

# CIB Markets decoded: How banks really make billions and lose fortunes

**Market Risk Officers and Traders operate the most sophisticated money-making machinery in global finance—a \$50 billion annual revenue engine built on millisecond decisions, mathematical precision, and managing catastrophic tail risk.** When executed well, CIB Markets generates 15%+ returns on capital by capturing bid-ask spreads, harvesting carry, and intermediating trillions in client flows. When it fails, single traders lose \$6.2 billion (London Whale), central banks deploy \$1.6 trillion in emergency support (March 2020 Treasury crisis), or funds evaporate overnight (\$830 million Everest Capital in hours during the Swiss Franc crisis). (Citywire) The business model rests on a delicate balance: providing liquidity earns steady flow revenue, but concentrated positions, leverage, and correlation breakdowns destroy decades of profits in days. Post-2008 regulation transformed the industry—the Volcker Rule eliminated 20-30% of prop trading revenue, Basel III increased capital requirements 60-75%, and electronification compressed spreads 50-70% while demanding billions in technology investment. (eFinancialCareers) (Wikipedia) Today's CIB Markets is capital-intensive, heavily regulated, and split between ultra-efficient electronic flow capture and complex, high-margin structured products requiring deep client relationships.

The difference between profit and catastrophe lies in how Market Risk Officers measure and limit exposure while traders monetize positions. Every disaster—from Orange County's \$1.7 billion bankruptcy to Archegos's \$10 billion cross-bank implosion—traces to the same root causes: position size exceeding liquidity, leverage amplifying losses, correlation assumptions shattering under stress, and risk limits ignored or poorly designed. Understanding both roles across all asset classes reveals not just how money flows through capital markets, but why seemingly sophisticated institutions repeatedly suffer devastating losses.

## How CIB Markets generates \$50 billion annually

Major banks' Corporate & Investment Banking Markets divisions collectively generate approximately \$50 billion in annual revenue, with Goldman Sachs producing \$34.9 billion in Global Banking & Markets (2024), (CNBC) JP Morgan around \$20 billion in Markets, and similar figures across Morgan Stanley, Citi, and Bank of America. (eFinancialCareers +2) **The revenue splits roughly 40% FICC (Fixed Income, Currencies, Commodities), 35% Equities, and 25% Investment Banking fees.** Within FICC, interest rates dominates at 35-40%, followed by credit at 25-30%, FX at 20-25%, and commodities at 10-15%. (The DESK +2)

The business model breaks down by revenue type rather than just asset class. **Flow trading and market making generate 60-70% of revenues**—banks capture bid-ask spreads by standing between buyers and sellers, earning fractions of a percent on massive volumes. A rates desk processing \$50-100 billion daily notional at 1 basis point spread generates \$500,000-\$1 million daily, or \$125-250 million annually. Underwriting and structuring contribute 15-20%, earned when banks arrange bond issuances (charging 0.7% for investment grade, 1.2% for high yield), structure CLOs (collecting 0.5-0.75% upfront plus 40-50 basis points annually), or create custom derivatives for clients. (Wikipedia) Financing activities—stock lending, repo, prime brokerage margin—add another 10-15% through daily spread capture on capital deployed.

Proprietary positioning, once 20-30% of revenues pre-2008, now contributes only 5-10% due to Volcker Rule restrictions. (eFinancialCareers +2) Traders can take directional views only within "reasonable expectation" of client demand, forcing revenue migration toward flow facilitation. This shift profoundly changed compensation: pre-crisis prop traders earning \$10-20 million became post-crisis flow traders earning \$2-5 million, with the most profitable opportunities moving to hedge funds and proprietary trading firms outside banking regulation.

The economics demand massive scale. With compensation consuming 62-64% of revenue, technology 10-15%, and other costs bringing total expenses to 75-80%, a desk generating \$1 billion revenue produces roughly \$200-250 million in pre-tax profit. (eFinancialCareers) (Capartners) To achieve a 15% ROE target—the minimum acceptable return—that profit must be generated on \$1.3-1.7 billion of allocated capital. In practice, large banks allocate \$80-120 billion to Markets businesses, requiring \$12-18 billion annual profit. When Goldman Sachs reports 12.7% ROE versus a 15% target, it signals the business is capital-constrained and needs either higher revenues or lower capital consumption. (Goldman Sachs) (Goldman Sachs)

## Interest rates: The \$600 trillion foundation where basis points become billions

Interest rate markets represent the largest and most fundamental trading arena, with over \$600 trillion notional in outstanding interest rate derivatives and \$25-30 trillion in government bonds globally. (PIMCO)

(Bank for International Settlements) **Rates trading generates approximately \$8-12 billion annually for a major bank** (35-40% of FICC revenue), (The DESK) split roughly 50-60% from flow trading and market making, 20-30% from proprietary positioning and curve trades, 15-25% from structuring swaptions and structured notes, and 5-10% from repo and securities lending.

### Why rates matter: The risk-free benchmark for everything

Government bond yields serve as the foundational pricing input for every financial asset. Corporate bonds trade at Treasury yields plus a credit spread; mortgages price off Treasuries plus an MBS spread; equity valuations discount cash flows using Treasury-based discount rates. (Wiley Online Library) When the Treasury market dysfunctions—as it spectacularly did in March 2020—the entire financial system seizes. (newyorkfed)

(Harvard Law School Forum on ...) The yield curve's shape telegraphs economic expectations: steep curves (2s/10s spread at +200 basis points) signal growth and future Fed tightening, flat curves (+20 basis points) indicate uncertainty, and inverted curves (negative spreads) have preceded 70% of recessions.

The \$600 trillion interest rate swaps market exists because it's vastly more capital-efficient than bonds for managing duration. (PIMCO) **A corporation issuing \$500 million in floating-rate debt but wanting fixed payments simply enters a swap: pay fixed at 3.50%, receive SOFR.** No principal changes hands, only net interest payments. The bank dealer intermediating this swap charges 1-2 basis points spread, immediately hedges by buying Treasuries, and earns carry. For the bank, the swap requires only 1-3% margin capital versus 100% for buying bonds, explaining why swaps dwarf the cash bond market in size.

### Orange County 1994: \$1.7 billion lost by ignoring DV01

**Orange County demonstrated DV01 risk catastrophically in 1994.** Treasurer Robert Citron managed a \$7.6 billion pool leveraged to \$20 billion using reverse repos, betting rates would fall. When the Fed raised rates six times from February to November 1994, the portfolio lost \$1.7 billion—22% of assets under management. (CA)

(SEC.gov) With proper DV01 limits, Citron's \$20 billion portfolio at 5-7 year duration represented roughly \$100 million DV01. The 300 basis point rate rise should have triggered immediate deleveraging after \$30-50 million losses, preventing bankruptcy. Instead, limits were ignored, doubling-down occurred, and Orange County filed Chapter 9 bankruptcy on December 6, 1994. Participants recovered only 77 cents on the dollar after a five-year workout. (CA)

### March 2020 Treasury crisis: When the "safest" market froze

During March 2020, the supposedly ultra-liquid Treasury market experienced catastrophic dysfunction. **The Federal Reserve had to purchase \$1.6 trillion in Treasuries over three months** to restore functioning.

(New York Fed) Bid-ask spreads on off-the-run bonds spiked to 30 basis points versus normal 1-2 basis points—a 30-fold increase. (ICI) (New York Fed) Customer transaction volumes surged to \$650 billion/day (March peak) versus \$400 billion/day normal—a 62% surge that overwhelmed dealer capacity. (U.S. Department of the Treasury) Market depth on 10-year on-the-run fell to 25% of normal levels. (newyorkfed) (New York Fed)

The crisis stemmed from hedge funds running basis trades—long cash Treasuries, short futures, financed in repo—supposedly earning "risk-free" 5-10 basis points. When the basis blew out by 100 basis points and 2-year rates fell 150 basis points while 30-year rates fell only 70 basis points (curve steepened 80 basis points), forced liquidations overwhelmed the market. (Bloomberg) Mutual funds sold \$200 billion Treasuries in Q1 2020 (largest ever), foreign official accounts sold to raise USD, repo markets froze as dealers couldn't finance inventory, and Principal Trading Firms pulled back from market-making. (newyorkfed) (U.S. Department of the Treasury)

### UK gilt crisis September 2022: The £500 billion pension meltdown

Prime Minister Liz Truss announced £70+ billion in unfunded tax cuts on September 23, 2022. Thirty-year gilt yields surged 80 basis points in three days (September 23-26). (Intereconomics) **Liability-Driven Investment funds—pension vehicles using 3x leverage via derivatives to match liabilities—faced overwhelming margin calls.** Forced gilt sales to meet margins pushed yields higher, triggering more margin calls in a doom loop. An estimated £500 billion in pension fund assets evaporated. The Bank of England intervened with £100+ billion in gilt purchases from September 28 through November 10 to break the spiral. (Intereconomics) LDI funds sold £25 billion in gilts over five weeks and retired 74% of repo debt. (Bank Underground)

### How rates traders make billions from basis points

A major bank rates desk processes \$50-100 billion notional daily across Treasuries and swaps. **On-the-run 10-year Treasuries trade at 0.43 basis points average spread,** (ResearchGate) generating roughly \$500-\$1,000 profit per \$100 million trade. Interest rate swaps trade at 1-1.5 basis points wide post-crisis. (Quora) **Market-making \$100 billion daily at 1 basis point spread generates \$1 million daily or \$250 million annually.**

Client flow monetization extends beyond spreads. When a pension fund wants to receive fixed on \$500 million 10-year swaps, the dealer might quote 3.500% (versus a 3.501% market), capturing a half basis point edge worth \$250,000 upfront. Structuring fees add significantly—selling a 10-year swaption at 75 basis points implied volatility when the market trades 70 basis points earns 5 volatility points, worth approximately \$250,000 on \$50 million notional.

Carry and roll-down trades contribute 15-25% of desk P&L with Sharpe ratios averaging 0.74. (Upenn) **The strategy: borrow at repo (4.00%), invest in 10-year Treasuries (4.50%), earn 50 basis points carry plus roll-down gains** as the bond ages down the yield curve. On \$100 million, this generates \$13,889 daily carry or \$500,000 annually. The risk: a 100 basis point rate rise produces a 9% loss (\$9 million), wiping out 18 years of carry.

Curve trades betting on steepening or flattening contribute 10-20% of revenues. A 2s/10s steepener paying fixed on \$100 million 2-year swaps and receiving fixed on \$21.8 million 10-year swaps (DV01-matched) gains approximately \$200,000 per 10 basis points of steepening. (Stack Exchange)

## **Credit markets: Where London Whale lost \$6.2 billion and CDOs destroyed \$150 billion**

Credit markets trade the risk that borrowers default, expressed as spreads over risk-free Treasury yields. A **major bank credit desk generates \$6-8 billion annually** (25-30% of FICC), (The DESK) with underwriting fees contributing 30%, flow trading 40%, proprietary views 20%, and relative value trades 10-15%.

### **London Whale: The \$6.2 billion lesson in hedging becoming prop trading**

JP Morgan Chief Investment Office trader Bruno Iksil managed the Synthetic Credit Portfolio, ostensibly hedging the bank's loan book. By early 2012, the position had grown to **\$157 billion notional in CDX IG9**, representing 40% of the entire market's open interest. The strategy was selling CDS protection (long credit risk), earning premium income. (Wikipedia)

#### **The timeline of collapse:**

- February 2012: Lost \$550 million in one month
- April 10, 2012: Jamie Dimon called it a "tempest in a teapot" (Wikipedia)
- April 13, 2012: Position disclosed; hedge funds went short against it
- May 2012: Losses mounted to \$2 billion (Wikipedia)
- July 13, 2012: **Final loss totaled \$6.2 billion**

The failures: VaR models were manipulated, risk limits exceeded repeatedly with no consequences, position size (40% of market) made exit impossible, and "hedging" became massive proprietary positioning. (Bloomberg)

### **2008 CDO crisis: When AAA tranches lost 80%**

**Merrill Lynch lost \$26 billion, Citigroup \$34 billion, UBS \$50 billion** on structured credit. (Wikipedia)

(Wikipedia) Banks retained supposedly "safe" AAA super-senior CDO tranches (requiring minimal capital) while selling riskier junior tranches. (Fox Business) When housing prices fell nationally, correlations approached 1.0 and subordination buffers evaporated. (Wikipedia) (Wordpress) Merrill's CDO exposure grew from \$17.6 billion (September 2006) to \$42.4 billion (May 2007). Citigroup held \$43 billion in super-senior positions plus \$25 billion in liquidity puts. (stanford) (Fox Business)

The fundamental error: assuming diversification through securitization when the underlying risk factor (housing prices) was systematic, not idiosyncratic. CDOs buying pieces of other CDOs created "daisy chains" that amplified correlation. [Wordpress +5](#)

### **Archegos March 2021: \$10 billion in prime brokerage failures**

Bill Hwang built \$20 billion concentrated positions in 5-7 stocks using total return swaps with multiple prime brokers. When ViacomCBS fell 27% after a secondary offering, margin calls overwhelmed Archegos. [Wikipedia](#)

#### **Cross-bank losses:**

- Credit Suisse: \$5.5 billion [Wikipedia](#) [UBS](#) (over 50% of equity capital)
- Nomura: \$2.85 billion [Wikipedia](#)
- Morgan Stanley: \$911 million [Wikipedia](#)
- UBS: \$774 million [Wikipedia](#)

Credit Suisse used static margining (not dynamic), concentration representing 4x their next-largest client, risk managers overruled by relationship managers, earned only \$17.5 million fees for \$20 billion exposure, and breached limits for months.

#### **Revenue breakdown: How credit desks make money**

Investment-grade bond issuance fees: 0.7% (70 basis points on \$1 billion = \$7 million). High-yield: 1.2% (\$12 million per billion). Leveraged loans: 1-2% upfront. [Wikipedia](#) A busy desk underwriting \$10 billion IG, \$5 billion HY, and \$10 billion loans generates \$280 million from origination alone.

Flow trading captures bid-ask spreads: **IG bonds 5-15 bps, HY bonds 25-100+ bps, CDS 2-10 bps**. Processing \$50 billion IG at 10 bps generates \$50 million; \$20 billion HY at 40 bps yields \$80 million; \$100 billion CDS at 5 bps produces \$50 million.

Cash-CDS basis trades exploit persistent mispricings. IG typically trades with -10 to -30 bps negative basis (CDS wider than bonds), HY -50 to -150 bps. Capital structure arbitrage trades debt versus equity when CDS spreads deviate from equity-implied levels. [Northstar Risk +2](#)

### **Foreign exchange: \$7.5 trillion daily where Swiss Franc cost \$830 million in hours**

FX markets dwarf all others with \$7.5 trillion average daily turnover (2022), [ScienceDirect](#) rising to \$9.6 trillion by 2025. [Investopedia +4](#) **A major bank FX desk generates \$3-5 billion annually**, with 40% from bid-ask spreads, 25% from carry trades, 20% from volatility trading, 10% from structured products, and 5% from proprietary trading.

#### **Swiss Franc January 15, 2015: When central bank pegs explode**

At 9:30am, the Swiss National Bank removed its 1.20 EUR/CHF floor without warning. [Forexlive](#) **EUR/CHF crashed from 1.20 to 0.85 in minutes (29% move)**, with some quotes at 0.75 (37.5%).

## The losses:

- FXCM Inc.: \$225-255 million loss, required \$300 million bailout
- Alpari UK: Entered insolvency immediately (The Irish Times +2)
- Everest Capital Global Fund: **\$830 million fund completely wiped out in hours**
- Deutsche Bank: \$150 million estimated (The Irish Times)
- Citigroup: \$150 million estimated (The Irish Times)
- IG Group: £30 million (Michelmores)

Retail traders using 50:1 or 100:1 leverage saw accounts go deeply negative. (The Irish Times) The lesson: pegged exchange rates are loaded guns that fire without warning.

## Turkish lira 2018: The 48% collapse

From May through August 2018, the Turkish lira collapsed from 3.75 to 7.22 TRY/USD (Insight Turkey) (48% depreciation). **GF Securities GTEC Pandion Fund lost \$139 million** on lira positions. Citigroup as prime broker faced \$100-200 million in charges. (ETF Trends) Other hedge funds running carry trades lost 10-20% in August alone.

## GBP flash crash October 7, 2016: 6.1% in 120 seconds

At 12:07am London time, GBP/USD plunged from \$1.26 to \$1.18 in 120 seconds (6.1% move). Only £252 million traded during the 8-second crash window. (Pound Sterling Live) Citi's Tokyo desk algorithmic tool sent rapid-fire sell orders creating "looping" behavior in thin overnight liquidity. (CNBC)

## How FX traders extract profits

**G10 bid-ask spreads:** EUR/USD and USD/JPY at 0.5-1 pip (\$500-\$1,000 per \$100M). (Investopedia) Processing \$500 billion annually at 0.08% capture = \$400 million. (bis) **EM spreads are vastly wider:** Mexican peso 0.12% (\$120K per \$100M), Turkish lira 0.3-2% (\$300K-\$2M), Indonesian rupiah 2%+ (\$2M+).

**Carry trades:** Borrow JPY at 0%, invest AUD at 4% earns 4% annually (400 bps). (Corporate Finance Institute) With 10:1 leverage, this becomes 40% ROE. Academic research shows Sharpe ratios of 0.71 unleveraged, rising to 1.29 with hedging. On a \$5-10 billion carry book, this generates \$350-1,200 million annually when working, but loses 30-50% in crisis years.

## Equities: Where Archegos lost \$10 billion and Knight Capital vaporized \$460 million in 45 minutes

Equity markets generate \$8-11 billion annually (30-35% of Markets revenue), (Goldman Sachs) split across cash equities (25%), equity derivatives (35%), prime brokerage (25%), equity finance (10%), and proprietary trading (5%).

## Flash Crash May 6, 2010: \$1 trillion evaporated in 36 minutes

From 2:32-3:08pm ET, the Dow fell 998.5 points (9%), from -300 to -998 in five minutes. [Grokipedia](#)

**Accenture traded at \$0.01, Apple at \$100,000 per share, P&G dropped from \$60 to \$39.37.** Twenty thousand trades executed at prices 60%+ away from reference prices.

The trigger: \$4.1 billion E-mini S&P sell order using a volume-participation algorithm with no price limits. HFTs bought and immediately resold in a "hot potato" game—27,000 contracts traded among HFTs in 14 seconds (49% of volume) but net absorbed only 200 contracts. When HFT risk limits were hit, liquidity vanished.

### **Knight Capital August 1, 2012: \$440 million in 45 minutes**

Knight's deployment script failed on 1 of 8 servers, reactivating deprecated "Power Peg" code. **In infinite loop: 212 parent orders became 4 million child orders became 397 million shares across 154 stocks in 45 minutes.** Knight ended with net long \$3.5 billion and net short \$3.15 billion—completely unintended positions.

**Loss: \$440-460 million**— [Wikipedia](#) [SEC.gov](#) four times Knight's entire 2011 net income. [Bloomberg](#) Knight's stock fell 75% in two days. Required \$400 million rescue from Jefferies; acquired by Getco in December 2012.

[Wikipedia](#)

### **GameStop January 2021: When 140% short interest meets Reddit**

GameStop rocketed from \$17.25 (January 4) to \$483 premarket (January 28). **Short interest exceeded 140% of float**—more shares shorted than existed.

#### **The losses:**

- Melvin Capital: \$6.8 billion (53% of AUM), required \$2.75 billion bailout, shut down May 2022
- Aggregate short sellers: \$19.75 billion in January [CNBC](#)
- Maplelane Capital: 45% January loss [Infinity Investing](#)
- Multiple funds: 20%+ losses

The mechanics: r/WallStreetBets coordination plus gamma squeeze (dealers hedging call options bought stock, accelerating the rise) plus FOMO created explosive dynamics. [Wikipedia](#)

### **Statistical arbitrage: Sharpe ratios of 2.3-3.28 until August 2007**

PCA-based stat arb achieved **Sharpe ratios of 1.44 (1997-2007)**, degrading to 0.9 as strategies crowded. Modern machine learning approaches achieve **2.3-3.28 net of costs**. The August 2007 Quant Meltdown showed correlated failure—multi-strategy funds forced unwinding simultaneously, creating correlated losses as diversification failed.

### **Prime brokerage revenue and risk**

Revenue comes from **margin financing spreads** (benchmark + 50-200 bps), **stock lending fees** (20-50 bps typical, 500+ bps for hard-to-borrow), and **platform fees** (\$10K-\$50K monthly plus 0.1-1 bp per trade).

Risk management requires concentration limits (15-25% single issuer, 40-60% sector), days-to-liquidate calculations (10% daily volume rule), and stress testing (10-15% market moves, correlation spikes, volatility doubling). (Wikipedia) (FINRA) Dynamic margining—adjusting continuously based on volatility and concentration—is essential. Static margining, as Credit Suisse used, creates vulnerabilities.

## Commodities: Where oil went to -\$37 and Amaranth lost \$6.6 billion

Commodities generate \$1-2 billion annually (5-10% of FICC), with revenue from bid-ask spreads (10-20%), flow trading (30-40%), physical-paper arbitrage (20-30%), storage/carry trades (15-25%), and structuring (5-10%).

### WTI April 2020: Negative \$37.63 per barrel

**WTI crude oil went to -\$37.63 per barrel** on April 20, 2020— (CNBC) traders paid to avoid taking delivery into Cushing, Oklahoma storage that was 70-85% full during COVID lockdowns. (CNBC +4) May 2020 futures expired April 21. (CNBC) With no storage available and no ability to take delivery, sellers found zero bids.

(Commodity Futures Trading Co...) (Commodity Futures Trading Co...)

### Losses:

- Chinese Bank of China "Crude Oil Bao": Client losses exceeded deposits
- Interactive Brokers: \$88 million loss from customer accounts going negative
- Retail traders using USO ETF destroyed

CFTC found open interest at 108,000 contracts on April 20 (normal under 5,000 at expiration). (cftc) Eighty-five percent exited before April 20; the remaining 15% were massacred. (Commodity Futures Trading Co...)

### Amaranth September 2006: When 40% of the market exits

Amaranth controlled **40% of NYMEX natural gas open interest**—extraordinary concentration. The strategy: long winter gas, short summer/fall gas. (Premiacap +6)

### Timeline:

- May 2006: Lost \$1 billion
- September 14, 2006: Lost \$560 million in one day
- September 15-19: Spreads moved 3-15 standard deviations against Amaranth
- September 20: Sold energy book at \$2.15 billion discount
- **Total loss: \$6.6 billion (70% of \$9.2 billion fund)** (Premiacap +4)

Position size relative to liquidity guaranteed exit attempts moved prices further against them. Margin calls exceeded \$3 billion. (Jpmcc-gcard) CFTC assessed \$300 million penalties. Brian Hunter banned from trading.

(Natural Gas Intelligence)



## LME nickel March 2022: \$12 billion in trades canceled

Tsingshan Holding held **short 150,000-200,000 tons nickel** (80% OTC, 20% LME). Russia invaded Ukraine February 24, pushing nickel from \$25K to \$48K. **On March 8, nickel hit \$100,000/ton—quadrupling in 24 hours.** At 5:42am London, LME halted trading. (Office of Financial Research +3)

Later March 8, LME made unprecedented decision: **cancel all trades from midnight—9,000 trades worth \$12 billion.** (MarketScreener +3) At \$100K/ton, Tsingshan's mark-to-market loss exceeded \$16 billion. LME member brokers faced \$19.7 billion in margin calls that would bankrupt multiple firms.

(Office of Financial Research +3)

JP Morgan-led consortium extended credit to Tsingshan for unwinding. Tsingshan reported only ~\$1 billion loss versus \$8+ billion at peak. (Warrior Trading +2) Elliott and Jane Street sued LME for \$472 million. (MarketScreener +2) LME volumes fell 21% in Q2 2022 as trust evaporated. (CNN)

## How commodity traders monetize volatility

**Storage/carry trades in contango:** When crude is \$50 spot and 3-month futures are \$58, buy physical, store (\$1.35 total), sell futures. (Wikipedia) Net profit:  $\$8 - \$1.35 - \$0.50 \text{ financing} = \$6.15/\text{barrel}$  (12.3% in 3 months). April 2020 contango reached \$8-10/barrel, (CNBC) leading to tanker leasing at \$5-7/barrel profit.

**Crack spreads simulate refining:** 3:2:1 crack buys 3 barrels crude, sells 2 gasoline and 1 heating oil. Spreads range \$5-25/barrel seasonally.

**Spark spreads measure power generation:**  $\text{Spark} = \text{Power Price} - (\text{Gas Price} \times \text{Heat Rate})$ . With power at \$50/MWh, gas at \$4/MMBtu, heat rate 7, spark = \$22/MWh profit for gas power plants.

(U.S. Energy Information Admi...)

(U.S. Energy Information Admi...)

## Securitized products: Where \$150 billion evaporated in 2008 and LTCM lost billions

Securitized products—MBS, ABS, CMBS, CLOs—generate revenue primarily from underwriting/structuring fees and relative value trading. (AnalystPrep) **CLO issuance on \$500M deal:** 0.50-0.75% upfront (\$2.5-3.75M) plus 40-50 bps annually (\$2-2.5M/year) plus 20% incentive fee above 12% IRR hurdle. **MBS underwriting:** 5-10 bps for agency, 50-100 bps for non-agency.

## 2008 subprime crisis: The correlation apocalypse

### Major bank write-downs 2007-2008:

- Citigroup: \$55+ billion (stanford)
- Merrill Lynch: \$52 billion (stanford)
- UBS: \$38 billion (stanford)
- Bank of America: \$27 billion (stanford)
- HSBC: \$27 billion (stanford)

- Royal Bank of Scotland: \$28 billion (stanford)

**Total industry write-downs: \$523 billion** (Wikipedia +7)

Banks retained AAA super-senior CDO tranches (requiring only 1.6% Tier 1 capital under Basel II) while selling junior tranches. (Wall Street Oasis) When housing fell nationally, correlations spiked to 1.0, and AAA tranches lost 60-80% despite 35-40% subordination buffers. (Brookings +4) CDOs buying pieces of other CDOs created "daisy chains." (FDIC +5)

AIG sold \$440 billion notional CDS protection on CDOs, couldn't meet margin calls, required \$182 billion Federal bailout. (Wikipedia +3)

### **LTCM 1998: When mean reversion fails**

LTCM (founded 1994 by John Meriwether, partners including Myron Scholes and Robert Merton) ran 30:1 on-balance sheet leverage, 100:1+ with derivatives. (Bauer College of Business) Active in MBS basis trades—long MBS, short Treasuries, harvesting OAS.

#### **Timeline:**

- May-June 1998: Lost 16% (first consecutive monthly losses) (Wikipedia)
- August 17, 1998: Russia defaults (Bauer College of Business)
- August 21, 1998: Lost \$550M in one day as swap spreads moved 10+ bps (normal 2-3 bps) (Wikipedia)
- August 31: Equity down to \$2.3B from \$4.8B start of year (Bauer College of Business)
- September: Lost 44% in August (Bauer College of Business)
- September 23: Fed facilitates \$3.6B bailout by 14 banks (Federal Reserve History)

**Total loss: ~\$4.6 billion**

Flight to quality widened spreads instead of converging. MBS prepayment models failed. High leverage amplified losses. Forced selling by Salomon (unwinding similar positions) pushed prices against LTCM. (Wikipedia)

### **Why prepayments destroy MBS portfolios**

When rates fall, borrowers refinance. Premium MBS (above par) get called at par = loss. When rates rise, borrowers don't refinance. Discount MBS (below par) extend duration, stuck with low coupons in high-rate environment = loss. (AnalystPrep) (Dimensional Fund Advisors) **Duration drift:** At 3% rates, agency MBS has 4-year duration with lots of prepayment risk. At 6% rates, same MBS has 7-year duration as prepayments stop. (MSCI) Negative convexity means duration increases when you least want it. (The FinAnalytics) (Onlinewbcb)

### **XVA: The hidden costs that add 90 basis points to derivatives**

XVA (Valuation Adjustments) represents the true cost of derivatives beyond Black-Scholes pricing. **For a 10-**

## year swap with BBB counterparty on \$100M notional:

- **CVA (Credit Valuation Adjustment):** 40 bps = \$400K (counterparty credit risk)
- **FVA (Funding Valuation Adjustment):** 25 bps = \$250K (funding uncollateralized exposure)
- **KVA (Capital Valuation Adjustment):** 15 bps = \$150K (regulatory capital cost)
- **MVA (Margin Valuation Adjustment):** 10 bps = \$100K (margin posting cost)
- **Total XVA: 90 bps = \$900K upfront** or ~10 bps/year running

CVA measures counterparty default risk:  $CVA = (1 - \text{Recovery}) \times \sum [EE(t_i) \times PD(t_{i-1}, t_i) \times DF(t_i)]$ , with typical recovery rate 40%. For investment-grade (A-rated) counterparties, CVA runs 10-30 bps; BBB 30-60 bps; high yield 60-150 bps; distressed 150-500+ bps.

FVA measures funding costs for uncollateralized positions:  $FVA = FCA - FBA$ , where FCA is funding cost on positive exposure and FBA is funding benefit on negative exposure. For major banks (AA-rated), FVA runs 15-25 bps; regional banks (A) 25-40 bps.

XVA desks warehouse these risks centrally, hedge with CDS and equity shorts, exploit portfolio netting benefits, and execute novations/compression for capital relief.

## Cross-asset strategies: When correlations break, billions evaporate

**Macro trading** combines rates, FX, commodities, and equities into thematic views. **FX carry trade example:**

**QuantPedia** Borrow JPY at 0.1%, invest AUD at 4% = 390 bps gross. Risk: currency depreciation. 2008 disaster saw JPY appreciate 25% versus carry currencies, destroying annual gains instantly.

**Rates-FX combination:** US rates rising → Long USD/EUR + steepener in UST + flattener in Bunds. USD/EUR correlates 0.7-0.8 with 2-year rate differentials.

**Commodity-FX:** Long oil + Long CAD/NOK (CAD has 0.25-0.3 beta to oil).

**Typical Sharpe ratios:** Pure carry 0.5-0.8, macro trend 0.3-0.6, relative value 0.8-1.2. **Macrosynergy** In crises: -1.0 to -2.0.

**Equity-credit relative value** exploits Merton model linkages between stocks and CDS. Correlation: stock price and CDS spread typically -0.3 to -0.5. When GM CDS widened to 440 bps in 2005 (model implied 280 bps), trade was short CDS + short equity hedge. Profited as CDS tightened to 300 bps. **Correlation breaks:** 2008 saw both CDS widen AND equities fall simultaneously, destroying both legs of hedges.

**Multi-asset structured products:** Worst-of baskets sell correlation (worst-of cheaper than sum), earning premium when correlations stay 40-60%. Rainbow options exploit volatility dispersion across multiple underlyings. Risk: correlations spike to 1.0 in crises, destroying structures.

## Regulatory environment: Basel III and FRTB increase capital 60-75%

### Basel III RWA by asset class:

- Sovereigns (AAA): 0%
- Banks (A-rated): 50%
- Corporates (BBB): 100%
- High yield (BB): 150%
- Equities: 100-400%

**SA-CCR for derivatives:**  $EAD = 1.4 \times (RC + PFE)$ , where PFE add-ons are: interest rates 0.5-5%, FX 4-5%, credit 5-10%, equity 32-48%, commodity 18-40%.

**Total capital requirement:** 8% RWA + buffers (2.5-6%) = 10.5-14% effective. **Example:** \$100B derivatives → \$15B EAD × 80% RW = \$12B RWA × 13% = \$1.56B capital required.

**FRTB (Fundamental Review Trading Book)** replaces VaR with Expected Shortfall at 97.5% confidence, imposes liquidity horizons by asset class (10 days for liquid G10 FX, 60-250 days for EM/illiquid), requires desk-level P&L attribution tests, and severely penalizes non-modellable risk factors. **Impact: 60-75% increase in market risk capital** (some banks 100-200%). Implementation: EU 2026, UK IMA 2028.

**Dodd-Frank clearing mandates:** Interest rate swaps >90% cleared, CDS index >80%, CDS single-name ~30%. Margin rules require VM (variation margin) daily for all swaps and IM (initial margin) using SIMM model at 5-15% of notional for uncleared. **Impact: \$2-3 trillion in clearing margin industry-wide.**

**MiFID II (Europe 2018)** required research unbundling—paying separately for research versus execution. **Impact: \$1-1.5 billion revenue decline industry-wide**, 20-30% reduction in small/mid-cap coverage, asset managers paying \$2-5 million/year explicitly for research.

**Volcker Rule (April 2014)** prohibited bank proprietary trading, dismantling prop desks and reducing equity revenues 10-15%. Prop traders migrated to hedge funds. The line between market making (permitted under "reasonable expectation" of customer interest) and prop trading (prohibited) remains contentious and difficult to enforce.

## Technology and market structure: 90% electronic with \$1 trillion in tech spend

### Electronification by asset class (2024):

- US Treasuries: 85-90%
- Vanilla interest rate swaps: 70-80%
- US investment-grade credit: 45-50% (up from 25% in 2019)
- FX spot: 95%+

- Cash equities: 85-90% US, 75-80% Europe

**HFT (High-Frequency Trading)** represents 40-50% of equity volume, 20-30% of FX. Benefits: bid-ask spreads compressed 50-70% (NYSE average spread 12 cents pre-2000 → <1 cent now), estimated 0.5-1 bp transaction cost improvement. Risks: flash crashes, phantom liquidity (quotes disappearing when hit), two-tier market (fast versus slow), predatory behaviors (spoofing, quote stuffing).

**Voice trading persists for 30-40% of FICC** because illiquid bonds need price discovery, large blocks require discretion, complex structures need negotiation, and emerging markets lack electronic infrastructure.

**Dark pools** handle 32-40% of US equity volume (peaked ~40% in 2023), executing at NBBO midpoint without pre-trade transparency. Concerns: reduced price discovery, conflicts of interest, 3.94% of trades identified as "stale" (latency arbitrage by HFTs exploiting slow reference prices).

**Future trends:** AI/ML now represents 20-30% of systematic strategies. Crypto/DeFi tokenization experiments suggest 5-10 year horizon for meaningful integration.

## **Risk management: VaR failed in 2008, stress testing now dominates**

**VaR (Value-at-Risk)** uses 99% confidence and 1-day trading / 10-day regulatory horizons. **Why VaR failed 2008:** Normal distribution assumption missed fat tails, correlation breakdowns, invalid liquidity assumptions, procyclical behavior, and model optimization versus real risk.

**Stress testing (post-2008)** uses 2008-style crisis scenarios, rate shocks (+200 bps), FX shocks (20% moves), and CCAR (Comprehensive Capital Analysis and Review) Fed supervisory tests. **Expected Shortfall (FRTB):**  $ES_{97.5\%} = E[\text{Loss} \mid \text{Loss} > \text{VaR}_{97.5\%}]$  captures tail risk better than VaR.

**Tail risk management tools:** Buy OTM options (0.5-2% annual cost), CDS on indices, dynamic hedging, position limits, and stress loss limits (maximum loss in severe scenario <10% of capital).

Typical limits for large bank trading desk: \$10-30M VaR (99%, 1-day), \$50-100M stress loss limit, concentration limits (<20% in single sector), and liquidity risk (days-to-liquidate using 10% daily volume rule).

## **Careers and compensation: MROs earn \$600K-\$1.5M, traders \$1-10M+**

### **MRO (Market Risk Officer) path:**

- Background: MS/PhD in Math, Physics, Financial Engineering
- Skills: Python/C++, stochastic calculus, model validation
- Compensation: Analyst (0-2 yrs) \$100-140K, Associate (3-5) \$150-220K, VP (5-8) \$250-400K, Director (8-12) \$400-600K, MD (12+) \$600K-\$1.5MM

### **Trader path:**

- Background: Undergrad + internship or MBA

- Skills: Market intuition, P&L focus, client relationships
- Compensation: Analyst (0-2) \$150-200K, Associate (2-5) \$200-350K, VP (5-8) \$400-700K, Director (8-12) \$700K-\$1.5MM, MD (12+) \$1-5MM+ (highly variable, top performers \$5-10MM+)

**Comp structure:** Analyst/Associate 40% cash/60% deferred, VP 35% cash/65% deferred, MD 25% cash/75% LTI (long-term incentive). Typical compensation ratio: 62-64% of revenue goes to compensation across the desk.

### **Asset class comparison for careers:**

**Rates:** Stable, massive volumes, deep liquidity. Cons: compressed margins, highly electronic, commoditized. Comp: 50-55% comp ratio, solid but less variable. Best for: stability, quant skills.

**Credit:** Higher margins (15-25 bps), relationship-driven, alpha potential. Cons: cyclical, credit losses, fundamental analysis required. Comp: higher variability, big bonuses in good years. Best for: fundamental skills, higher risk tolerance.

**FX:** 24/5 markets, massive turnover, macro linkages. Cons: lower margins, time zone challenges. Comp: ~60% comp ratio, stable. Best for: global macro perspective, willing to work irregular hours.

**Equities:** Diverse products, client-driven, bull market linked. Cons: electronic in cash, commoditized flow. Comp: variable with equity markets. Best for: client-facing, structuring skills.

**Commodities:** Highest margins, most alpha, fundamental-driven. Cons: small market, volatile, regulatory scrutiny. Comp: highest upside possible (\$10MM+ for stars). Best for: high risk/reward appetite, fundamental analysis.

### **Municipal bonds: Limited CIB relevance**

Municipal bonds represent ~\$4 trillion outstanding versus ~\$10 trillion corporate. **CIB involvement is limited** because tax-exempt status creates different investor base (retail, insurance), issuers are regional/local governments versus corporates, different credit analysis (GO bonds versus revenue bonds), smaller deal sizes, and separate regulatory structure (MSRB versus FINRA).

Large banks maintain separate municipal underwriting desks. CIB interaction occurs through interest rate hedging for muni issuers, Build America Bonds (taxable munis), and swap advisory to state/local governments.

### **The bottom line: Billions earned capturing spreads, billions lost when correlations spike**

CIB Markets is fundamentally about **buying liquidity risk from clients and managing it systematically**. Corporations, asset managers, pension funds, and governments need to hedge risks, finance operations, and execute large transactions. Banks intermediate by providing liquidity—capturing bid-ask spreads, structuring customized products, and warehousing risk temporarily. This works beautifully in normal markets, generating 15%+ ROE on \$80-120 billion capital.

Disasters occur when **five conditions align**:

1. **Position size exceeds liquidity:** Amaranth (40% of natural gas market), London Whale (40% of IG9 CDS), Archegos (\$20B concentrated in 5 stocks)
2. **Leverage amplifies losses:** LTCM (100:1), UK LDI funds (3x), retail FX traders (50-100:1)
3. **Correlation assumptions shatter:** 2008 CDOs (housing correlated nationally, not idiosyncratically), August 2007 quant meltdown (stat arb strategies correlated)
4. **Risk limits ignored or poorly designed:** Orange County (no effective DV01 limits), London Whale (VaR models manipulated), Archegos (static margining, concentration limits breached)
5. **Liquidity disappears:** March 2020 (Treasury bid-asks widened 30x), Swiss Franc 2015 (no bids for minutes), oil April 2020 (negative prices)

**The post-2008 transformation fundamentally changed the business.** Volcker eliminated \$8-12 billion in prop trading revenues, forcing migration to flow trading and market making within tighter constraints. Basel III and FRTB increased capital requirements 60-75%, making balance-sheet-intensive strategies (long-duration bonds, illiquid credit, EM currencies) far more expensive. Clearing mandates and margin rules absorbed \$2-3 trillion in collateral industry-wide. Electronification compressed spreads 50-70% while demanding billions in technology investment. MiFID II research unbundling cost \$1-1.5 billion in revenues.

Today's survivors are those who **excel at capital efficiency**: maximizing revenues per dollar of allocated capital, minimizing RWAs through netting and novation, charging XVA accurately to reflect true costs (90+ basis points on long-dated derivatives), and balancing flow revenues (steady, lower margin) with structured products (episodic, high margin). The firms that fail are those repeating historical mistakes—ignoring concentration risk (Credit Suisse/Archegos), manipulating models (London Whale), assuming correlations stay low (2008 CDOs), or leveraging beyond liquidity (LTCM, Amaranth).

The essential insight is that **markets exist because participants have different risks, horizons, and needs**. CIB Markets captures the spread between these participants, earning billions for providing immediacy and bearing temporary risk. But when everyone needs liquidity simultaneously—2008, March 2020, Swiss Franc 2015—correlations spike to 1.0, diversification fails, and losses dwarf years of accumulated profits. This is why stress testing dominates modern risk management, why capital requirements increased 60-75%, and why the most catastrophic losses always trace to the same root causes: size, leverage, correlation, ignored limits, and vanishing liquidity.