028	Prefunding of 2025 bond maturity and paydown of term loan
05/07/2024	Mastercard Inc.	A+	$1 bil 4.875% callable senior unsecured notes due 2034	General corporate purposes
05/20/2024	PayPal Holdings Inc.	A-	$850 mil 5.15% callable senior unsecured notes due 2034	Refinancing of bond maturity
09/03/2024	Mastercard Inc.	A+	$750 mil 4.1% senior unsecured notes due 2028 $1.5 bil 4.55% callable senior unsecured notes due 2030 $1.1 bil 4.875% callable senior unsecured notes due 2032	General corporate purposes
09/17/2024	London Stock Exchange Group plc§	A	€600 mil 2.75% callable senior unsecured notes due 2027	Prefinancing of 2025 bond maturity

Source: S&P Global Ratings. *Acting through Lseg US Fin Corp. §Acting through Lseg Netherlands BV.

Cash Flow / Leverage Analysis Benchmark Thresholds

Medial volatility table: use reflects lower earnings volatility of FMIs than most other corporate sectors

	-------- Core ratios------------		-----Supplementary coverage ratios------		--------------Supplementary payback ratios-------------		
	FFO/debt (%)	**Debt/EBITDA (x)**	**FFO/cash interest (x)**	**EBITDA/interest (x)**	**CFO/debt (%)**	**FOCF/debt (%)**	**DCF/debt (%)**
Minimal	50+	less than 1.75	10.5+	14+	40+	30+	18+
Modest	35-50	1.75-2.5	7.5-10.5	9-14	27.5-40	17.5-30	11-18
Intermediate	23-35	2.5-3.5	5-7.5	5-9	18.5-27.5	9.5-17.5	6.5-11
Significant	13-23	3.5-4.5	3-5	2.75-5	10.5-18.5	5-9.5	2.5-6.5
Aggressive	9-13	4.5-5.5	1.75-3	1.75-2.75	7-10.5	0-5	(11)-2.5
Highly leveraged	Less than 9	Greater than 5.5	Less than 1.75	Less than 1.75	Less than 7	Less than 0	Less than (11)

Source: Corporate Methodology, Jan. 7, 2024

Adjusted Earnings and Cashflow Metrics

Adjusted earnings metrics

	Reported revenue
-	Operating expenses
+	Depreciation
+	Amortization
+	Non-current asset impairment and impairment reversals
+	Cash dividends received from equity accounted affiliates (we exclude the profits or losses from such affiliates)
+	Equity settled stock compensation
-	Capitalized development costs
+	Adjustments for leases
+/-	Adjustments for PRBs and deferred compensation
-	Adjustments for AROs
+/-	Adjustments for earn outs and deferred consideration for business acquisitions
	Adjusted EBITDA
-	Cash interest paid, adjusted
-	Cash taxes paid
	Adjusted funds from operations (FFO)

Source: Corporate Methodology: Ratios And Adjustments, April 1, 2019

Adjusted cashflow metrics

	Reported cashflow from operations (CFO)
+/-	Interest or dividends received, and interest paid reported outside of CFO
-	Capitalized interest
-	Capitalized development costs
+/-	Adjustments for securitization, sale, and factoring of trade receivables and other assets
+/-	Adjustments for leases
+/-	Adjustments for hybrid capital instruments
+/-	Adjustments for earn outs and deferred consideration for business acquisitions
	Adjusted CFO
-	Adjusted capital expenditures
	Adjusted free operating cashflow (FOCF)
-	Cash dividends (paid on common and preferred stock)
-	Share buybacks
	Adjusted discretionary cashflow (DCF)

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