Office of the
Comptroller of the Currency

Quarterly Report on Bank Trading and Derivatives Activities

Fourth Quarter 2023

Office of the Comptroller of the Currency
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About This Report

The Office of the Comptroller of the Currency's (OCC) quarterly report on bank trading and derivatives activities is based on call report information provided by all insured U.S. commercial banks and savings associations, reports filed by U.S. financial holding companies, and other published data.[1] A total of 1,185 insured U.S. national and state commercial banks and savings associations reported trading and derivatives activities at the end of the fourth quarter of 2023.[2] A small group of large financial institutions continues to dominate trading and derivatives activity in the U.S. commercial banking system. During the fourth quarter of 2023, four large commercial banks represented 87.4 percent of the total banking industry notional amounts and 64.6 percent of industry net current credit exposure (NCCE).

The OCC and other supervisors have dedicated examiners at the largest banks to continuously evaluate the credit, market, operational, reputation, and compliance risks of bank trading and derivatives activities. In addition to the OCC's supervisory activities, the OCC works with other financial supervisors and major market participants to address infrastructure, clearing, and margining issues in over-the-counter (OTC) derivatives. OCC activities include development of objectives and milestones for stronger trade processing and improved market transparency across derivative categories, migration of certain highly liquid products to clearinghouses, and requirements for posting and collecting margin.

This is the 113th edition of the OCC's *Quarterly Report on Bank Trading and Derivatives Activities*. The first report was published in 1995. Please send any comments or feedback on the structure and content of this report to QuarterlyDerivatives@occ.treas.gov.

Executive Summary

- Insured U.S. commercial banks and savings associations (collectively, banks) reported trading revenue of $11.6 billion in the fourth quarter of 2023, $1.6 billion less (11.8 percent) than in the previous quarter and $2.0 billion more (20.4 percent) than a year earlier (see table 1).
- Credit exposure from derivatives decreased in the fourth quarter of 2023 compared with the third quarter of 2023. NCCE decreased $68.0 billion, or 22.0 percent, to $240.0 billion (see table 5).
- Derivative notional amounts decreased in the fourth quarter of 2023 by $11.7 trillion, or 5.7 percent, to $192.5 trillion (see table 10).
- Derivative contracts remained concentrated in interest rate products, which totaled $136.3 trillion or 70.8 percent of total derivative notional amounts (see table 10).

[1] Values in the tables and figures in this report may not add up to the totals because of rounding.

[2] Institutions with total assets of less than $5 billion have the option to file the Federal Financial Institutions Examination Council (FFIEC) 051 call report. Due to the limited amount of derivatives data provided by FFIEC 051 call report filers, this report provides this information separately and distinctly in table 25 in the appendix.

Revenue

Insured U.S. Commercial Banks and Savings Associations' Trading Revenue

Insured U.S. commercial banks and savings associations reported $11.6 billion in trading revenue in the fourth quarter of 2023, $1.6 billion less (11.8 percent) than in the previous quarter and $2.0 billion more (20.4 percent) than a year earlier (see table 1). The quarter-over-quarter decrease in trading revenue was due to decreases in revenue from foreign exchange, commodity and other, and credit instruments. For a historical view of quarterly bank trading revenue by instrument, see figure 15a in the appendix.

Table 1: Quarterly Bank Trading Revenue, in Millions of Dollars

Trading instruments	4Q 2023	3Q 2023	Q/Q change	Q/Q % change	4Q 2022	Y/Y change	Y/Y % change
Interest rate	$6,016	$630	$5,387	855.7%	$4,653	$1,363	29.3%
Foreign exchange	$2,334	$8,036	–$5,702	–71.0%	$1,134	$1,200	105.9%
Equity	$3,603	$2,262	$1,341	59.3%	$3,100	$504	16.2%
Commodity and other	$773	$942	–$169	–18.0%	$1,153	–$380	–33.0%
Credit	–$1,077	$1,342	–$2,419	–180.2%	–$368	–$709	–192.6%
Total trading revenue	**$11,649**	**$13,211**	**–$1,562**	**–11.8%**	**$9,671**	**$1,978**	**20.4%**

Source: Call reports, Schedule RI

Holding Company Trading Revenue

Consolidated bank holding company (BHC) trading performance provides a more complete picture of trading revenue in the banking system. As shown in table 2, consolidated holding company trading revenue of $32.3 billion in the fourth quarter of 2023 was $13.4 billion more (70.5 percent) than in the previous quarter. The quarter-over-quarter increase in trading revenue was due to increases in revenue from interest rate and equity instruments. Year-over-year holding company trading revenue increased by $9.2 billion (39.7 percent). For a historical view of quarterly holding company trading revenue by instrument, see figure 15b in the appendix.

Table 2: Quarterly Holding Company Trading Revenue, in Millions of Dollars

Trading instruments	4Q 2023	3Q 2023	Q/Q change	Q/Q % change	4Q 2022	Y/Y change	Y/Y % change
Interest rate	$14,397	$225	$14,172	6295.8%	$6,649	$7,748	116.5%
Foreign exchange	$1,768	$8,752	–$6,984	–79.8%	$1,810	–$42	–2.3%
Equity	$14,476	$6,363	$8,113	127.5%	$11,535	$2,942	25.5%
Commodity and other	$1,607	$2,025	–$418	–20.6%	$3,378	–$1,771	–52.4%
Credit	$53	$1,577	–$1,523	–96.6%	–$249	$302	121.5%
Total BHC trading revenue	**$32,302**	**$18,943**	**$13,359**	**70.5%**	**$23,123**	**$9,179**	**39.7%**

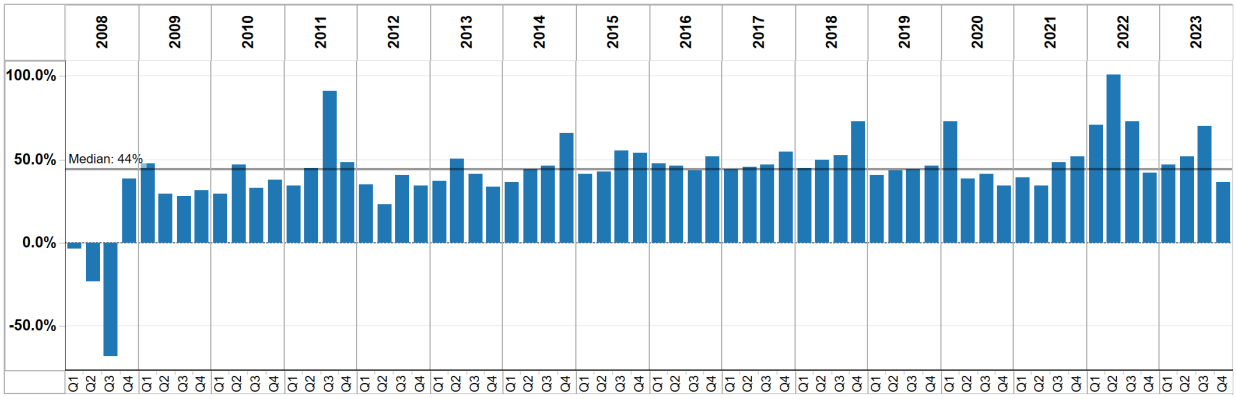
Source: Consolidated Financial Statements for Holding Companies—FR Y-9C, Schedule HI

Bank Trading Revenue as a Percentage of Consolidated Holding Company Trading Revenue

Before the 2008 financial crisis, trading revenue at banks typically ranged from 60 percent to 80 percent of consolidated BHC trading revenue. Since the 2008 financial crisis and the adoption of bank charters by the former investment banks, the percentage of bank trading revenue to consolidated BHC trading revenue has decreased and is typically between 30 percent and 50 percent. This decline reflects the significant amount of trading activity by the former investment banks that, while included in BHC results, remains outside insured commercial banks. More generally, insured U.S. commercial banks and savings associations have more limited legal authorities than their holding companies, particularly in the trading of commodity and equity products.

In the fourth quarter of 2023, banks generated 36.1 percent of consolidated holding company trading revenue, a decrease from 69.7 percent in the previous quarter (see figure 1).

Figure 1: Bank Trading Revenue as a Percentage of Consolidated Holding Company Trading Revenue



Source: Consolidated Financial Statements for Holding Companies—FR Y-9C (Schedule HI) and call report (Schedule RI)

Counterparty Credit Risk

Counterparty credit risk is a significant risk in bank derivative trading activities. The notional amount of a derivative contract is a reference amount that determines contractual payments, but it is generally not an amount at risk. The credit risk in a derivative contract is a function of a number of variables, such as whether counterparties exchange notional principal, the volatility of the underlying market factors (interest rate, currency, commodity, equity, or corporate reference entity), the maturity and liquidity of the contract, and the creditworthiness of the counterparty.

Credit risk in derivatives differs from credit risk in loans because of the more uncertain nature of the potential credit exposure. Because the credit exposure is a function of movements in market factors, banks do not know, and can only estimate, how much the value of the derivative contract might be at various points in the future.

The credit exposure is bilateral in most derivative transactions, such as swaps (which make up the bulk of bank derivative contracts). Each party to the contract may (and, if the contract has a long enough tenor, probably will) have a credit exposure to the other party at various times during the contract's life. With a funded traditional loan, the amount at risk is the amount advanced to the borrower. The credit risk is unilateral as the bank faces the credit exposure of the borrower.

Measuring credit exposure in derivative contracts involves identifying those contracts on which a bank would lose value if the counterparty to a contract defaulted. The total of all contracts with positive value (i.e., derivative receivables) to the bank is the gross positive fair value (GPFV) and represents an initial measurement of credit exposure. The total of all contracts with negative value (i.e., derivative payables) to the bank is the gross negative fair value (GNFV) and represents a measurement of the exposure the bank poses to its counterparties.

GPFV decreased by $290.0 billion (11.8 percent) in the fourth quarter of 2023 to $2.2 trillion, primarily driven by a $226.0 billion (14.5 percent) decrease in receivables from interest rate contracts and a $67.0 billion (9.8 percent) decrease in receivables from foreign exchange contracts (see table 3a). GNFV decreased $223.0 billion (9.4 percent) to $2.1 trillion during the quarter, driven by a $210.0 billion (14.1 percent) decrease in payables on interest rate contracts and a $34.0 billion (5.2 percent) decrease in payables from foreign exchange contracts (see table 3b).

Table 3a: Gross Positive Fair Values, in Billions of Dollars

Trading instruments	4Q 2023	3Q 2023	Q/Q change	Q/Q % change	4Q 2022	Y/Y change	Y/Y % change
Interest rate	$1,331	$1,556	–$226	–14.5%	$1,545	–$215	–13.9%
FX	$614	$680	–$67	–9.8%	$721	–$108	–14.9%
Equity	$149	$138	$11	8.1%	$129	$20	15.3%
Commodity & other	$42	$49	–$7	–14.6%	$70	–$28	–40.2%
Credit	$36	$38	–$2	–4.7%	$35	$0	1.2%
GPFV	**$2,171**	**$2,461**	**–$290**	**–11.8%**	**$2,501**	**–$330**	**–13.2%**

Source: Call reports, Schedule RC-L

Table 3b: Gross Negative Fair Values, in Billions of Dollars

Trading instruments	4Q 2023	3Q 2023	Q/Q change	Q/Q % change	4Q 2022	Y/Y change	Y/Y % change
Interest rate	$1,274	$1,484	–$210	–14.1%	$1,472	–$198	–13.5%
FX	$629	$663	–$34	–5.2%	$736	–$108	–14.6%
Equity	$158	$140	$18	13.1%	$125	$33	26.8%
Commodity & other	$41	$45	–$3	–7.6%	$61	–$20	–32.5%
Credit	$42	$36	$6	16.6%	$34	$8	22.2%
GNFV	**$2,144**	**$2,367**	**–$223**	**–9.4%**	**$2,429**	**–$285**	**–11.7%**

Source: Call reports, Schedule RC-L
Note: Numbers may not add up to total due to rounding.

A legally enforceable netting agreement between a bank and a counterparty creates a single legal obligation for all transactions (called a "netting set") under the agreement. Therefore, when banks have such agreements with their counterparties, contracts with negative values (an amount a bank would pay to its counterparty) can offset contracts with positive values (an amount owed by the counterparty to the bank), leaving an NCCE as shown in table 4.

Table 4: Netting Contract Examples

Bank A portfolio with Counterparty B	Number of contracts	Value of contracts	Credit measure/metric
Contracts with positive value to Bank A	6	$500	GPFV
Contracts with negative value to Bank A	4	–$350	GNFV
Total contracts	**10**	**$150**	**NCCE to Bank A from Counterparty B**

Most derivative transactions that a bank has with an individual counterparty are subject to a legally enforceable netting agreement. Some transactions may be subject to the laws of a jurisdiction that does not provide legal certainty of netting agreements, in which case banks must regard such transactions as separate from the netting set. Other transactions may involve nonstandard contractual documentation. Transactions that are not subject to the same legally enforceable netting agreement have distinct values that cannot be netted and for which the appropriate current credit measure is the gross exposure to the bank if that amount is positive. While banks can net exposures within a netting set under the same netting agreement, they cannot net exposures across netting sets without a separate legally enforceable netting agreement. As a result, a bank's NCCE to a particular counterparty equals the sum of the GPFV of contracts less the dollar amount of netting benefits with that counterparty. A bank's NCCE across all counterparties equals the sum of its NCCE to each of its counterparties.

NCCE is the primary metric the OCC uses to evaluate credit risk in bank derivative activities. NCCE for insured U.S. commercial banks and savings associations decreased by $68.0 billion (22.0 percent) to $240.0 billion in the fourth quarter of 2023 (see table 5).[3] Legally enforceable netting agreements allowed banks to reduce GPFV exposures by 88.9 percent ($1.9 trillion) in the fourth quarter of 2023.

Table 5: Net Current Credit Exposure, in Billions of Dollars

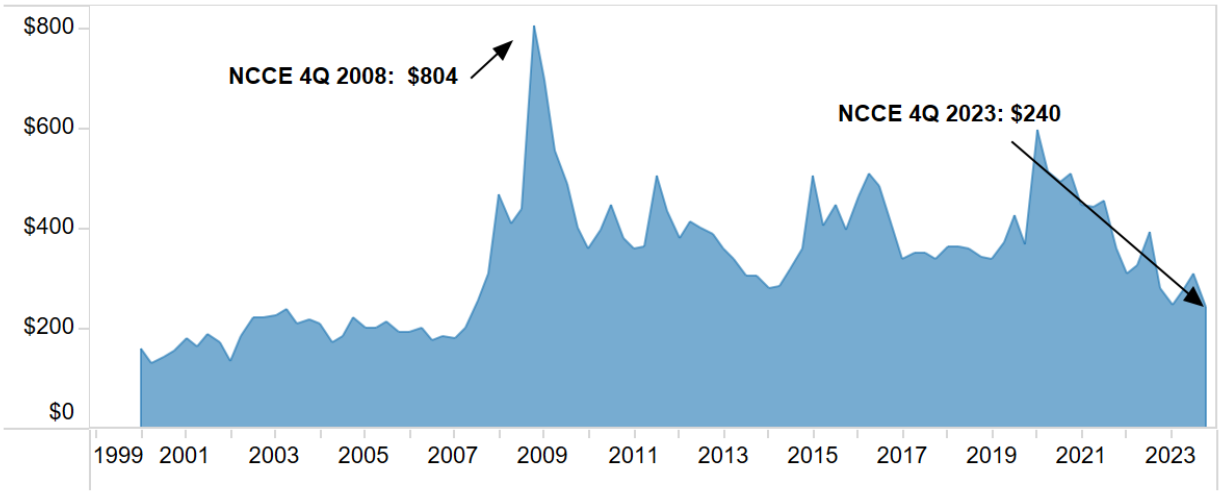
Netting benefit ratio	4Q 2023	3Q 2023	Q/Q change	Q/Q % change
GPFV	$2,171	$2,461	–$290	–11.8%
NCCE RC-R	$240	$308	–$68	–22.0%
Netting benefit RC-R	$1,931	$2,153	–$222	–10.3%
Netting benefit % RC-R	88.9%	87.5%		1.4%

Source: Call reports, Schedules RC-L and RC-R

[3] Banks report NCCE on two different schedules (RC-R and RC-L) of the call report, and the amounts reported are not the same because of differences in the scope of coverage. Neither measure comprehensively captures NCCE. RC-L includes exposure only from OTC derivative transactions; it excludes exchange-traded transactions. RC-R excludes transactions not subject to capital requirements. This report uses RC-R to measure NCCE.

NCCE peaked at $804.0 billion at the end of 2008 during the financial crisis when interest rates had plunged, and credit spreads were very high (see figure 2). The decline in NCCE since 2008 has largely resulted from declines in the GPFV of interest rate and credit contracts. After a large increase in NCCE during the first quarter of 2020 as markets responded to the financial impact of the COVID-19 global pandemic, NCCE ended the fourth quarter of 2023 at $240.0 billion as more normal market activity resumed.

Figure 2: Net Current Credit Exposure (NCCE), in Billions of Dollars



Source: Call reports, Schedule RC-R

The bulk of NCCE in the financial system is concentrated in banks and securities firms (34.6 percent) and in corporations and other counterparties (58.1 percent) (see table 6). The combined exposure to hedge funds and sovereign governments was small (7.3 percent in total).

Table 6: Net Current Credit Exposure by Counterparty Type as a Percentage of Total Net Current Credit Exposure

Quarter	Banks and securities firms	Hedge funds	Sovereign governments	Corporate and all other counterparties
4Q 2023	34.6%	2.3%	5.0%	58.1%
3Q 2023	37.9%	1.7%	3.3%	57.1%
2Q 2023	36.8%	1.7%	4.1%	57.4%
1Q 2023	36.3%	2.0%	4.1%	57.7%
4Q 2022	34.5%	2.3%	3.9%	59.2%
4Q 2021	37.9%	2.0%	7.4%	52.6%
4Q 2020	39.1%	2.2%	8.3%	50.4%
4Q 2019	44.2%	2.5%	9.2%	44.1%
4Q 2018	41.7%	5.0%	10.0%	43.2%
4Q 2017	41.7%	3.1%	7.9%	47.3%

Source: Call reports, Schedule RC-L

A more risk-sensitive measure of credit exposure would consider the value of collateral held against counterparty exposures. Reporting banks held collateral valued at 118.9 percent of their total NCCE at the end of the fourth quarter of 2023, up from 111.2 percent in the third quarter of 2023 (see table 7). Collateral held against hedge fund exposures decreased in the fourth quarter to 574.3 percent. Bank exposures to hedge funds are secured because banks take initial margin on transactions with hedge funds, in addition to fully securing any current credit exposure. Collateral coverage of corporate and sovereign exposures is much less than coverage of financial institutions and hedge funds.

Table 7: Ratio of Fair Value (FV) Collateral to Net Current Credit Exposure

Quarter	FV banks and securities firms	FV hedge funds	FV sovereign governments	FV corporate and all other counterparties	FV/NCCE %
4Q 2023	142.0%	574.3%	79.1%	90.8%	118.9%
3Q 2023	124.3%	594.3%	72.0%	90.7%	111.2%
2Q 2023	120.1%	634.2%	71.4%	86.0%	107.4%
1Q 2023	119.6%	609.6%	73.7%	87.9%	109.0%
4Q 2022	111.4%	474.5%	61.5%	75.4%	96.5%
4Q 2021	128.6%	687.6%	69.3%	76.0%	108.0%
4Q 2020	110.6%	467.6%	52.1%	59.5%	87.8%
4Q 2019	130.0%	485.9%	48.3%	91.8%	114.5%
4Q 2018	128.9%	308.0%	47.1%	91.8%	113.7%

Source: Call reports, Schedule RC-L

The majority of collateral held by banks against NCCE is very liquid with 61.3 percent held in cash (both U.S. dollar and other currencies) and an additional 11.0 percent held in U.S. Treasuries and U.S. government agency securities (see table 8). Supervisors assess changes in the quality and liquidity of collateral held as a key early indicator of potential easing in credit terms. Examiners review the collateral management practices of derivative dealers as a regular part of their supervision activities.

Table 8: Composition of Collateral

Quarter	Cash U.S. $	Cash other currencies	U.S. Treasury securities	U.S. government agency	Corp bonds	Equity securities	All other collateral
4Q 2023	46.2%	15.1%	10.3%	0.7%	4.1%	6.7%	17.0%
3Q 2023	49.9%	15.9%	7.6%	0.5%	4.5%	6.2%	15.4%
2Q 2023	48.5%	16.9%	8.3%	0.6%	4.1%	6.5%	15.1%
1Q 2023	49.2%	16.1%	8.5%	0.6%	4.2%	6.4%	15.0%
4Q 2022	53.1%	14.9%	8.7%	0.4%	3.8%	5.5%	13.7%
4Q 2021	39.3%	24.5%	8.1%	0.9%	1.6%	8.2%	17.3%
4Q 2020	39.5%	28.6%	7.8%	1.7%	1.1%	7.2%	14.1%
4Q 2019	34.4%	24.5%	11.6%	1.7%	2.3%	7.6%	17.7%
4Q 2018	37.2%	23.3%	10.8%	2.2%	2.1%	7.1%	17.2%

Source: Call reports, Schedule RC-L

Market Risk

Value-at-Risk

Banks primarily control market risk in trading operations by establishing limits against potential losses. Banks use value-at-risk (VaR) to quantify the maximum expected loss over a specified time period and at a certain confidence level under relevant market conditions. Banks subject to the market risk capital rule, 12 CFR 3, subpart F, are required to report their VaR-based measures quarterly on Federal Financial Institutions Examination Council (FFIEC) Form 102. The VaR measurement is calculated daily using a one-tail, 99 percent confidence level, and a holding period equivalent to a 10-business-day movement in underlying risk factors, such as rates, spreads, and prices. Tables 9a and 9b show the quarter-over-quarter change in VaR, as well as the VaR-based capital charge, for banks most active in trading and derivatives activity. As shown in table 9a, market risk in trading operations, as measured by VaR, is a small proportion of their risk-based capital. Figure 22 in the appendix illustrates the historical trend in VaR measurements for these institutions.

Table 9a: Value-at-Risk, in Millions of Dollars

Value-at-risk	JPMorgan Chase Bank NA	Citibank NA	Bank of America NA	Goldman Sachs Bank USA
4Q 2023 average 60-day VaR	$180	$205	$84	$344
3Q 2023 average 60-day VaR	$177	$152	$83	$387
Q/Q change	$3	$53	$1	–$43
4Q 2023 total risk-based capital	$281,308	$160,706	$201,932	$60,095

Source: Market Risk Regulatory Report for Institutions Subject to the Market Risk Capital Rule—FFIEC 102

Table 9b: Value-at-Risk Capital Requirement, in Millions of Dollars

Value-at-risk capital requirement	JPMorgan Chase Bank NA	Citibank NA	Bank of America NA	Goldman Sachs Bank USA
4Q 2023 VaR capital requirement	$540	$615	$252	$1,033
3Q 2023 VaR capital requirement	$530	$457	$249	$1,161
Q/Q change	$10	$158	$3	–$128
4Q 2023 total risk-based capital	$281,308	$160,706	$201,932	$60,095

Source: Market Risk Regulatory Report for Institutions Subject to the Market Risk Capital Rule—FFIEC 102

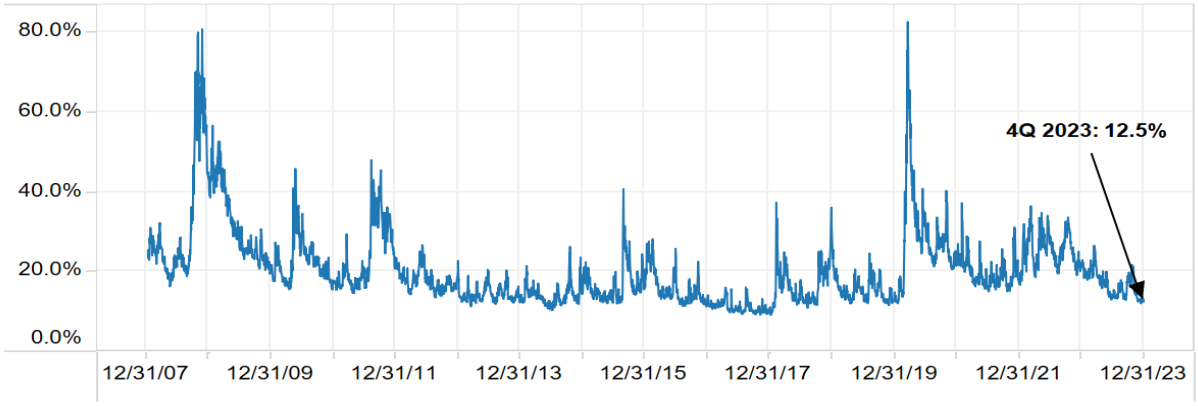
Volatility Index

Figure 3 shows the VIX, a volatility index,[4] which measures the market's expectation of stock market volatility in the S&P 500 index over the next 30-day period. Higher volatility as represented by the VIX is associated with increased equity trading volume, which drives increased bank and holding company equity trading revenue. The figure illustrates that there was

[4] VIX is the trademarked ticker symbol for the Chicago Board Options Exchange SPX Volatility Index.

an extended period of low volatility following the end of the 2008 financial crisis that continued until late in the first quarter of 2020. In mid-March 2020, volatility spiked as financial markets reacted to fears over the potential impact of the COVID-19 global pandemic. The VIX exceeded its previous high from the 2008 financial crisis before settling back to a more normal level of 12.5 percent at the end of the fourth quarter of 2023.

Figure 3: Volatility Index (VIX)

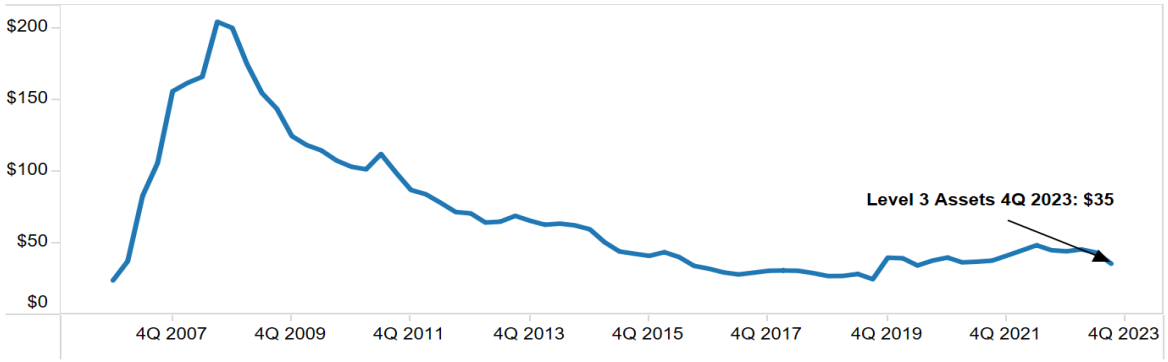


Source: Bloomberg

Level 3 Trading Assets

Another measure used to assess market risk is the volume of and changes in level 3 trading assets. Level 3 trading assets are assets whose fair value cannot be determined by using observable inputs, such as market prices. Since the peak of the financial crisis at the end of 2008, major dealers have reduced the volume of level 3 trading assets. Because the model inputs that determine the fair value of these exposures are not derived from observable market transactions, banks use their own model assumptions in determining their fair values. Level 3 trading assets peaked at $204.0 billion at the end of 2008 (see figure 4). At the end of the fourth quarter of 2023, banks held $35.4 billion of level 3 trading assets, down 18.0 percent from the previous quarter and 20.9 percent lower than a year ago. Level 3 trading assets are $168.7 billion (82.7 percent) lower than the peak level from 2008.

Figure 4: Level 3 Trading Assets, in Billions of Dollars



Source: Call reports, Schedule RC-Q

Notional Amounts of All Derivative Contracts

Changes in notional amounts are generally reasonable reflections of business activity and can provide insight into potential revenue and operational issues. The notional amount of derivative contracts, however, does not provide a useful measure of market or credit risk.

The total notional amount of derivative contracts held by banks in the fourth quarter decreased by $11.7 trillion (5.7 percent) to $192.5 trillion from the previous quarter (see table 10). The decrease in the notional amount of derivative contracts by underlying risk exposure was primarily driven by interest rate contracts. Interest rate notional amounts continued to represent the majority of banks' derivative holdings at $136.3 trillion, or 70.8 percent of total derivatives (see table 10).

Table 10: Derivative Notional Amounts by Underlying Risk Exposure Quarter-Over-Quarter, in Billions of Dollars

Trading instrument	4Q 2023	3Q 2023	Q/Q change	Q/Q % change	4Q 2022	Y/Y change	Y/Y % change
Interest rate	$136,274	$145,790	–$9,516	–6.5%	$139,755	–$3,481	–2.5%
FX	$45,278	$46,867	–$1,590	–3.4%	$41,123	$4,154	10.1%
Equity	$5,674	$5,875	–$201	–3.4%	$4,424	$1,250	28.3%
Commodity and other	$1,493	$1,530	–$37	–2.4%	$1,433	$60	4.2%
Credit derivatives	$3,746	$4,115	–$369	–9.0%	$4,241	–$496	–11.7%
Total notional	**$192,463**	**$204,177**	**–$11,713**	**–5.7%**	**$190,977**	**$1,487**	**0.8%**

Source: Call reports, Schedule RC-L

The decrease in the total notional amount of derivative contracts by contract type was primarily driven by a decrease in swaps derivatives contracts (see table 11). Swaps contracts remained the leading derivatives contract type at 60.9 percent of all notional amounts.

The four banks with the most derivative activity hold 87.4 percent of all bank derivatives, while the largest 25 banks account for nearly 100 percent of all contracts (see tables 15 and 17 and figure 10 in the appendix for more information).

Table 11: Derivative Notional Amounts by Contract Type Quarter-Over-Quarter, in Billions of Dollars

Trading instrument	4Q 2023	3Q 2023	Q/Q change	Q/Q % change	4Q 2022	Y/Y change	Y/Y % change
Futures and forwards	$31,806	$34,215	–$2,409	–7.0%	$28,748	$3,058	10.6%
Swaps	$117,303	$124,697	–$7,393	–5.9%	$118,598	–$1,294	–1.1%
Options	$39,608	$41,150	–$1,542	–3.7%	$39,389	$219	0.6%
Credit derivatives	$3,746	$4,115	–$369	–9.0%	$4,241	–$496	–11.7%
Total notional	**$192,463**	**$204,177**	**–$11,713**	**–5.7%**	**$190,977**	**$1,487**	**0.8%**

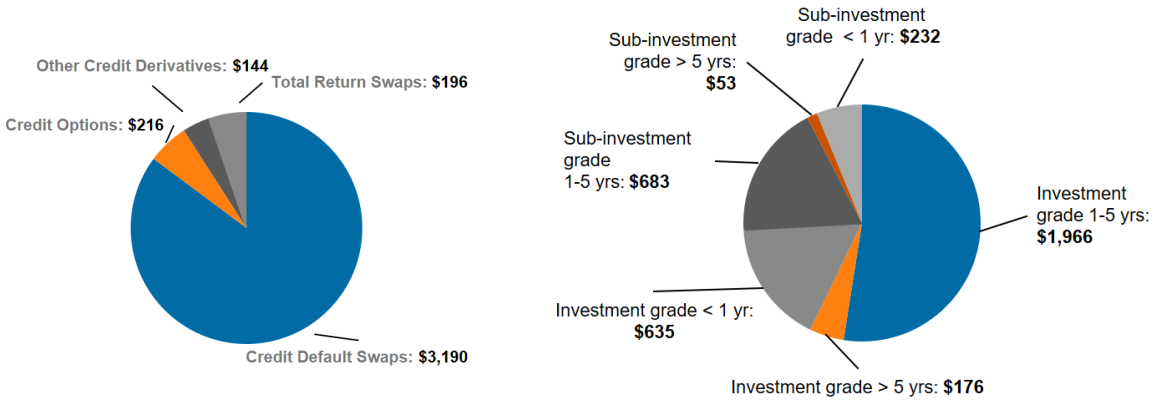
Source: Call reports, Schedule RC-L

Credit Derivatives

The notional amounts of credit derivatives decreased $369.0 billion (9.0 percent) to $3.7 trillion in the fourth quarter of 2023 (see table 11). As shown in the chart on the left of figure 5, credit default swaps are the dominant product, at $3.2 trillion (85.2 percent) of all credit derivative notional amounts.

Credit derivative contracts referencing investment-grade entities with maturities from one to five years represented the largest segment of the market at $2.0 trillion or 52.5 percent of all credit derivative notional amounts. Contracts of all tenors that reference investment-grade entities are $2.8 trillion or 74.2 percent of the market (see the chart on the right in figure 5).

Figure 5: Credit Derivative Composition, in Billions of Dollars



Source: Call reports, Schedule RC-L

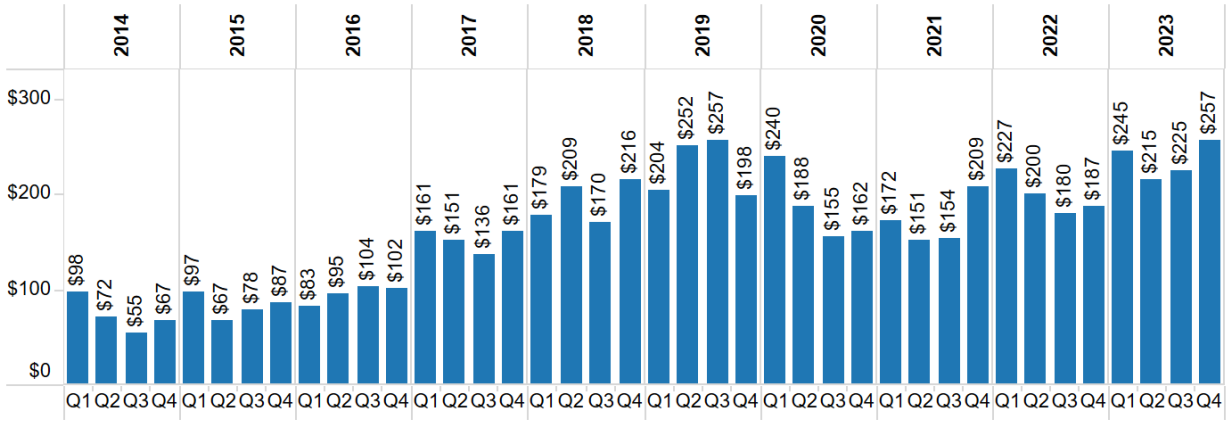
The notional amount for the 113 banks that net sold credit protection (i.e., assumed credit risk) was $1.7 trillion, down $192.8 billion (9.9 percent) from the third quarter of 2023 (see table 24 in the appendix). The notional amount for the 90 banks that net purchased credit protection (i.e., hedged credit risk) was $2.0 trillion, $176.6 billion lower (8.1 percent) than in the third quarter of 2023 (see table 24 in the appendix).

Compression Activity

Notional amounts of banks' derivative contracts have generally declined since 2014 because of trade compression efforts, leading to less need for risk management products. Trade compression continues to be a significant factor in reducing the amount of notional derivatives outstanding.

Trade compression aggregates a large number of swap contracts with similar factors, such as risk or cash flows, into fewer trades. Compression removes economic redundancy in a derivative book and reduces operational risk and capital costs for large banks. Trade compression activities increased in the fourth quarter of 2023, as shown in figure 6.

Figure 6: Quarterly Compression Activity, in Trillions of Dollars



Source: LCH Group

Centrally Cleared Derivative Contracts

In the first quarter of 2015, banks began reporting their volumes of cleared and uncleared derivative transactions, as well as risk weights for counterparties in each of these categories. In the fourth quarter of 2023, 33.9 percent of banks' derivative holdings were centrally cleared (see table 12). From a market factor perspective, 44.9 percent of interest rate derivative contracts' notional amounts outstanding were centrally cleared, while very little of the FX derivative market was centrally cleared. The bank-held credit derivative market remained largely uncleared, as 28.2 percent of credit derivative transactions were centrally cleared during the fourth quarter of 2023.

Centrally cleared derivative transactions were heavily concentrated at qualifying central counterparties, with 82.1 percent of notional amounts reflecting the 2 percent risk weight applicable to such counterparties.

Table 12: Centrally Cleared Derivative Contracts as a Percentage of Total Derivative Contracts

Quarter	Interest rate	FX	Equity	Precious metals	Credit	Other	Total
4Q 2023	44.9%	2.9%	24.0%	6.7%	28.2%	12.9%	33.9%
3Q 2023	49.7%	3.1%	23.4%	6.8%	32.5%	14.0%	37.8%
2Q 2023	52.9%	3.0%	23.5%	7.7%	35.1%	12.5%	41.3%
1Q 2023	52.2%	3.0%	24.7%	7.3%	30.9%	12.6%	40.5%
4Q 2022	49.1%	2.7%	23.8%	8.8%	28.9%	12.2%	37.9%
3Q 2022	54.3%	3.0%	23.9%	6.6%	30.6%	12.9%	41.7%
2Q 2022	55.9%	3.2%	24.8%	5.9%	25.4%	12.3%	43.1%
1Q 2022	56.1%	2.9%	24.3%	6.4%	33.8%	12.4%	43.4%
4Q 2021	51.8%	2.0%	20.6%	3.1%	29.2%	12.3%	39.4%
3Q 2021	50.5%	2.1%	21.4%	2.6%	35.3%	13.2%	39.0%

Source: Call reports, Schedule RC-R

Glossary of Terms

Bilateral netting: A legally enforceable arrangement between a bank and a counterparty that creates a single legal obligation covering all included individual contracts. This arrangement means that a bank's receivables or payables, in the event of the default or insolvency of one of the parties, would be the net sum of all positive and negative fair values of contracts included in the bilateral netting arrangement.

Centrally cleared derivative contract: A standardized derivative contract that is transacted bilaterally but submitted for clearing to a central counterparty, with the central counterparty becoming the ultimate counterparty to both the buyer and the seller.

Credit derivative: A financial contract that allows a party to take on or reduce credit exposure (generally on a bond, loan, or index). The OCC's derivatives survey includes OTC credit derivatives, such as credit default swaps, total return swaps, and credit spread options.

Derivative: A financial contract in which the value is derived from the performance of underlying market factors, such as interest rates, currency exchange rates, and commodity, credit, and equity prices. Derivative transactions include a wide assortment of financial contracts, such as structured debt obligations and deposits, swaps, futures, options, caps, floors, collars, forwards, and various combinations thereof.

Gross negative fair value (GNFV): The sum total of the fair values of contracts when the bank owes money to its counterparties, without taking netting into account. This amount represents the maximum losses the bank's counterparties would incur if the bank defaulted and there was no netting of contracts, and the counterparties held no bank collateral. GNFVs associated with credit derivatives are included.

Gross positive fair value (GPFV): The sum total of the fair values of contracts when the bank is owed money by its counterparties, without taking netting into account. This amount represents the maximum losses a bank would incur if all its counterparties defaulted and there was no netting of contracts, and the bank held no counterparty collateral. GPFVs associated with credit derivatives are included.

Net current credit exposure (NCCE): For a portfolio of derivative contracts, NCCE is the GPFV of contracts less the dollar amount of netting benefits. On any individual contract, current credit exposure (CCE) is the fair value of the contract if positive and zero when the fair value is negative or zero. NCCE is also the net amount owed to banks if all contracts were immediately liquidated.

Notional amount: The nominal or face amount that is used to calculate payments made on swaps and other risk management products. This amount generally does not change hands and is thus referred to as notional.

OTC derivative contracts: Privately negotiated derivative contracts that are transacted off organized exchanges.

Potential future exposure (PFE): An estimate of what the CCE could be over time, based on a supervisory formula in the agencies' risk-based capital rules. PFE is generally determined by multiplying the notional amount of the contract by a credit conversion factor that is based on the underlying market factor (e.g., interest rates, commodity prices, or equity prices) and the contract's remaining maturity. The risk-based capital rules, however, permit banks to adjust the formulaic PFE measure by the net-to-gross ratio, which proxies the risk-reduction benefits attributable to a valid bilateral netting contract. PFE data in this report use the amounts on which banks hold risk-based capital.

Qualifying central counterparties (QCCP): QCCPs are defined in 12 CFR 3.2 as a CCP either that the Financial Stability Oversight Council has designated systemically important under title VIII of the Dodd–Frank Wall Street Reform and Consumer Protection Act or that meets a series of standards. See 12 CFR 3.2 for a full definition.

Total credit exposure (TCE): The sum total of NCCE and PFE.

Total risk-based capital: The sum of tier 1 plus tier 2 capital. Tier 1 capital generally consists of common shareholders' equity, perpetual preferred shareholders' equity with noncumulative dividends, retained earnings, and tier 1 capital of consolidated subsidiaries that is not owned by the bank (minority interest), less regulatory adjustments and deductions. Tier 2 capital generally consists of subordinated debt, intermediate-term preferred stock, cumulative and long-term preferred stock, tier 2 capital of consolidated subsidiaries that is not owned by the bank (minority interest), and a portion of a bank's allowance for loan and lease losses less regulatory adjustments and deductions.

Trade compression: A significant factor in reducing the amount of notional derivatives outstanding. Trade compression aggregates a large number of swap contracts with similar factors, such as risk or cash flows, into fewer trades. Compression removes economic redundancy in a derivative book and reduces operational risks and capital costs for large banks.

Volatility index (VIX): A measure of the market's expectation of stock market volatility of S&P 500 index options over the next 30-day period.

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Table 13: Notional Amounts of Derivative Contracts
Top 25 Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank name	Total assets	Total derivatives	Total futures (EXCH TR)	Total options (EXCH TR)	Total forwards (OTC)	Total swaps (OTC)	Total options (OTC)	Total credit derivatives (OTC)	Spot FX
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$1,933,537	$1,936,572	$6,004,560	$32,869,617	$10,829,909	$555,890	$710,533
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	1,045,232	978,690	7,813,802	29,937,113	8,854,856	1,052,665	665,813
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	448,892	909,237	5,014,426	30,416,374	7,767,887	1,423,059	327,669
BANK OF AMERICA NA	2,540,116	18,468,516	235,744	297,029	3,200,591	10,719,411	3,574,474	441,267	322,216
WELLS FARGO BANK NA	1,733,244	13,279,012	430,514	476,621	1,689,426	7,407,812	3,147,805	126,834	23,639
STATE STREET BANK&TRUST CO	293,238	2,554,495	12,864	0	2,482,213	29,319	30,099	0	54,993
HSBC NA	165,172	1,272,674	4,923	190	501,573	680,525	68,752	16,710	29,631
U S BANK NATIONAL ASSN	650,659	1,205,666	1,884	0	86,283	888,869	212,958	15,673	5,265
BANK OF NEW YORK MELLON	332,529	1,090,116	8,879	60	283,295	767,798	29,864	220	97,280
PNC BANK NATIONAL ASSN	557,463	676,142	10,381	11,518	21,990	553,129	65,729	13,396	1,111
TD BANK NATIONAL ASSN	367,175	410,561	0	0	2,162	408,329	69	0	0
TRUIST BANK	527,530	376,353	4,472	24,808	21,235	246,659	69,857	9,322	556
CITIZENS BANK NATIONAL ASSN	221,750	311,805	2,108	0	9,402	264,186	33,858	2,251	123
NORTHERN TRUST CO	150,252	307,670	0	0	284,175	23,022	473	0	34,713
CAPITAL ONE NATIONAL ASSN	475,629	259,044	24,875	0	12,734	213,519	912	7,004	295
MORGAN STANLEY BANK NA	209,006	233,146	1,113	699	28,790	169,173	13,037	20,334	1,927
FIFTH THIRD BANK NA	213,768	188,178	2,264	316	6,668	106,000	68,143	4,787	398
REGIONS BANK	151,314	171,975	127	0	2,269	135,694	28,066	5,819	12
BMO BANK NATIONAL ASSN	265,658	146,859	0	0	3,356	141,135	2,366	2	256
KEYBANK NATIONAL ASSN	185,890	136,698	773	0	5,287	112,508	18,009	121	320
HUNTINGTON NATIONAL BANK	188,731	97,986	1,005	0	5,900	70,865	15,882	4,335	14
MANUFACTURERS&TRADERS TR CO	207,771	78,912	0	0	3,854	70,780	4,277	0	169
COMERICA BANK	85,902	72,937	0	0	3,054	57,638	10,592	1,653	253
UBS BANK USA	114,334	61,884	0	0	0	61,884	0	0	0
SANTANDER BANK N A	100,488	60,234	0	0	1,112	52,664	6,397	60	20
Top 25 commercial banks, SAs & TCs with derivatives	$15,338,556	$191,253,181	$4,169,587	$4,635,740	$27,488,159	$116,404,023	$34,854,270	$3,701,402	$2,277,206
Other commercial banks, SAs & TCs with derivatives	5,746,350	1,210,080	18,872	4,796	129,711	899,398	113,050	44,254	840
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	4,188,459	4,640,535	27,617,870	117,303,421	34,967,320	3,745,656	2,278,045

Note: Credit derivatives have been included in the sum of total derivatives. Credit derivatives have been included as an "over-the-counter" category, although the call report does not differentiate by market currently. Before the first quarter of 1995 total derivatives included spot FX. Beginning in that quarter, spot FX has been reported separately.

Source: Call reports, Schedule RC-L

Table 14: Notional Amounts of Derivative Contracts (Holding Companies)
Top 25 Holding Companies in Derivatives, in Millions of Dollars, December 31, 2023

Holding company	Total assets	Total derivatives	Total futures (EXCH TR)	Total options (EXCH TR)	Total forwards (OTC)	Total swaps (OTC)	Total options (OTC)	Total credit derivatives (OTC)	Spot FX
JPMORGAN CHASE & CO.	$3,875,393	$49,162,906	$1,087,647	$1,596,729	$8,222,727	$28,725,713	$8,485,111	$1,044,979	$650,339
CITIGROUP INC.	2,411,834	44,720,992	629,376	4,064,024	5,947,723	25,742,745	7,272,798	1,064,326	327,753
GOLDMAN SACHS GROUP, INC., THE	1,641,594	43,328,478	2,361,628	3,361,208	5,282,942	20,441,015	10,761,642	1,120,043	229,153
MORGAN STANLEY	1,193,693	37,288,934	913,120	1,436,740	3,880,616	21,711,925	8,505,049	841,484	55,354
BANK OF AMERICA CORPORATION	3,180,151	31,337,919	739,235	1,452,229	5,743,311	18,015,877	4,647,440	739,827	207,729
WELLS FARGO & COMPANY	1,932,472	13,610,755	452,731	539,376	2,122,077	7,237,946	3,145,143	113,482	23,626
MIZUHO AMERICAS LLC	78,249	9,750,422	25,795	39,302	421,918	8,777,836	469,019	16,552	1,788
SMBC AMERICAS HOLDINGS, INC.	32,905	9,087,209	724,053	1,076,390	461,587	5,155,012	1,668,586	1,581	0
HSBC NORTH AMERICA HOLDINGS INC.	219,645	4,267,489	433,099	764,331	501,573	2,477,522	74,253	16,710	29,631
STATE STREET CORPORATION	297,258	2,546,320	12,989	0	2,482,213	21,019	30,099	0	54,993
U.S. BANCORP	663,491	1,205,905	1,884	0	85,027	890,363	212,958	15,673	5,265
BANK OF NEW YORK MELLON CORPORATION, THE	409,982	1,070,489	9,188	60	288,048	743,109	29,864	220	97,301
RBC US GROUP HOLDINGS LLC	168,463	778,821	230,282	270,303	17,530	259,701	410	595	209
PNC FINANCIAL SERVICES GROUP, INC., THE	561,600	656,059	10,454	11,518	24,515	530,333	65,729	13,511	1,111
BARCLAYS US LLC	186,766	646,409	16,762	244,774	344,156	39,822	95	800	3
TD GROUP US HOLDINGS LLC	523,282	501,330	48,670	2,814	24,637	424,882	326	0	0
TRUIST FINANCIAL CORPORATION	535,349	365,403	4,472	24,808	21,271	235,573	69,857	9,422	556
CITIZENS FINANCIAL GROUP, INC.	222,412	311,805	2,108	0	9,402	264,186	33,858	2,251	123
NORTHERN TRUST CORPORATION	150,783	305,670	0	0	284,175	21,022	473	0	34,713
CAPITAL ONE FINANCIAL CORPORATION	478,464	293,743	24,875	0	12,842	248,110	912	7,004	295
BMO FINANCIAL CORP.	292,738	229,499	29,742	6,154	48,028	141,868	2,425	1,280	273
FIFTH THIRD BANCORP	214,574	192,383	2,264	316	6,668	110,205	68,143	4,787	398
REGIONS FINANCIAL CORPORATION	152,632	170,575	127	0	2,269	134,294	28,066	5,819	12
KEYCORP	188,369	143,121	773	0	7,564	116,654	18,009	121	320
AMERIPRISE FINANCIAL, INC.	175,198	132,390	8,913	2,381	383	42,437	74,840	3,436	0
Top 25 holding companies with derivatives	$19,787,298	$252,105,024	$7,770,188	$14,893,457	$36,243,203	$142,509,169	$45,665,104	$5,023,903	$1,720,946

Note: Currently, the Y-9 report does not differentiate credit derivatives by contract type. Credit derivatives have been included in the sum of total derivatives. Before the first quarter of 2005, total derivatives included spot FX. Beginning in that quarter, spot FX has been reported separately.

Source: Consolidated Financial Statements for Bank Holding Companies, FR Y- 9, Schedule HC-L

Table 15: Distribution of Derivative Contracts
Top 25 Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank Name	Total assets	Total derivatives	Percent exchange traded contracts	Percent OTC contracts	Percent interest rate contracts	Percent foreign exchange contracts	Percent equity contracts	Percent other contracts	Percent credit derivatives
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	7.1	92.9	84.9	12.9	1.1	0.1	1.0
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	4.1	95.9	66.5	25.6	4.4	1.4	2.1
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	3.0	97.0	63.9	28.9	3.3	0.7	3.1
BANK OF AMERICA NA	2,540,116	18,468,516	2.9	97.1	65.3	26.7	4.9	0.7	2.4
WELLS FARGO BANK NA	1,733,244	13,279,012	6.8	93.2	78.8	17.0	2.5	0.7	1.0
STATE STREET BANK&TRUST CO	293,238	2,554,495	0.5	99.5	1.6	97.3	0.0	1.1	0.0
HSBC NA	165,172	1,272,674	0.4	99.6	10.3	83.9	1.3	3.3	1.3
U S BANK NATIONAL ASSN	650,659	1,205,666	0.2	99.8	87.9	10.1	0.0	0.7	1.3
BANK OF NEW YORK MELLON	332,529	1,090,116	0.8	99.2	20.7	79.0	0.3	0.0	0.0
PNC BANK NATIONAL ASSN	557,463	676,142	3.2	96.8	91.3	3.8	1.2	1.7	2.0
TD BANK NATIONAL ASSN	367,175	410,561	0.0	100.0	99.5	0.5	0.0	0.0	0.0
TRUIST BANK	527,530	376,353	7.8	92.2	78.4	6.4	10.5	2.2	2.5
CITIZENS BANK NATIONAL ASSN	221,750	311,805	0.7	99.3	88.4	10.4	0.0	0.4	0.7
NORTHERN TRUST CO	150,252	307,670	0.0	100.0	7.4	92.4	0.3	0.0	0.0
CAPITAL ONE NATIONAL ASSN	475,629	259,044	9.6	90.4	83.6	6.6	0.0	7.1	2.7
MORGAN STANLEY BANK NA	209,006	233,146	0.8	99.2	39.6	33.5	18.3	0.0	8.7
FIFTH THIRD BANK NA	213,768	188,178	1.4	98.6	65.9	19.9	2.2	9.4	2.5
REGIONS BANK	151,314	171,975	0.1	99.9	93.0	1.2	0.0	2.4	3.4
BMO BANK NATIONAL ASSN	265,658	146,859	0.0	100.0	96.2	2.3	1.6	0.0	0.0
KEYBANK NATIONAL ASSN	185,890	136,698	0.6	99.4	87.0	4.4	0.0	8.5	0.1
HUNTINGTON NATIONAL BANK	188,731	97,986	1.0	99.0	88.6	5.6	0.7	0.7	4.4
MANUFACTURERS&TRADERS TR CO	207,771	78,912	0.0	100.0	98.3	1.7	0.0	0.0	0.0
COMERICA BANK	85,902	72,937	0.0	100.0	74.6	4.2	0.0	18.9	2.3
UBS BANK USA	114,334	61,884	0.0	100.0	100.0	0.0	0.0	0.0	0.0
SANTANDER BANK N A	100,488	60,234	0.0	100.0	87.8	12.1	0.0	0.0	0.1
Top 25 commercial banks, SAs & TCs with derivatives	$15,338,556	$191,253,181	$8,805,327	$182,447,854	$135,196,340	$45,235,504	$5,673,061	$1,446,874	$3,701,402
Other commercial banks, SAs & TCs with derivatives	5,746,350	1,210,080	23,667	1,186,413	1,077,394	42,046	698	45,688	44,254
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	8,828,994	183,634,267	136,273,734	45,277,550	5,673,759	1,492,562	3,745,656
Top 25 Commercial Banks, SAs & TCs with derivatives: percentage of total		99.4	4.6	94.8	70.2	23.5	2.9	0.8	1.9
Other commercial banks, SAs & TCs with derivatives: percentage of total		0.6	0.0	0.6	0.6	0.0	0.0	0.0	0.0
Total all commercial banks, SAs & TCs with derivatives: percentage of total		100.0	4.6	95.4	70.8	23.5	2.9	0.8	1.9

Note: Currently, the call report does not differentiate credit derivatives by over-the-counter or exchange-traded. Credit derivatives have been included in the "over-the-counter" category as well as in the sum of total derivatives here. "FX" does not include spot FX. "Other" is defined as the sum of commodity and equity contracts.

Source: Call reports, Schedule RC-L

Table 16: Credit Equivalent Exposures
Top 25 Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank Name	Total assets	Total derivatives	Total risk-based capital	Bilaterally netted current credit exposure	Potential future exposure	Total credit exposure from all contracts	Percent of total credit exposure to capital
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$60,095	$13,910	$71,329	$85,239	142
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	281,308	71,829	214,553	286,382	102
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	160,706	37,499	157,154	194,653	121
BANK OF AMERICA NA	2,540,116	18,468,516	201,932	31,890	59,392	91,282	45
WELLS FARGO BANK NA	1,733,244	13,279,012	165,634	34,982	22,018	57,000	34
STATE STREET BANK&TRUST CO	293,238	2,554,495	17,570	5,264	18,510	23,774	135
HSBC NA	165,172	1,272,674	19,024	3,285	3,820	7,105	37
U S BANK NATIONAL ASSN	650,659	1,205,666	68,817	5,994	11,353	17,347	25
BANK OF NEW YORK MELLON	332,529	1,090,116	21,276	6,716	7,469	14,185	67
PNC BANK NATIONAL ASSN	557,463	676,142	54,140	4,286	-1,358	2,928	5
TD BANK NATIONAL ASSN	367,175	410,561	41,858	31	1,681	1,712	4
TRUIST BANK	527,530	376,353	55,227	529	2,978	3,507	6
CITIZENS BANK NATIONAL ASSN	221,750	311,805	22,453	394	1,824	2,218	10
NORTHERN TRUST CO	150,252	307,670	12,279	737	4,537	5,274	43
CAPITAL ONE NATIONAL ASSN	475,629	259,044	52,636	2,986	6,364	9,350	18
MORGAN STANLEY BANK NA	209,006	233,146	22,833	352	4,327	4,679	20
FIFTH THIRD BANK NA	213,768	188,178	22,463	1,676	3,239	4,915	22
REGIONS BANK	151,314	171,975	16,057	428	624	1,052	7
BMO BANK NATIONAL ASSN	265,658	146,859	26,222	323	263	586	2
KEYBANK NATIONAL ASSN	185,890	136,698	20,726	573	414	988	5
HUNTINGTON NATIONAL BANK	188,731	97,986	18,126	1,576	897	2,473	14
MANUFACTURERS&TRADERS TR CO	207,771	78,912	19,884	229	257	486	2
COMERICA BANK	85,902	72,937	9,362	603	1,242	1,845	20
UBS BANK USA	114,334	61,884	10,489	0	141	141	1
SANTANDER BANK N A	100,488	60,234	12,195	923	485	1,408	12
Top 25 commercial banks, SAs & TCs with derivatives	$15,338,556	$191,253,181	$1,413,314	$227,015	$593,513	$820,528	58
Other commercial banks, SAs & TCs with derivatives	5,746,350	1,210,080	595,115	13,273	10,500	23,773	4
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	2,008,428	240,288	604,013	844,301	42

Note: Total credit exposure is defined as the credit equivalent amount from derivative contracts (RC-R column B lines 20 and 21), which is the sum of netted current credit exposure and PFE. The total credit exposure to capital ratio is calculated using risk-based capital (tier 1 plus tier 2 capital). Currently, the call report does not differentiate credit derivatives by contract type. Credit derivatives have been included in the sum of total derivatives here.

Source: Call reports, Schedules RC-L and RC-R

Table 17: Notional Amounts of Derivative Contracts Held for Trading
Top Four Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank name	Total assets	Total derivatives	Total held for trading & MTM	Percent held for trading & MTM	Total not held for trading & MTM	Percent not held for trading & MTM
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$53,537,123	99.9	$37,072	0.1
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	47,989,439	98.7	640,254	1.3
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	44,450,091	99.8	106,725	0.2
BANK OF AMERICA NA	2,540,116	18,468,516	16,302,453	90.4	1,724,796	9.6
Top four commercial banks, SAs & TCs with derivatives	$8,141,054	$168,260,834	$162,279,106	98.5	$2,508,847	1.5
Other commercial banks, SAs & TCs with derivatives	12,943,852	24,202,427	20,923,098	87.4	3,006,554	12.6
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	183,202,204	97.1	5,515,401	2.9

Note: Currently, the call report does not differentiate between traded and not-traded credit derivatives. Credit derivatives have been excluded from the sum of total derivatives here.

Source: Call reports, Schedule RC-L

Table 18: Gross Fair Values of Derivative Contracts
Top Four Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank name	Total assets	Total derivatives	Trading gross positive fair value*	Trading gross negative fair value**	Not for trading gross positive fair value*	Not for trading gross negative fair value**	Credit derivatives gross positive fair value	Credit derivatives gross negative fair value**
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$699,418	$691,243	$57	$363	$6,457	$7,475
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	592,522	585,436	3,238	3,340	9,432	12,142
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	435,911	427,324	1,895	1,840	14,884	15,412
BANK OF AMERICA NA	2,540,116	18,468,516	160,542	148,097	39,898	45,834	3,952	3,953
Top four commercial banks, SAs & TCs with derivatives	$8,141,054	$168,260,834	$1,888,393	$1,852,100	$45,088	$51,377	$34,725	$38,982
Other commercial banks, SAs & TCs with derivatives	12,943,852	24,202,427	162,776	164,922	39,033	34,083	1,105	2,633
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	2,051,169	2,017,022	84,121	85,460	35,830	41,615

* Market value of contracts that have a positive fair value as of the end of the quarter.

** Market value of contracts that have a negative fair value as of the end of the quarter.

Note: Currently, the call report does not differentiate between traded and non-traded credit derivatives. Credit derivatives have been included in the sum of total derivatives here.

Source: Call reports, Schedule RC-L

Table 19: Trading Revenues From Cash Instruments and Derivatives
Top Four Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars: Revenue Figures are for the Quarter (Not Year-to-Date), December 31, 2023

Bank name	Total assets	Total derivatives	Total trading revenues from cash & off-balance sheet positions	Trading revenue from interest rate positions	Trading revenue from foreign exchange positions	Trading revenue from equity positions	Trading revenue from commodity & other positions	Trading revenue from credit positions
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	1,282	2,006	-1,043	450	-9	-122
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	5,662	1,789	1,099	2,647	301	-174
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	1,552	734	1,210	-575	219	-36
BANK OF AMERICA NA	2,540,116	18,468,516	1,226	416	252	503	112	-57
Top four commercial banks, SAs & TCs with derivatives	$8,141,054	$168,260,834	9,722	4,945	1,518	3,025	623	-389
Other commercial banks, SAs & TCs with derivatives	12,943,852	24,202,427	1,927	1,071	816	578	150	-688
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	11,649	6,016	2,334	3,603	773	-1,077

Note: Effective in the first quarter of 2007, trading revenues from credit exposures are reported separately, along with the four other types of exposures. The total derivatives column includes credit exposures. Trading revenue is defined here as "trading revenue from cash instruments and off-balance-sheet derivative instruments."

Source: Call reports, Schedules RC-L and Schedule RI

Table 20: Notional Amounts of Derivative Contracts by Contract Type and Maturity (Interest Rate and Foreign Exchange Rate)
Top Four Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank name	Total assets	Total derivatives	Interest rate maturity < 1 year	Interest rate maturity 1-5 years	Interest rate maturity > 5 years	Interest rate: all maturities	Foreign exchange rate maturity < 1 year	Foreign exchange rate maturity 1-5 years	Foreign exchange rate maturity > 5 years	Foreign exchange rate: all maturities
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$22,763,580	$9,438,537	$8,166,138	$40,368,255	$5,213,994	$1,098,917	$797,109	$7,110,020
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	30,145,853	7,830,299	6,382,256	44,358,408	8,867,194	2,702,521	1,286,471	12,856,186
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	18,707,536	4,516,200	3,240,489	26,464,225	9,262,685	2,232,753	1,021,222	12,516,660
BANK OF AMERICA NA	2,540,116	18,468,516	4,618,945	4,726,698	3,013,273	12,358,916	4,003,141	503,537	310,389	4,817,067
Top four commercial banks, SAs & TCs with derivatives	$8,141,054	$168,260,834	$76,235,914	$26,511,734	$20,802,156	$123,549,804	$27,347,014	$6,537,728	$3,415,191	$37,299,933
Other commercial banks, SAs & TCs with derivatives	12,943,852	24,202,427	11,340,172	3,136,248	1,002,069	15,478,489	6,994,067	323,854	85,843	7,403,763
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	87,576,086	29,647,982	21,804,225	139,028,293	34,341,081	6,861,582	3,501,034	44,703,696

Note: Beginning January 1, 2022, the largest banks are required to calculate their derivative exposure amount for regulatory capital purposes using the Standardized Approach for Counterparty Credit Risk (SA-CCR). Refer to the call report instructions and OCC Bulletin 2020-7, “Standardized Approach for Counterparty Credit Risk: Final Rule,” for additional information on the SA-CCR exposure calculation.

Source: Call reports, Schedules RC-L and RC-R

Table 21: Notional Amounts of Derivative Contracts by Contract Type and Maturity (Precious Metals)
Top Four Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank name	Total assets	Total derivatives	Precious metals maturity < 1 year	Precious metals maturity 1-5 years	Precious metals maturity > 5 years	Precious metals: all maturities
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$92	$68	$0	$160
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	220,575	26,226	24	246,825
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	91,352	7,552	0	98,904
BANK OF AMERICA NA	2,540,116	18,468,516	69,648	12,499	0	82,147
Top four commercial banks, SAs & TCs with derivatives	$8,141,054	$168,260,834	$381,667	$46,345	$24	$428,036
Other commercial banks, SAs & TCs with derivatives	12,943,852	24,202,427	11,532	1,157	0	12,689
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	393,199	47,502	24	440,725

Note: Beginning January 1, 2022, the largest banks are required to calculate their derivative exposure amount for regulatory capital purposes using the Standardized Approach for Counterparty Credit Risk (SA-CCR). Under SA-CCR gold derivatives are considered precious metals derivative contracts rather than an exchange rate derivative contract, resulting in an increase in reported precious metals derivative contracts compared with prior quarters. Refer to the call report instructions and OCC Bulletin 2020-7, “Standardized Approach for Counterparty Credit Risk: Final Rule,” for additional information on the SA-CCR exposure calculation.

Source: Call reports, Schedules RC-L and RC-R

Table 22: Notional Amounts of Derivative Contracts by Contract Type and Maturity (Other Commodity and Equity)
Top Four Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank name	Total assets	Total derivatives	Other commodity maturity < 1 year	Other commodity maturity 1-5 years	Other commodity maturity > 5 years	Other commodity: all maturities	Equity maturity < 1 year	Equity maturity 1-5 tears	Equity maturity > 5 years	Equity: all maturities
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$39,158	$18,966	$315	$58,439	$519,164	$63,223	$18,339	$600,726
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	736,972	139,472	3,975	880,419	3,205,458	638,182	44,663	3,888,303
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	116,804	43,373	341	160,518	689,882	197,989	9,700	897,571
BANK OF AMERICA NA	2,540,116	18,468,516	34,050	10,775	483	45,308	695,594	235,682	14,673	945,949
Top four commercial banks, SAs & TCs with derivatives	$8,141,054	$168,260,834	$926,984	$212,586	$5,114	$1,144,684	$5,110,098	$1,135,076	$87,375	$6,332,549
Other commercial banks, SAs & TCs with derivatives	12,943,852	24,202,427	93,780	101,530	1,991	197,301	359,022	169,332	11,244	539,599
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	1,020,764	314,116	7,105	1,341,985	5,469,120	1,304,408	98,619	6,872,148

Note: Beginning January 1, 2022, the largest banks are required to calculate their derivative exposure amount for regulatory capital purposes using the Standardized Approach for Counterparty Credit Risk (SA-CCR). Refer to the call report instructions and OCC Bulletin 2020-7, “Standardized Approach for Counterparty Credit Risk: Final Rule,” for additional information on the SA-CCR exposure calculation.

Source: Call reports, Schedules RC-L and RC-R

Table 23: Notional Amounts of Credit Derivative Contracts by Contract Type and Maturity (Investment Grade and Sub-Investment Grade)
Top Four Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank name	Total assets	Total derivatives	Total credit derivatives	Investment grade maturity <1 year	Investment grade maturity 1-5 years	Investment grade maturity >5 years	Investment grade all maturities	Sub-investment grade maturity <1 year	Sub-investment grade maturity 1-5 years	Sub-investment grade maturity >5 years	Sub-investment grade all maturities
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$555,890	$46,110	$237,967	$42,041	$326,118	$44,653	$165,538	$19,581	$229,772
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	1,052,665	192,128	565,284	56,611	814,023	73,736	153,989	10,917	238,642
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	1,423,059	222,380	868,319	41,247	1,131,946	67,178	216,598	7,337	291,113
BANK OF AMERICA NA	2,540,116	18,468,516	441,267	109,391	189,717	23,040	322,148	36,713	78,157	4,249	119,119
Top four commercial banks, SAs & TCs with derivatives	$8,141,054	$168,260,834	$3,472,881	$570,009	$1,861,287	$162,939	$2,594,235	$222,280	$614,282	$42,084	$878,646
Other commercial banks, SAs & TCs with derivatives	12,943,852	24,202,427	272,775	64,991	104,704	13,425	183,120	9,777	68,667	11,211	89,655
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	3,745,656	635,000	1,965,991	176,364	2,777,355	232,057	682,949	53,295	968,301

Source: Call reports, Schedule RC-L

Table 24: Distribution of Credit Derivative Contracts Held for Trading
Top 25 Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

Bank name	Total assets	Total derivatives	Total credit derivatives	Total credit derivatives purchased	Total credit derivatives sold	Purchased credit default swaps	Purchased total return swaps	Purchased credit options	Purchased other credit derivatives	Sold credit default swaps	Sold total return swaps	Sold credit options	Sold other credit derivatives
GOLDMAN SACHS BANK USA	$521,102	$54,130,085	$555,890	$304,314	$251,576	$292,712	$3,409	$8,141	$52	$239,796	$3,409	$8,352	$19
JPMORGAN CHASE BANK NA	3,395,126	49,682,358	1,052,665	559,739	492,926	480,032	39,018	34,657	6,032	448,674	8,684	35,511	57
CITIBANK NATIONAL ASSN	1,684,710	45,979,875	1,423,059	741,213	681,846	673,602	26,168	41,443	0	635,805	8,435	37,606	0
BANK OF AMERICA NA	2,540,116	18,468,516	441,267	230,920	210,347	185,846	17,048	28,026	0	172,997	15,799	21,551	0
WELLS FARGO BANK NA	1,733,244	13,279,012	126,834	71,384	55,450	9,250	36,566	250	25,318	11,242	29,758	0	14,450
STATE STREET BANK&TRUST CO	293,238	2,554,495	0	0	0	0	0	0	0	0	0	0	0
HSBC NA	165,172	1,272,674	16,710	13,718	2,992	7,766	5,952	0	0	2,992	0	0	0
U S BANK NATIONAL ASSN	650,659	1,205,666	15,673	6,101	9,572	3,032	0	0	3,069	5	0	0	9,567
BANK OF NEW YORK MELLON	332,529	1,090,116	220	220	0	220	0	0	0	0	0	0	0
PNC BANK NATIONAL ASSN	557,463	676,142	13,396	5,450	7,946	100	0	0	5,350	0	0	0	7,946
TD BANK NATIONAL ASSN	367,175	410,561	0	0	0	0	0	0	0	0	0	0	0
TRUIST BANK	527,530	376,353	9,322	3,151	6,171	225	1,598	0	1,328	0	0	0	6,171
CITIZENS BANK NATIONAL ASSN	221,750	311,805	2,251	0	2,251	0	0	0	0	0	0	0	2,251
NORTHERN TRUST CO	150,252	307,670	0	0	0	0	0	0	0	0	0	0	0
CAPITAL ONE NATIONAL ASSN	475,629	259,044	7,004	3,867	3,137	0	0	0	3,867	0	0	0	3,137
MORGAN STANLEY BANK NA	209,006	233,146	20,334	18,644	1,690	18,639	5	0	0	1,394	296	0	0
FIFTH THIRD BANK NA	213,768	188,178	4,787	1,224	3,563	0	0	0	1,224	0	0	0	3,563
REGIONS BANK	151,314	171,975	5,819	1,657	4,162	0	0	0	1,657	0	0	0	4,162
BMO BANK NATIONAL ASSN	265,658	146,859	2	1	1	1	0	0	0	1	0	0	0
KEYBANK NATIONAL ASSN	185,890	136,698	121	24	97	24	0	0	0	4	93	0	0
HUNTINGTON NATIONAL BANK	188,731	97,986	4,335	2,730	1,604	381	0	0	2,350	0	0	0	1,604
MANUFACTURERS&TRADERS TR CO	207,771	78,912	0	0	0	0	0	0	0	0	0	0	0
COMERICA BANK	85,902	72,937	1,653	648	1,005	648	0	0	0	1,005	0	0	0
UBS BANK USA	114,334	61,884	0	0	0	0	0	0	0	0	0	0	0
SANTANDER BANK N A	100,488	60,234	60	9	51	9	0	0	0	51	0	0	0
Top 25 commercial banks, SAs & TCs with derivatives	$15,338,556	$191,253,181	$3,701,402	$1,965,014	$1,736,388	$1,672,486	$129,764	$112,517	$50,247	$1,513,967	$66,474	$103,020	$52,927
Other commercial banks, SAs & TCs with derivatives	5,746,350	1,210,080	44,254	31,784	12,470	1,381	0	0	30,403	2,498	16	0	9,956
Total all commercial banks, SAs & TCs with derivatives	21,084,906	192,463,261	3,745,656	1,996,799	1,748,857	1,673,868	129,764	112,517	80,650	1,516,465	66,489	103,020	62,883
Top 25 commercial banks, SAs & TCs with derivatives: percentage of total			98.8	52.5	46.4	44.7	3.5	3.0	1.3	40.4	1.8	2.8	1.4
Other commercial banks, SAs & TCs with derivatives: percentage of total			1.2	0.8	0.3	0.0	0.0	0.0	0.8	0.1	0.0	0.0	0.3
Total all commercial banks, SAs & TCs with derivatives: percentage of total			100.0	53.3	46.7	44.7	3.5	3.0	2.2	40.5	1.8	2.8	1.7

Note: Credit derivatives have been excluded from the sum of total derivatives here.

Source: Call reports, Schedule RC-L

Table 25: Derivatives Data Reported by FFIEC 051 Filers*

Commercial Banks, Savings Associations, and Trust Companies in Derivatives, in Millions of Dollars, December 31, 2023

FFIEC 051 Call Report Schedule SU

Gross notional amount of derivatives	4Q23	3Q23	2Q23	1Q23	4Q22	3Q22	2Q22	1Q22	4Q21	3Q21	2Q21	1Q21
Total gross notional amount of interest rate derivatives held for trading	$5,586	$5,325	$5,242	$5,016	$4,792	$4,915	$4,953	$4,994	$5,011	$5,301	$5,189	$5,391
Total gross notional amount of all other derivatives held for trading	$149	$50	$47	$51	$43	$42	$35	$39	$44	$14	$173	$20
Total gross notional amount of interest rate derivatives not held for trading	$26,068	$122,763	$21,050	$17,819	$14,395	$16,786	$19,499	$21,308	$22,545	$29,991	$31,949	$38,839
Total gross notional amount of all other derivatives not held for trading	$614	$845	$842	$676	$1,103	$1,037	$1,142	$1,007	$1,314	$1,461	$1,350	$1,269

FFIEC 051 Call Report Schedule RC-R**

Notional principal amounts of over-the-counter derivative contracts covered by the regulatory capital rules	4Q23	3Q23	2Q23	1Q23	4Q22	3Q22	2Q22	1Q22	4Q21	3Q21	2Q21	1Q21
Interest rate	$20,246	Data Not Reported	$20,844	Data Not Reported	$12,839	Data Not Reported	$14,092	Data Not Reported	$14,005	Data Not Reported	$17,688	Data Not Reported
Foreign exchange rate	$7	Data Not Reported	$5	Data Not Reported	$5	Data Not Reported	$4	Data Not Reported	$4	Data Not Reported	$3	Data Not Reported
Credit (investment grade reference asset)	$75	Data Not Reported	$80	Data Not Reported	$188	Data Not Reported	$265	Data Not Reported	$230	Data Not Reported	$196	Data Not Reported
Credit (non-investment grade reference asset)	$302	Data Not Reported	$251	Data Not Reported	$212	Data Not Reported	$176	Data Not Reported	$168	Data Not Reported	$154	Data Not Reported
Equity	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported
Precious metals	$4	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$4	Data Not Reported	$1	Data Not Reported
Other	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$1	Data Not Reported

Notional principal amounts of centrally cleared derivative contracts covered by the regulatory capital rules	4Q23	3Q23	2Q23	1Q23	4Q22	3Q22	2Q22	1Q22	4Q21	3Q21	2Q21	1Q21
Interest rate	$69	Data Not Reported	$90	Data Not Reported	$79	Data Not Reported	$108	Data Not Reported	$21	Data Not Reported	$193	Data Not Reported
Foreign exchange rate	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported
Credit (investment grade reference asset)	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported
Credit (non-investment grade reference asset)	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported
Equity	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported
Precious metals	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported
Other	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported	$0	Data Not Reported

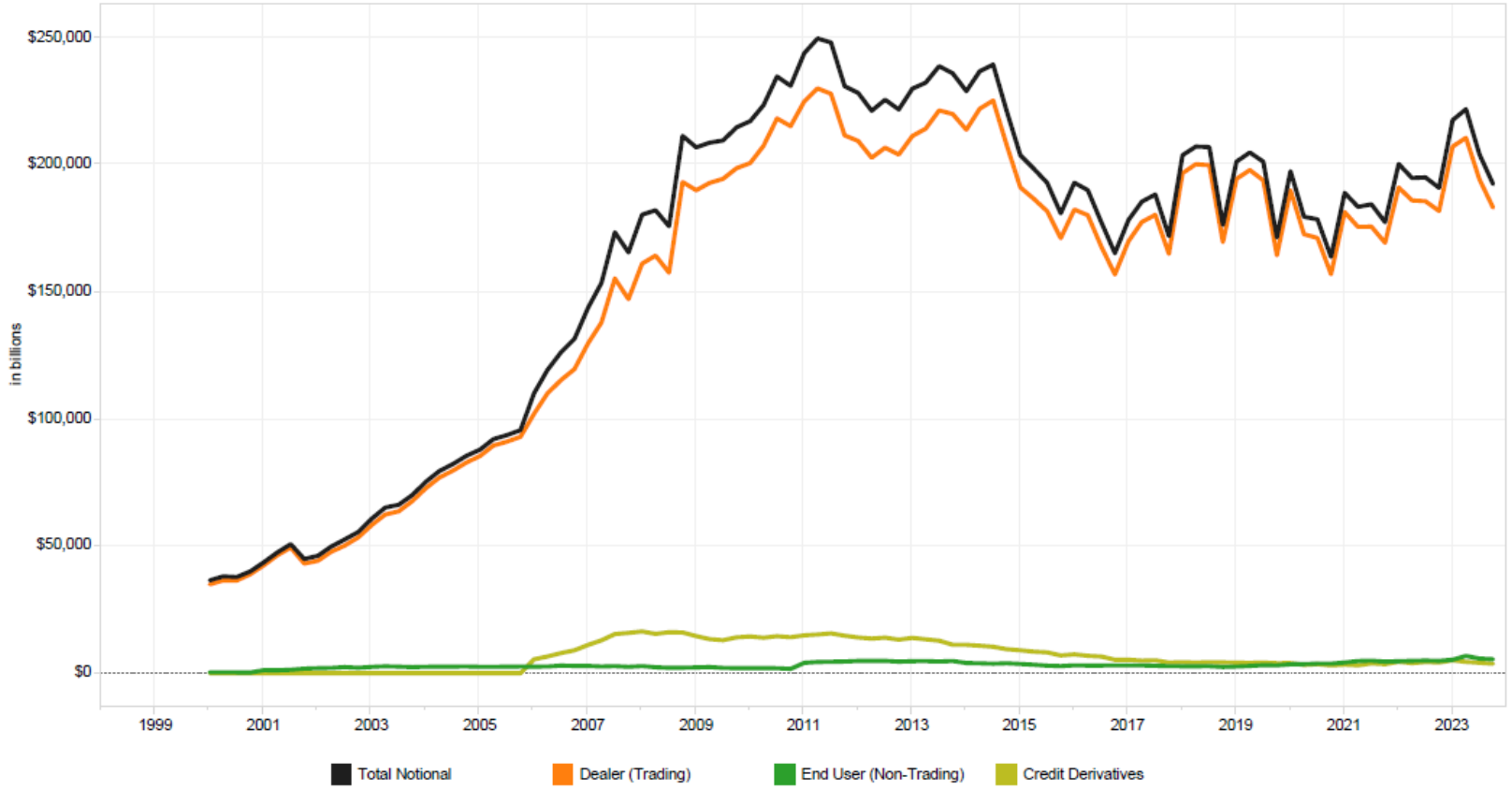
Current Credit Exposure	4Q23	3Q23	2Q23	1Q23	4Q22	3Q22	2Q22	1Q22	4Q21	3Q21	2Q21	1Q21
Current credit exposure across all derivative contracts covered by the regulatory capital rules	$354	Data Not Reported	$455	Data Not Reported	$493	Data Not Reported	$363	Data Not Reported	$233	Data Not Reported	$287	Data Not Reported

* Beginning September 30, 2019, the eligibility to file the FFIEC 051 call report expanded from banks with total assets less than $1 billion to include banks with less than $5 billion in total assets.

** Beginning September 30, 2019, banks filing the FFIEC 051 call report complete this information from schedule RC-R in the June and December reports only.

Source: Call reports, Schedule SU and Schedule RC-R

Figure 7: Derivative Notional Amounts by Type
Insured U.S. Commercial Banks and Savings Associations



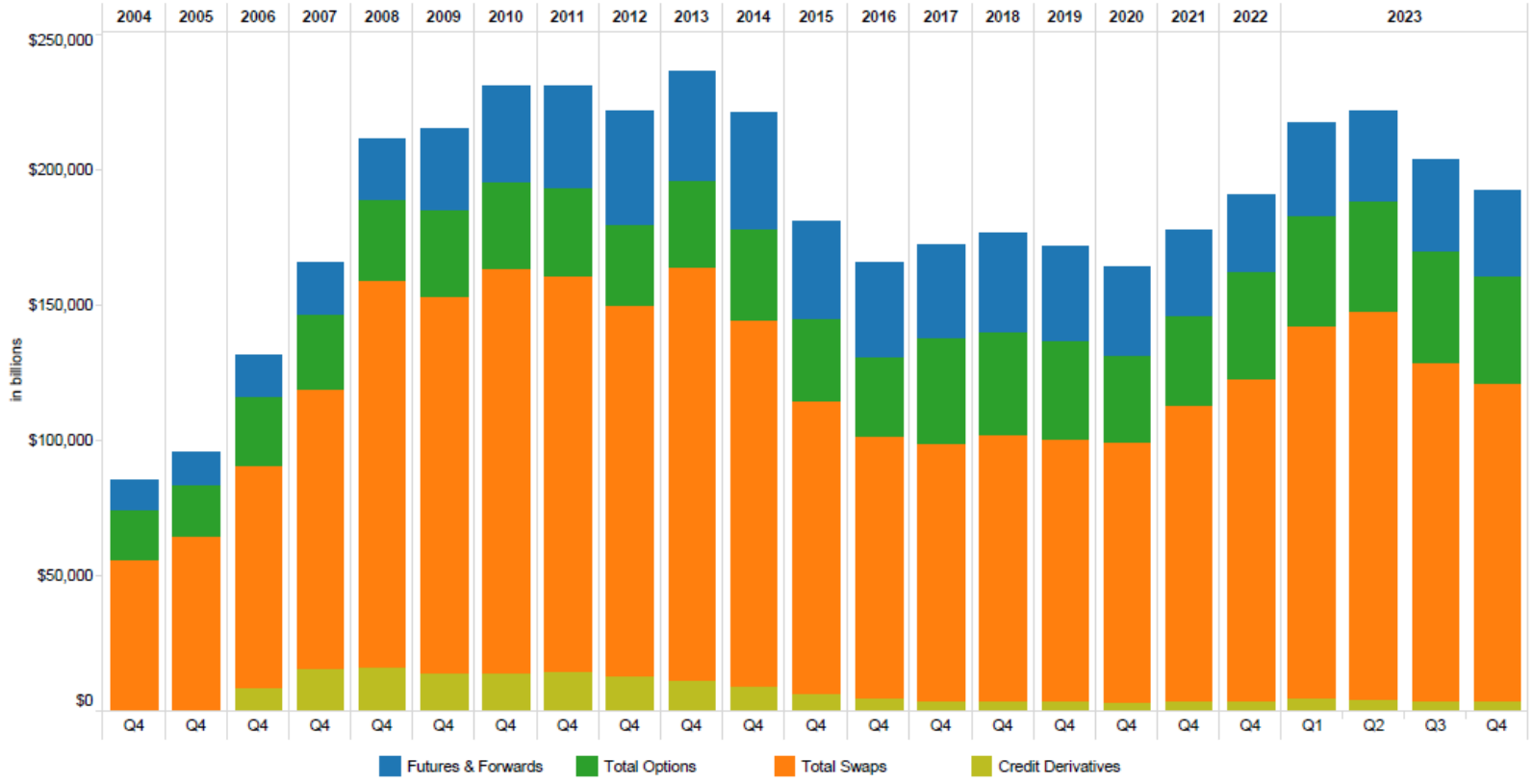
In billions of dollars

	2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Total Notional	$197,504	$179,573	$178,579	$163,799	$188,990	$183,501	$184,480	$177,464	$200,354	$194,851	$195,082	$190,977	$217,601	$221,913	$204,177	$192,463
Dealer (Trading)	189,995	172,723	171,242	156,997	181,421	175,607	175,695	169,360	191,121	186,016	185,700	181,874	207,221	210,641	194,309	183,202
End User (Non-Trading)	3,522	3,595	3,757	3,768	4,211	4,791	4,933	4,563	4,729	4,870	4,992	4,861	5,301	6,798	5,752	5,515
Credit Derivatives	3,986	3,255	3,581	3,034	3,359	3,104	3,852	3,540	4,504	3,966	4,390	4,241	5,079	4,474	4,115	3,746

Note: Numbers may not add up to total due to rounding. Total derivative notionals are now reported including credit derivatives, for which regulatory reporting does not differentiate between trading and non-trading.

Source: Call reports, Schedule RC-L

Figure 8: Derivative Contracts by Product*
Insured U.S. Commercial Banks and Savings Associations



In billions of dollars

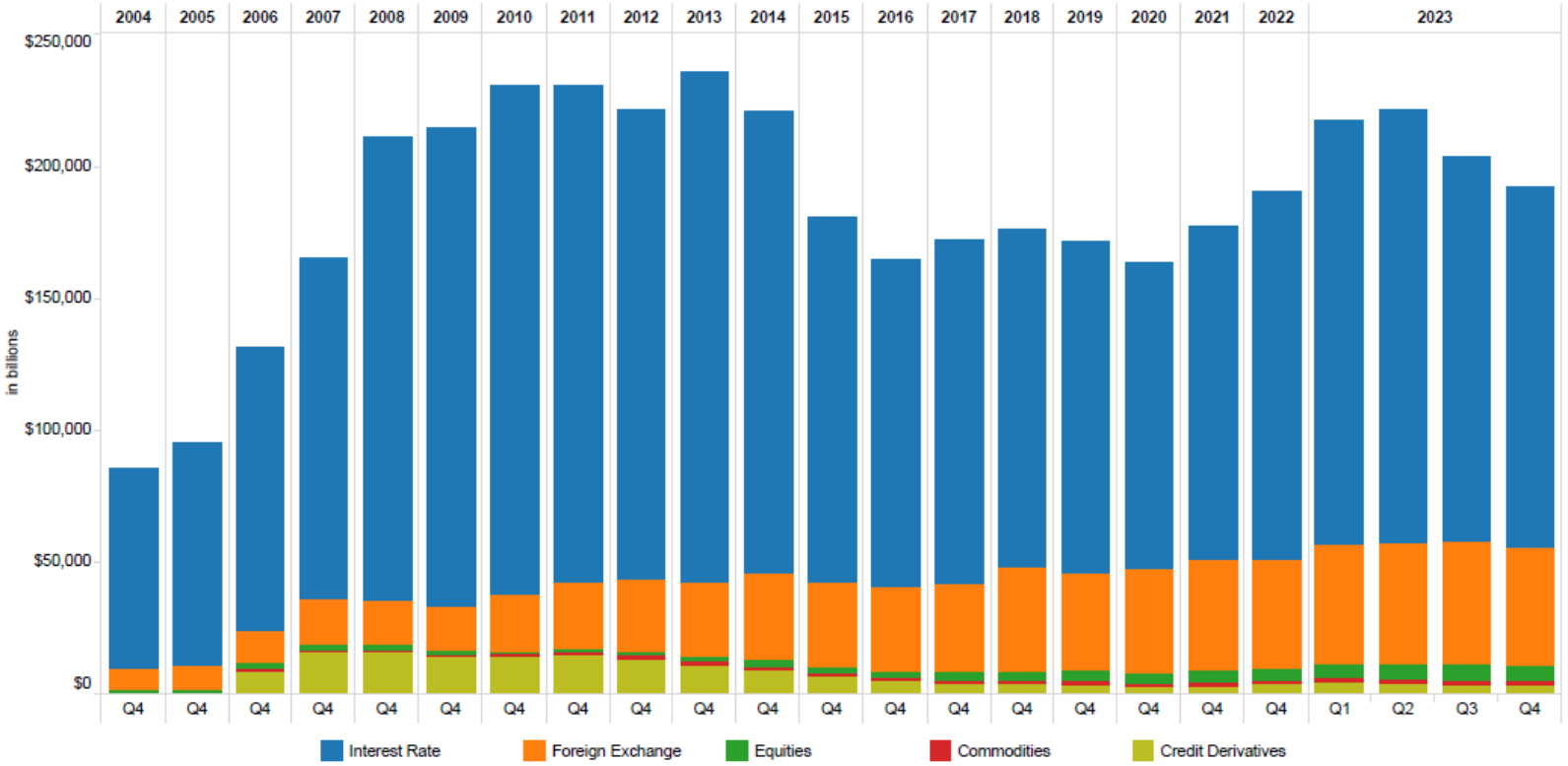
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023			
	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q1	Q2	Q3	Q4
Futures & Forwards	$22,529	$29,652	$35,539	$37,469	$41,621	$40,027	$43,380	$35,691	$34,201	$34,162	$36,145	$34,789	$32,350	$31,180	$28,748	$34,502	$33,317	$34,215	$31,806
Total Options	29,747	31,884	32,078	32,505	30,375	32,305	33,081	30,889	29,373	38,841	38,009	36,117	31,991	33,453	39,389	40,290	40,880	41,150	39,608
Total Swaps	143,111	139,138	149,331	146,266	136,608	152,469	135,169	107,392	96,384	94,784	97,930	96,614	96,423	109,290	118,598	137,730	143,243	124,697	117,303
Credit Derivatives	16,029	14,112	14,151	14,759	13,190	11,191	9,449	6,986	5,293	4,186	4,270	3,945	3,034	3,540	4,241	5,079	4,474	4,115	3,746
Total Notional	211,416	214,786	231,099	230,998	221,794	235,992	221,078	180,959	165,252	171,974	176,354	171,465	163,799	177,464	190,977	217,601	221,913	204,177	192,463

* Notional amount of total: futures, exchange-traded options, over-the-counter options, forwards, and swaps.

Note: Numbers may not add up to total due to rounding.

Source: Call reports, Schedule RC-L

Figure 9: Derivative Contracts by Type*
Insured U.S. Commercial Banks and Savings Associations



In billions of dollars

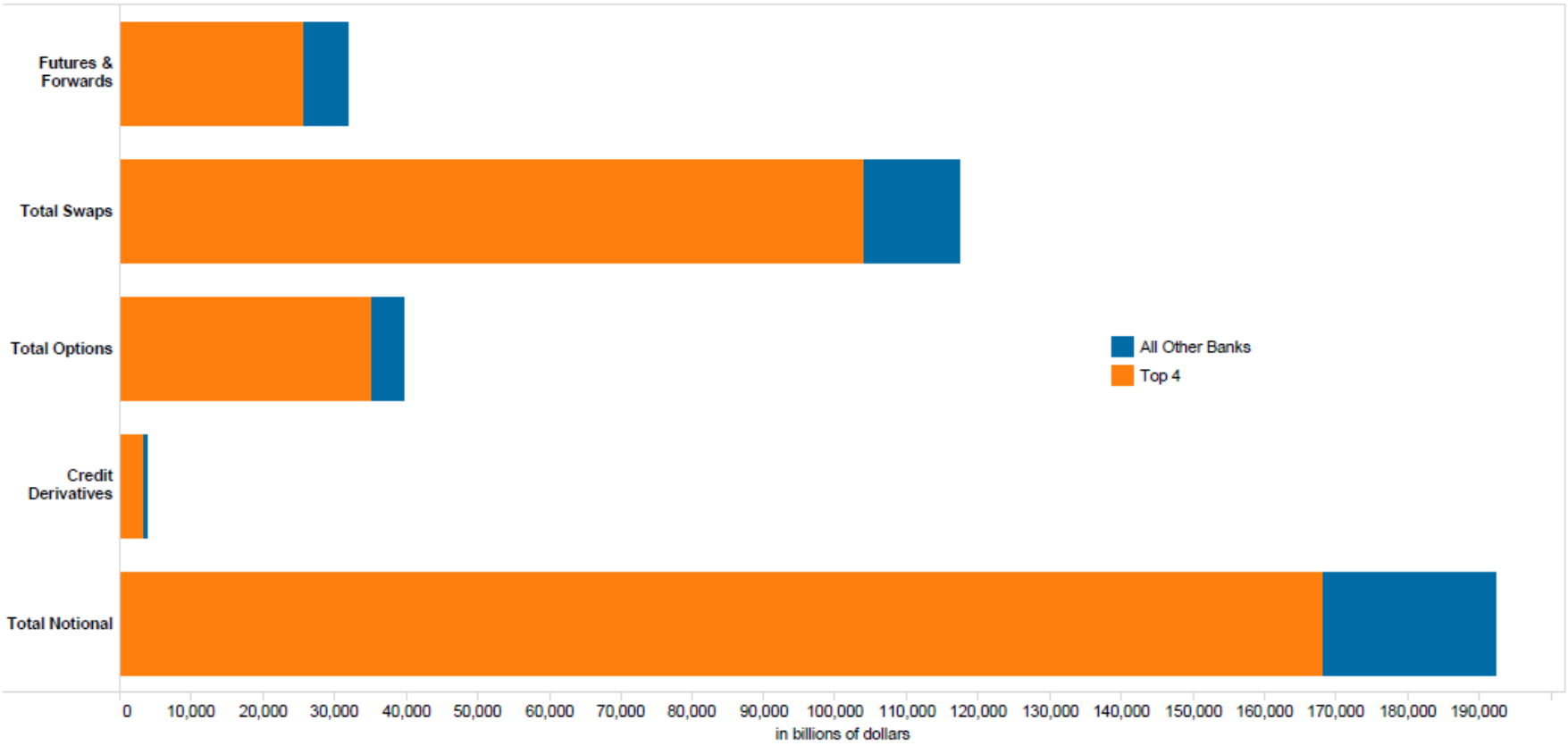
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023			
	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q1	Q2	Q3	Q4
Interest Rate	$181,454	$193,399	$187,866	$177,650	$193,084	$174,687	$138,369	$124,488	$130,417	$128,175	$125,065	$116,000	$126,236	$139,755	$160,260	$164,073	$145,790	$136,274
Foreign Exchange	16,555	20,990	25,436	27,587	28,480	33,183	32,100	31,737	32,903	39,220	37,170	39,596	41,847	41,123	45,686	46,376	46,867	45,278
Equities	1,685	1,364	1,606	1,970	2,028	2,537	2,395	2,475	3,080	3,374	3,796	3,775	4,256	4,424	5,001	5,471	5,875	5,674
Commodities	979	1,195	1,330	1,397	1,209	1,222	1,108	1,257	1,388	1,315	1,488	1,395	1,584	1,433	1,575	1,520	1,530	1,493
Credit Derivatives	14,112	14,151	14,759	13,190	11,191	9,449	6,986	5,293	4,186	4,270	3,945	3,034	3,540	4,241	5,079	4,474	4,115	3,746
Total Notional	214,786	231,099	230,998	221,794	235,992	221,078	180,959	165,252	171,974	176,354	171,465	163,799	177,464	190,977	217,601	221,913	204,177	192,463

* Notional amount of total: futures, exchange-traded options, over-the-counter options, forwards, and swaps.

Note: As of 2006 Q2 equities and commodities are shown as separate categories. They were previously shown as “Other Derivs.” Numbers may not add up to total due to rounding.

Source: Call reports, Schedule RC-L

Figure 10: Four Banks Dominate in Derivatives*
Insured U.S. Commercial Banks and Savings Associations, December 31, 2023



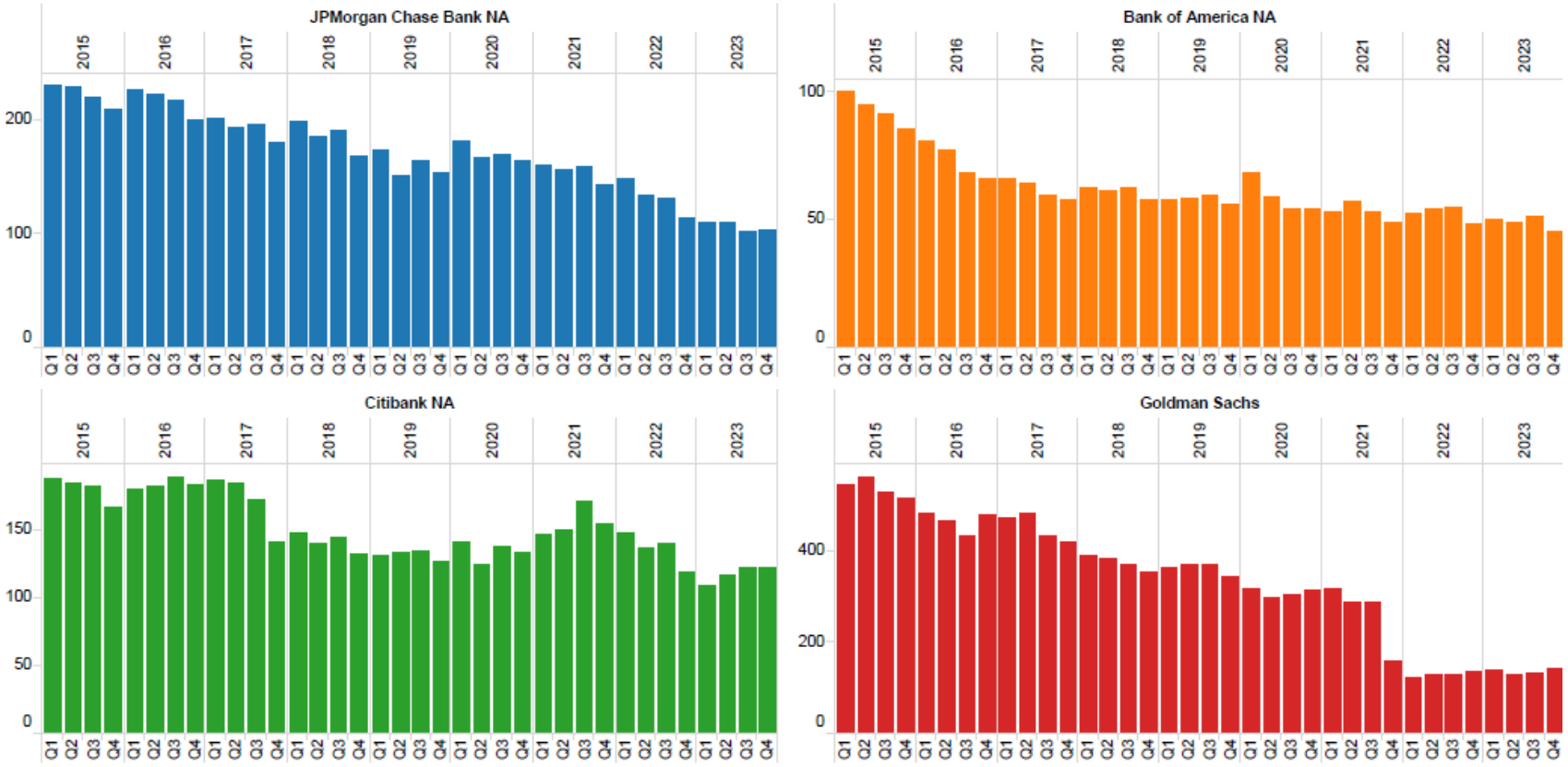
In billions of dollars

	Top 4	All Other Banks	Grand Total
Futures & Forwards	$25,697	$6,110	$31,806
Total Swaps	103,943	13,361	117,303
Total Options	35,149	4,459	39,608
Credit Derivatives	3,473	273	3,746
Total Notional	168,261	24,202	192,463

* Notional amount of total: futures, exchange-traded options, over-the-counter options, forwards, and swaps. See table 13 for a list of the top four banks.

Source: Call reports, Schedule RC-L

Figure 11: Credit Exposure to Risk-Based Capital (in Percentage)
Top Four Insured U.S. Commercial Banks and Savings Associations by Derivative Holdings



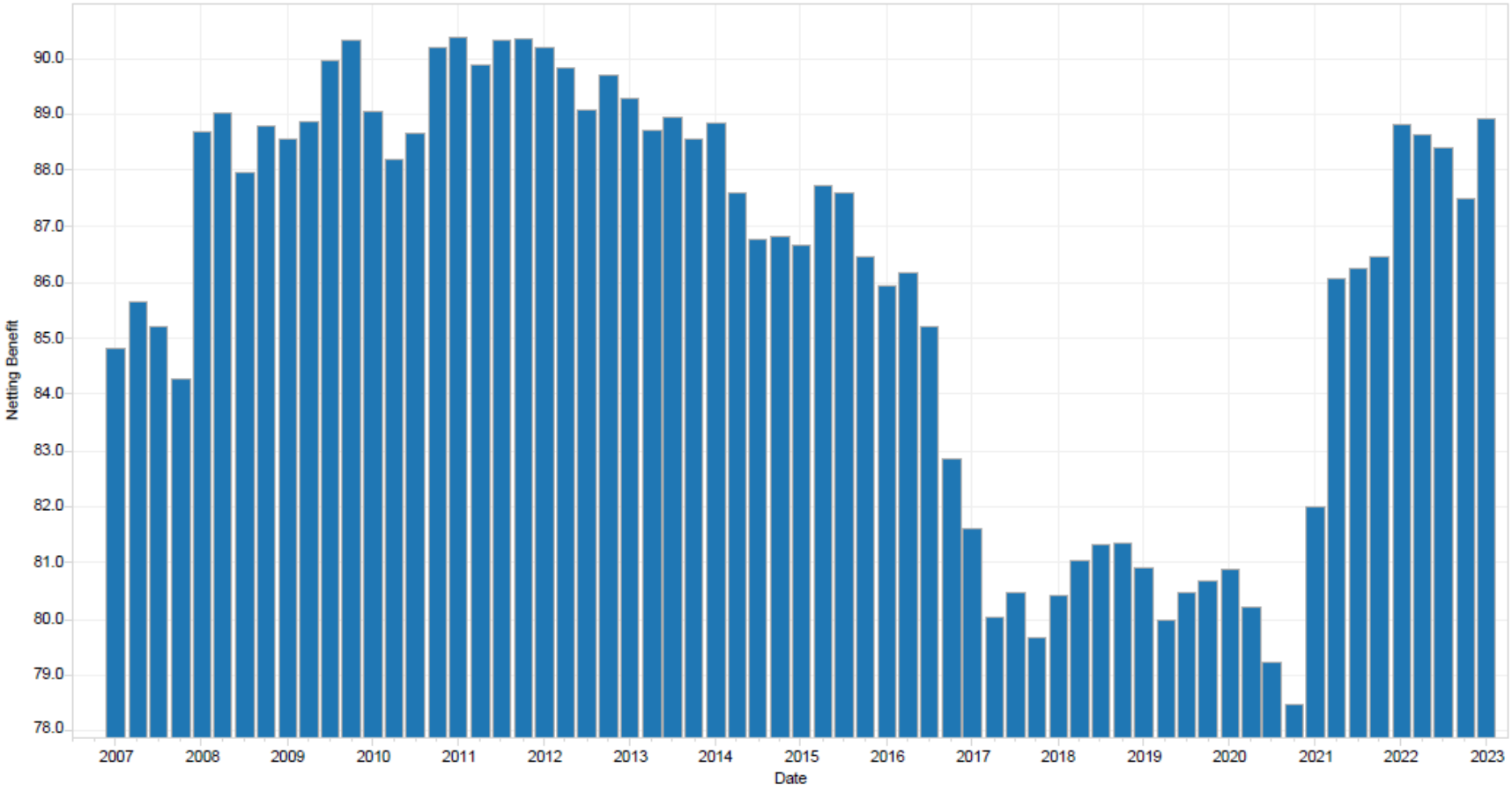
	2017				2018				2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
JPMorgan Chase Bank NA	201	193	195	179	197	184	190	167	173	150	163	153	181	165	168	163	159	155	158	143	147	133	130	113	109	110	102	102
Bank of America NA	66	64	59	57	62	61	62	57	58	58	59	56	68	59	54	54	53	57	53	49	52	54	55	48	50	49	51	45
Citibank NA	186	184	171	140	146	139	144	132	130	132	134	126	140	125	137	133	145	150	170	153	147	136	139	118	108	116	123	121
Goldman Sachs	472	484	433	420	389	384	371	354	366	372	372	344	319	299	304	314	317	285	286	160	120	126	128	134	140	126	130	142
TOTAL	220	218	205	191	195	187	188	173	178	169	176	164	174	160	165	164	165	158	169	137	134	122	122	108	103	104	103	105

Note: Beginning January 1, 2022, the largest banks are required to calculate their derivative exposure amount for regulatory capital purposes using the Standardized Approach for Counterparty Credit Risk (SA-CCR). Refer to the call report instructions and OCC Bulletin 2020-7, "Standardized Approach for Counterparty Credit Risk: Final Rule," for additional information on the SA-CCR exposure calculation.

Note: The methodology to calculate the ratio of credit risk exposure to capital for the Top 4 category uses a weighted average of total current credit exposure.

Source: Call reports, Schedule RC-R

Figure 12: Netting Benefit*: Amount of Gross Credit Exposure Eliminated Through Bilateral Netting (in Percentage)
Insured U.S. Commercial Banks and Savings Associations by Derivative Holdings



Netting Benefit

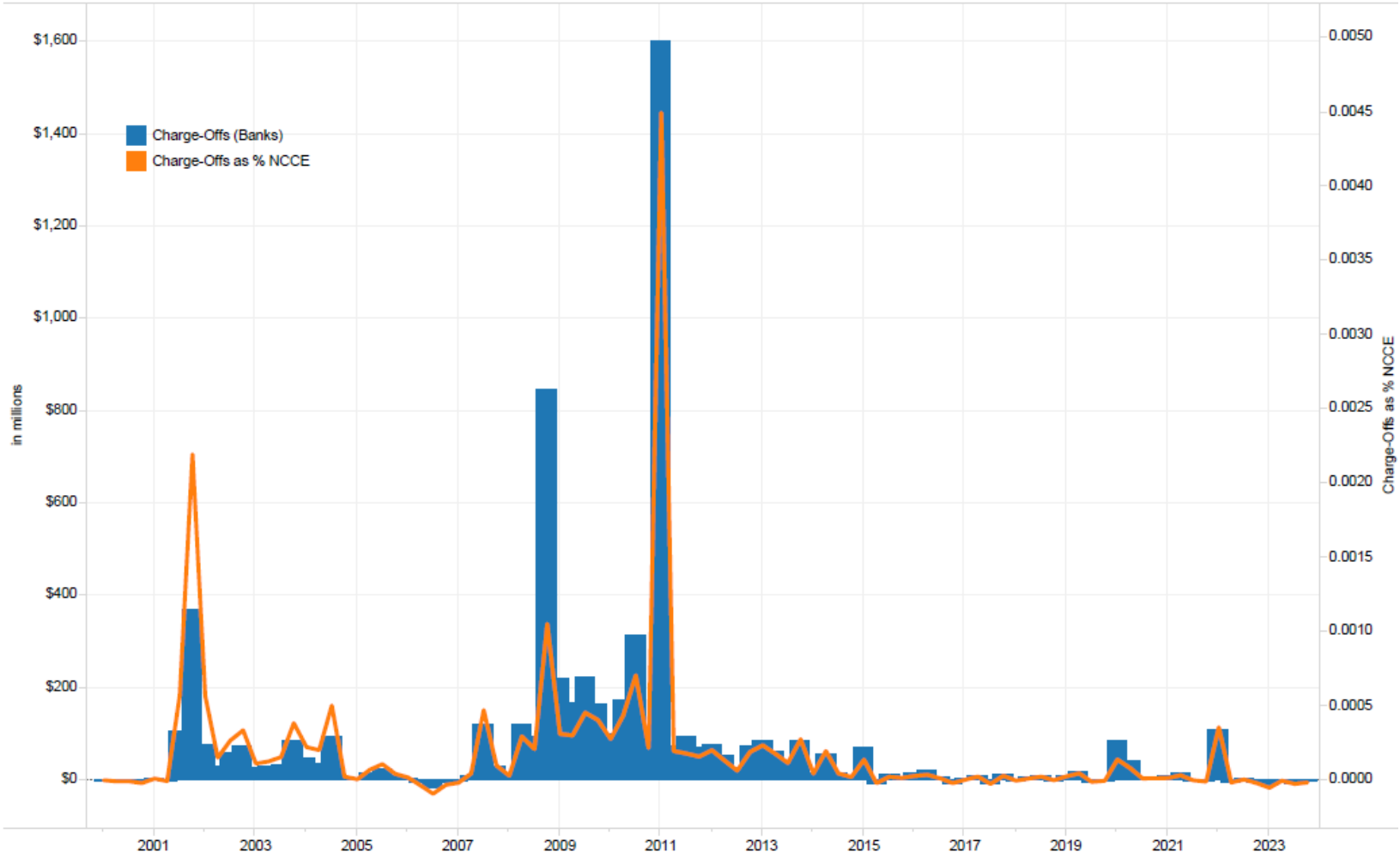
2015				2016				2017				2018				2019				2020				2021				2022				2023			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
87.6	86.8	86.8	86.7	87.7	87.6	86.5	86.0	86.2	85.2	82.9	81.6	80.0	80.5	79.7	80.4	81.0	81.3	81.4	80.9	80.0	80.5	80.7	80.9	80.2	79.2	78.5	82.0	86.1	86.3	86.5	88.8	88.6	88.4	87.5	88.9

* The netting benefit is defined as the Gross Positive Fair Value (GPFV) from call report Schedule RC-L minus the Net Current Credit Exposure from call report Schedule RC-R divided by the GPFV.

Note: Beginning January 1, 2022, the largest banks are required to calculate their derivative exposure amount for regulatory capital purposes using the Standardized Approach for Counterparty Credit Risk (SA-CCR). Refer to the call report instructions and OCC Bulletin 2020-7, "Standardized Approach for Counterparty Credit Risk: Final Rule," for additional information on the SA-CCR exposure calculation.

Source: Call reports, Schedules RC-L and RC-R

Figure 13: Quarterly Charge-Offs/(Recoveries) From Derivatives—Bank
Insured U.S. Commercial Banks and Savings Associations With Derivatives

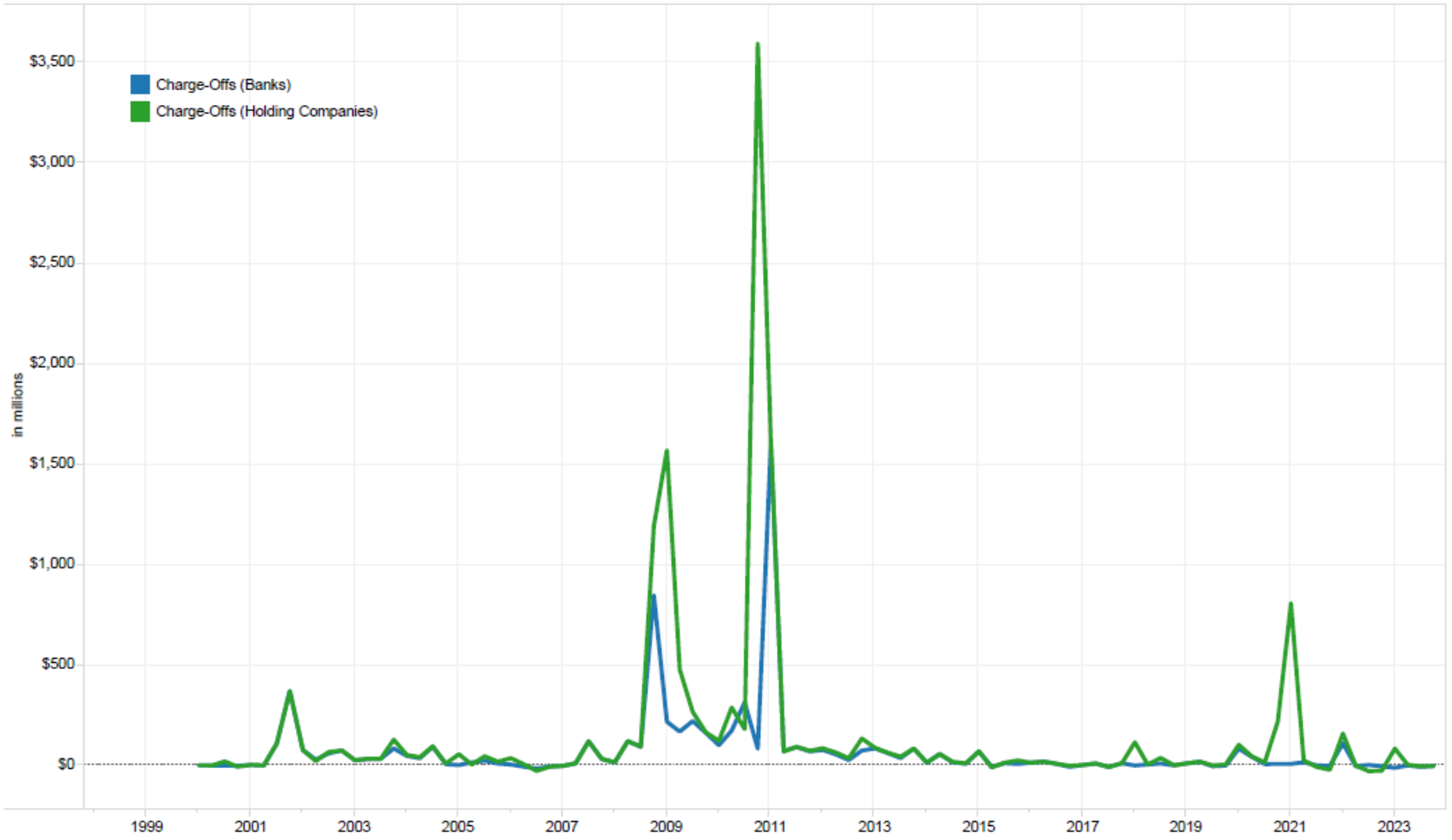


	2017				2018				2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Charge-Offs (Banks)	1.2	8.7	-8.8	10.3	-1.1	4.0	8.8	0.1	9.1	17.2	-4.8	-1.5	82.7	42.1	6.0	6.6	6.8	14.7	-0.2	-3.3	109.5	-4.9	2.0	-5.5	-12.5	-0.9	-7.7	-3.6

Note: The figures are for each quarter alone, not year-to-date.

Source: Call reports, Schedule RI, NCCE: Pre-2009 Q2 (RC-R); 2009 Q2– 2014 Q4 (RC-L); 2015 Q1 onward (RC-R)

Figure 14: Quarterly Charge-Offs/(Recoveries) From Derivatives—Holding Company
Insured U.S. Commercial Banks and Savings Associations With Derivatives Compared With Holding Companies

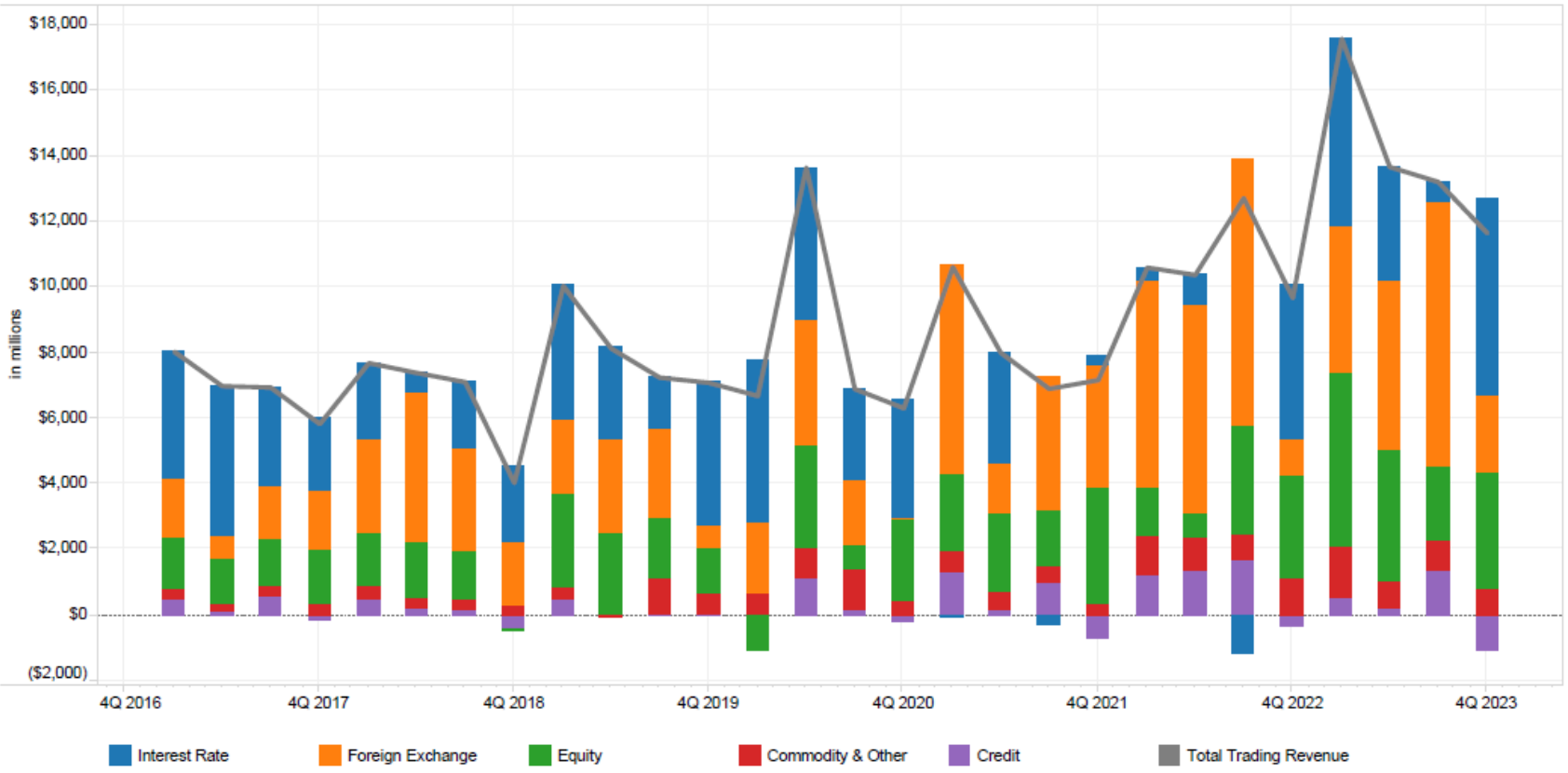


	2018				2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Charge-Offs (Banks)	-1.1	4.0	8.8	0.1	9.1	17.2	-4.8	-1.5	82.7	42.1	6.0	6.6	6.8	14.7	-0.2	-3.3	109.5	-4.9	2.0	-5.5	-12.5	-0.9	-7.7	-3.6
Charge-Offs (Holding Companies)	114.5	3.5	36.6	0.1	9.5	17.9	-0.3	4.1	102.1	44.2	14.6	218.3	807.7	23.7	-8.2	-22.5	158.0	-1.8	-29.4	-27.1	83.1	2.5	-4.9	-3.2

Note: The figures are for each quarter alone, not year-to-date.

Source: Call reports, Schedule RI and Y-9, Schedule HI

Figure 15a: Quarterly Trading Revenue (Cash and Derivative Positions)*—Bank
Insured U.S. Commercial Banks and Savings Associations



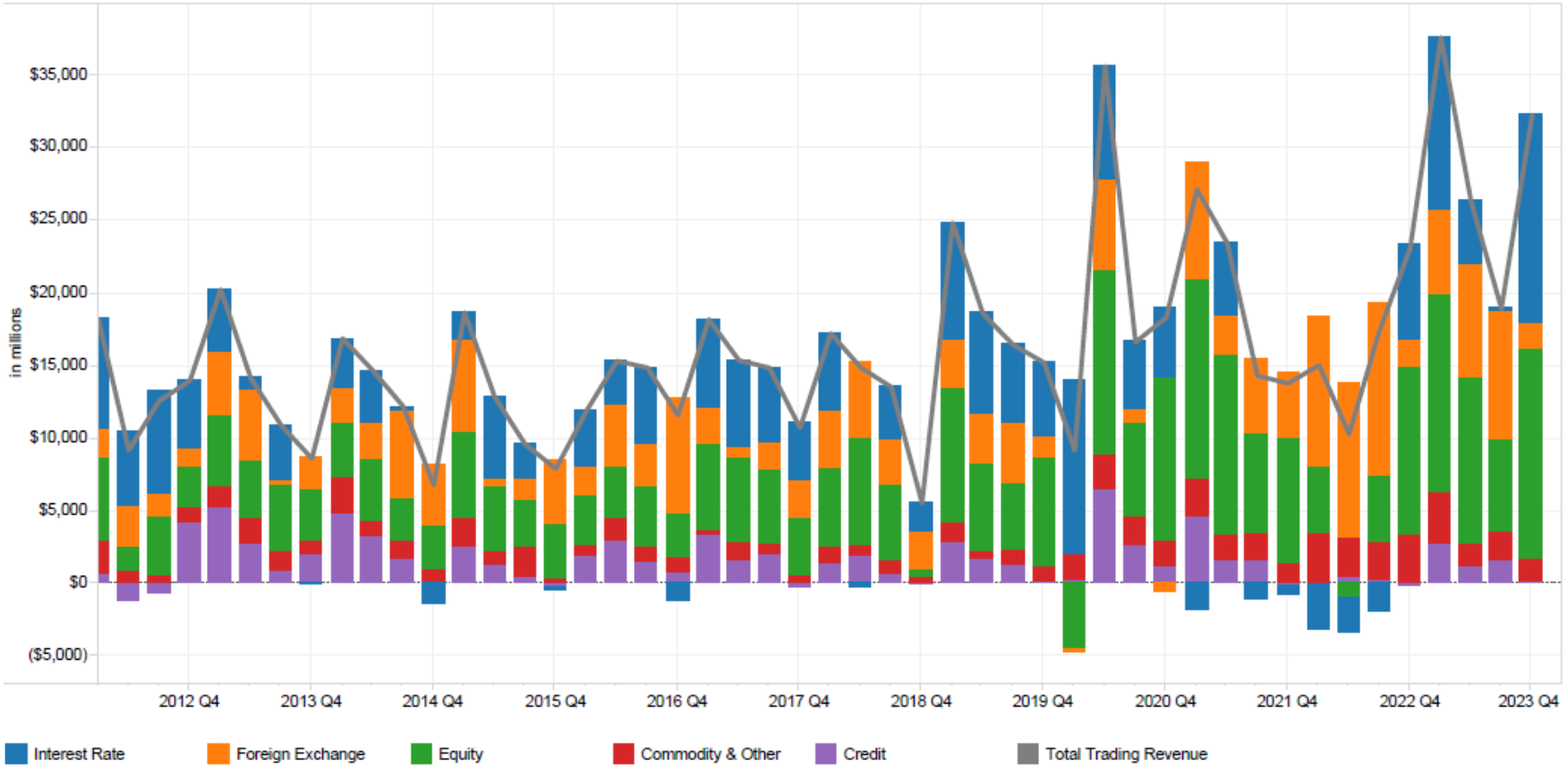
In millions of dollars

	2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Interest Rate	$4,942	$4,634	$2,821	$3,616	($42)	$3,369	($329)	$273	$403	$874	($1,197)	$4,653	$5,721	$3,471	$630	$6,016
Foreign Exchange	2,167	3,841	1,942	18	6,343	1,546	3,998	3,747	6,341	6,363	8,153	1,134	4,439	5,174	8,036	2,334
Equity	-1,040	3,139	750	2,480	2,388	2,384	1,729	3,534	1,458	773	3,306	3,100	5,334	3,996	2,262	3,603
Commodity & Other	646	905	1,226	434	622	549	531	347	1,161	1,029	774	1,153	1,570	824	942	773
Credit	-34	1,129	154	-243	1,300	150	967	-737	1,235	1,334	1,678	-368	516	204	1,342	-1,077
Total Trading Revenue	6,681	13,648	6,893	6,305	10,611	7,999	6,896	7,164	10,598	10,373	12,714	9,671	17,581	13,668	13,211	11,649

* The trading revenue figures are for cash and derivative activities. Revenue figures are for each quarter alone, not year-to-date. Note: Numbers may not add up to total due to rounding.

Source: Call reports, Schedule RI

Figure 15b: Quarterly Trading Revenue (Cash and Derivative Positions)*—Holding Company
Bank Holding Companies



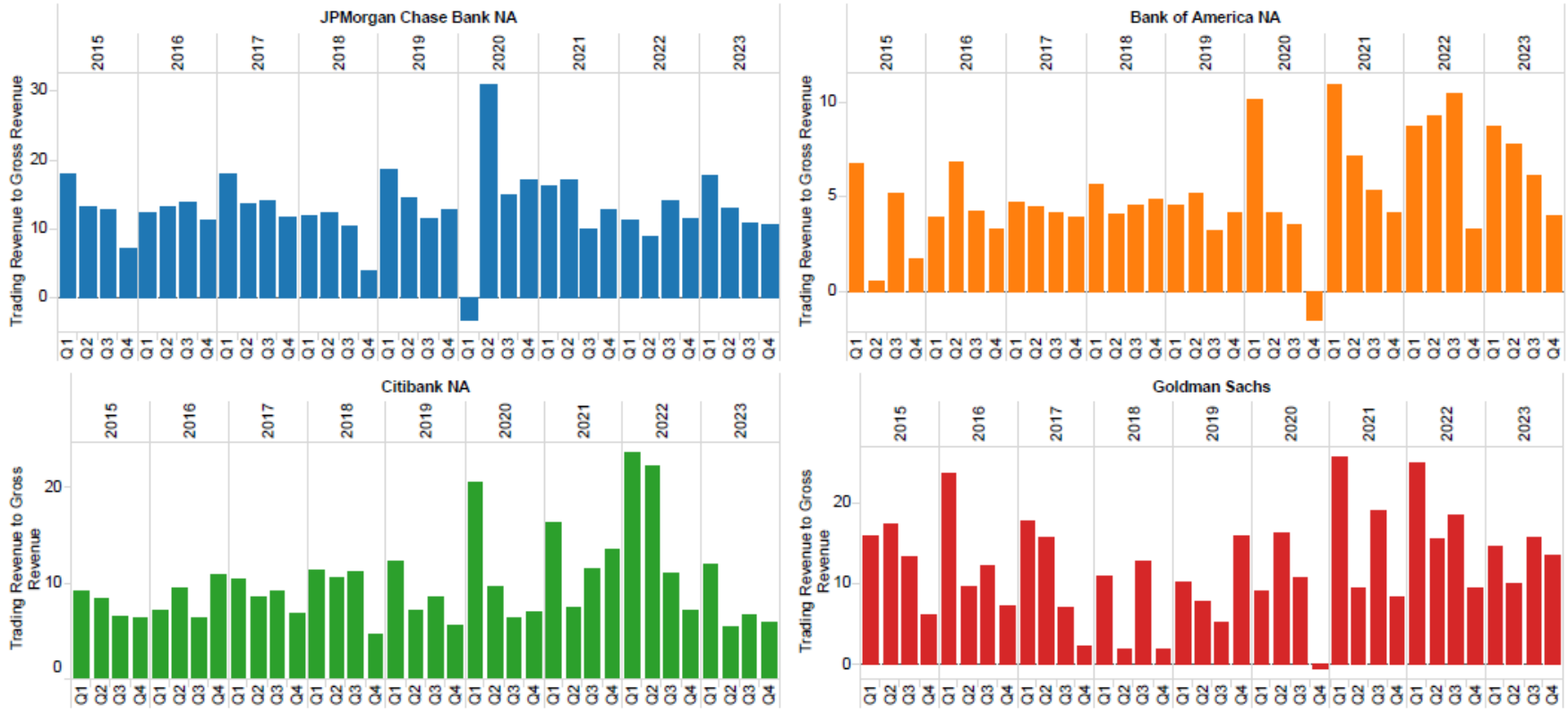
In millions of dollars

	2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Interest Rate	$12,036	$7,801	$4,582	$4,855	($1,828)	$5,001	($1,182)	($569)	($3,137)	($2,365)	($1,976)	$6,649	$11,954	$4,338	$225	$14,397
Foreign Exchange	-302	6,374	1,037	-628	8,051	2,732	5,144	4,496	10,267	10,574	11,900	1,810	5,760	7,902	8,752	1,768
Equity	-4,499	12,604	6,424	11,126	13,753	12,353	6,835	8,745	4,546	-1,063	4,672	11,535	13,714	11,347	6,363	14,476
Commodity & Other	1,664	2,486	1,912	1,804	2,665	1,802	1,978	1,340	3,498	2,698	2,533	3,378	3,471	1,615	2,025	1,607
Credit	257	6,410	2,675	1,181	4,531	1,595	1,530	-225	-129	438	286	-249	2,771	1,157	1,577	53
Total Trading Revenue	9,157	35,676	16,631	18,337	27,172	23,483	14,305	13,786	15,046	10,281	17,417	23,123	37,670	26,359	18,943	32,302

* The trading revenue figures are for cash and derivative activities. Revenue figures are for each quarter alone, not year-to-date. Note: Numbers may not add up to total due to rounding.

Source: Y9, Schedule HI

Figure 16: Quarterly Trading Revenue (Cash and Derivative Positions) as a Percentage of Gross Revenue (in Percentage)*
Top Four Insured U.S. Commercial Banks and Savings Associations by Derivative Holdings



Trading Revenue to Gross Revenue*

	2018				2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
JPMorgan Chase Bank NA	11.90	12.19	10.26	3.92	18.57	14.57	11.30	12.62	-3.33	30.88	14.83	16.96	16.12	16.90	9.84	12.70	11.13	8.86	14.06	11.38	17.66	12.79	10.83	10.50
Bank of America NA	5.62	4.04	4.54	4.90	4.60	5.14	3.20	4.09	10.13	4.14	3.55	-1.52	10.89	7.10	5.33	4.08	8.74	9.23	10.45	3.30	8.70	7.71	6.09	3.95
Citibank NA	11.33	10.69	11.26	4.66	12.32	7.23	8.48	5.56	20.50	9.63	6.27	7.08	16.24	7.42	11.57	13.44	23.64	22.30	11.05	7.15	12.01	5.44	6.66	5.77
Goldman Sachs	10.85	1.84	12.77	1.86	10.31	7.78	4.98	15.90	8.96	16.21	10.68	-0.56	25.61	9.27	19.13	8.19	24.97	15.46	18.52	9.30	14.72	10.12	15.74	13.43

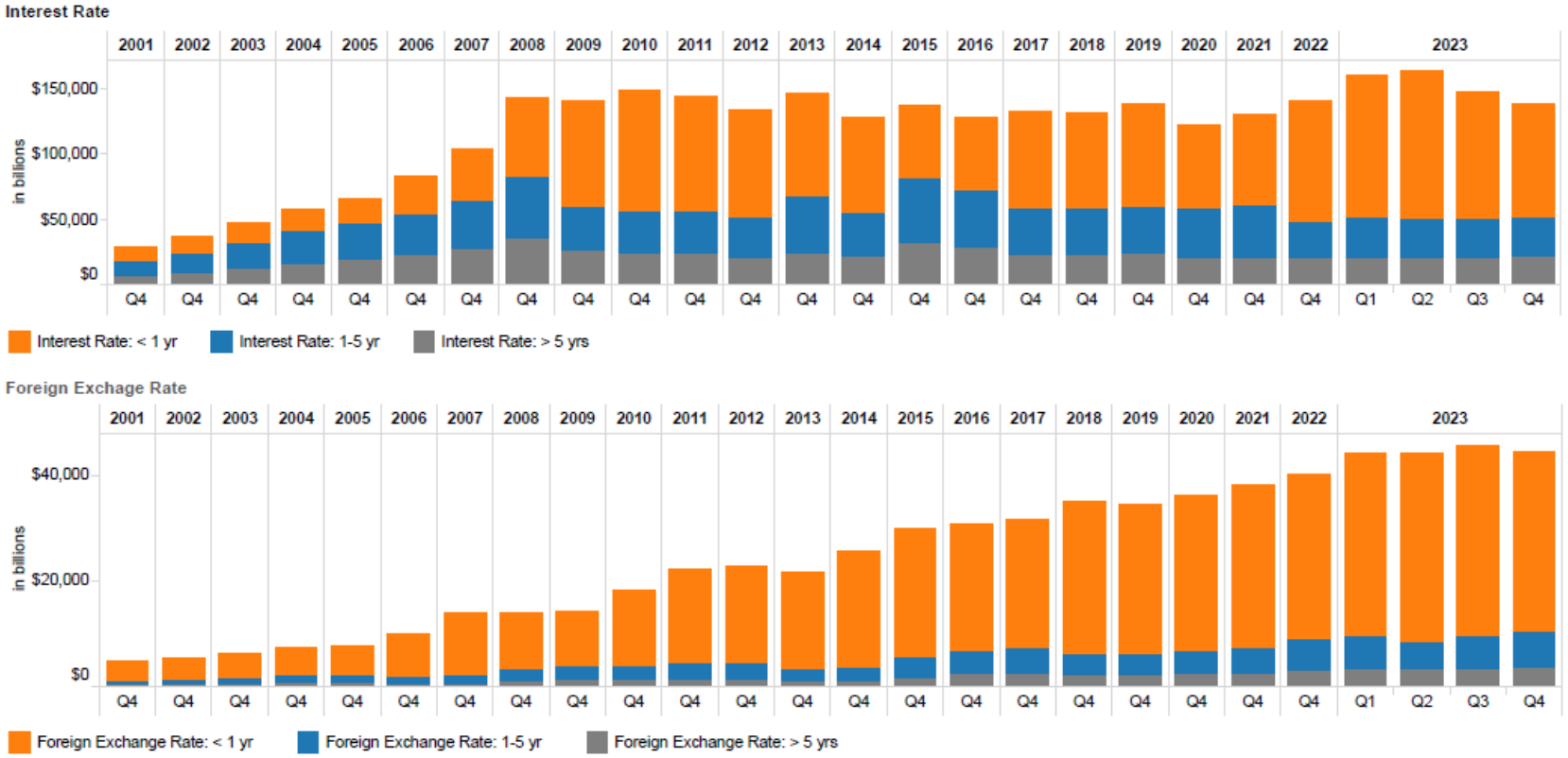
TOTAL	2018				2019				2020				2021				2022				2023			
	9.77	8.95	8.82	4.36	12.43	9.60	8.01	8.61	7.44	18.00	9.49	8.91	15.11	11.75	9.49	10.36	14.32	12.72	12.68	8.11	13.78	9.67	9.08	8.01

* The trading revenue figures are for cash and derivative activities. Revenue figures are quarterly, not year-to-date numbers.

Note: Gross revenue equals interest income plus non-interest income.

Source: Call reports, Schedule RI

Figure 17: Notional Amounts of Interest Rate and Foreign Exchange Rate Contracts by Maturity
Insured U.S. Commercial Banks and Savings Associations



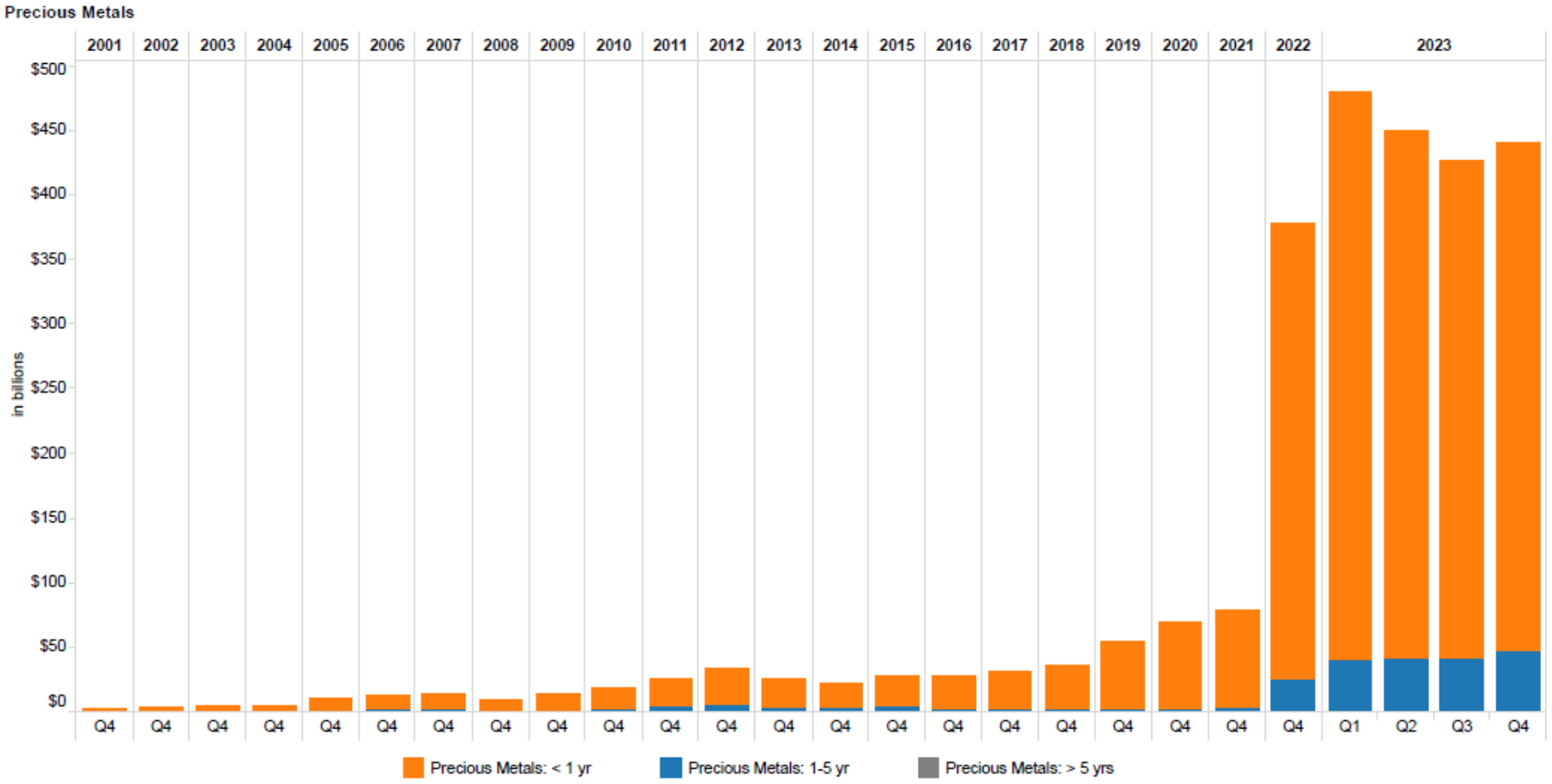
In billions of dollars

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023			
	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q1	Q2	Q3	Q4
Interest Rate: < 1 yr	$87,812	$82,948	$77,758	$71,808	$55,054	$55,061	$72,589	$71,492	$79,132	$62,444	$68,044	$92,693	$109,261	$112,936	$97,313	$87,576
Interest Rate: 1-5 yr	32,750	30,191	44,157	33,727	49,406	43,261	36,154	36,681	35,854	39,198	41,244	27,371	30,208	29,386	29,223	29,648
Interest Rate: > 5 yrs	24,168	21,175	24,630	22,214	32,981	29,762	23,565	23,244	24,259	20,838	20,464	20,661	21,259	21,493	21,229	21,804
Foreign Exchange Rate: < 1 yr	17,632	18,386	18,372	22,145	24,130	23,912	24,380	28,891	28,241	29,434	30,954	31,270	34,845	35,713	36,129	34,341
Foreign Exchange Rate: 1-5 yr	3,117	2,910	2,341	2,587	3,986	4,454	4,805	4,219	4,052	4,404	4,864	5,996	6,287	5,265	6,296	6,862
Foreign Exchange Rate: > 5 yrs	1,503	1,480	1,029	969	1,648	2,420	2,525	2,096	2,146	2,402	2,552	3,146	3,272	3,321	3,278	3,501

Note: Beginning January 1, 2022, the largest banks are required to calculate their derivative exposure amount for regulatory capital purposes using the Standardized Approach for Counterparty Credit Risk (SA-CCR). Refer to the call report instructions and OCC Bulletin 2020-7, "Standardized Approach for Counterparty Credit Risk: Final Rule," for additional information on the SA-CCR exposure calculation.

Source: Call reports, Schedule RC-R

Figure 18: Notional Amounts of Precious Metal Contracts by Maturity
Insured U.S. Commercial Banks and Savings Associations



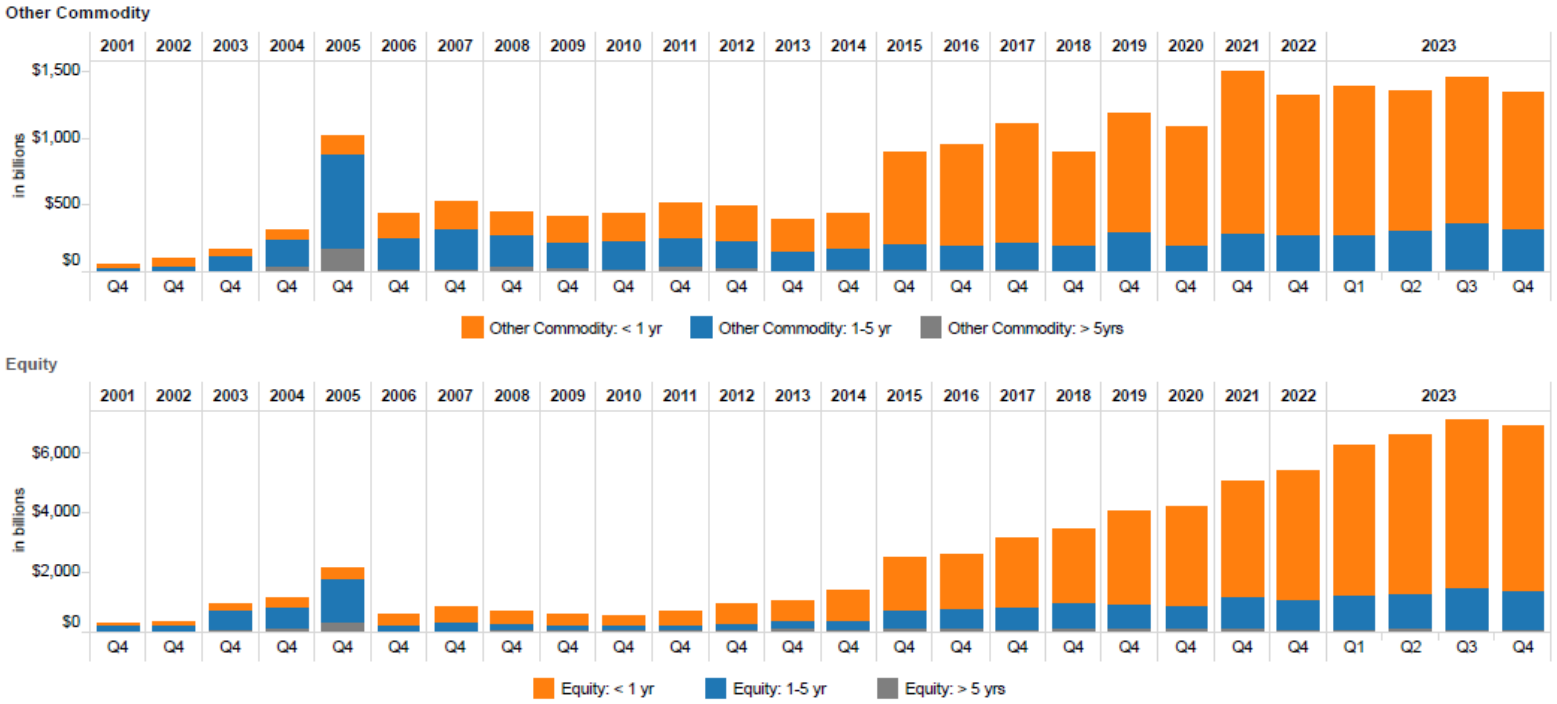
In billions of dollars

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023			
	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q1	Q2	Q3	Q4
Precious Metals: < 1 yr	$10.72	$7.55	$11.55	$17.47	$21.12	$27.68	$21.41	$19.29	$23.51	$25.07	$28.62	$33.62	$52.58	$67.80	$75.78	$352.12	$440.70	$408.54	$385.04	$393.20
Precious Metals: 1-5 yr	2.1	1.5	1.2	1.9	4.7	5.8	3.8	2.8	3.9	2.5	2.4	2.3	2.1	2.5	3.5	26.0	39.7	41.6	42.1	47.5
Precious Metals: > 5 yrs	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: Beginning January 1, 2022, the largest banks are required to calculate their derivative exposure amount for regulatory capital purposes using the Standardized Approach for Counterparty Credit Risk (SA-CCR). Under SA-CCR gold derivatives are considered precious metals derivative contracts rather than an exchange rate derivative contract, resulting in an increase in reported precious metals derivative contracts compared with prior quarters. Refer to the call report instructions and OCC Bulletin 2020-7, "Standardized Approach for Counterparty Credit Risk: Final Rule," for additional information on the SA-CCR exposure calculation.

Source: Call reports, Schedule RC-R

Figure 19: Notional Amounts of Other Commodity and Equity Contracts by Maturity
Insured U.S. Commercial Banks and Savings Associations



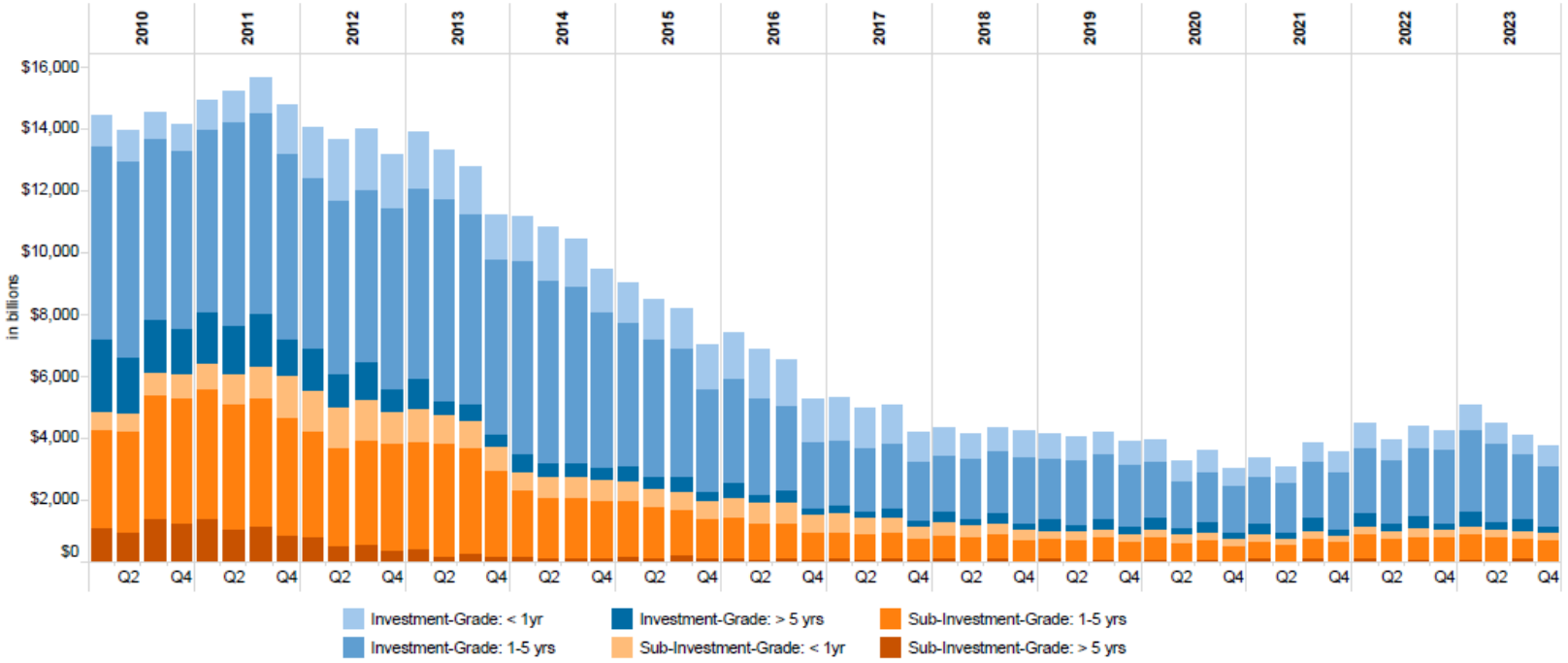
In billions of dollars

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023			
	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q1	Q2	Q3	Q4
Other Commodity: < 1 yr	$185	$206	$179	$176	$203	$261	$261	$235	$257	$668	$750	$883	$688	$884	$879	$1,216	$1,038	$1,100	$1,048	$1,086	$1,021
Other Commodity: 1-5 yr	235	297	233	198	209	209	208	144	164	197	179	202	198	286	198	279	272	275	302	344	314
Other Commodity: > 5yrs	20	25	43	33	25	46	28	6	20	22	23	25	9	10	9	7	7	5	5	17	7
Equity: < 1 yr	341	473	409	312	296	427	627	645	996	1,743	1,842	2,296	2,449	3,084	3,287	3,881	4,335	4,990	5,332	5,522	5,469
Equity: 1-5 yr	221	297	256	228	191	210	262	291	352	628	677	733	864	844	771	1,055	999	1,151	1,142	1,435	1,304
Equity: > 5 yrs	45	70	72	82	85	94	82	136	101	130	123	113	139	136	139	145	99	107	133	110	99

Note: Beginning January 1, 2022, the largest banks are required to calculate their derivative exposure amount for regulatory capital purposes using the Standardized Approach for Counterparty Credit Risk (SA-CCR). Refer to the call report instructions and OCC Bulletin 2020-7, "Standardized Approach for Counterparty Credit Risk: Final Rule," for additional information on the SA-CCR exposure calculation.

Source: Call reports, Schedule RC-R

Figure 20: Notional Amounts of Credit Derivative Contracts by Credit Quality and Maturity
Insured U.S. Commercial Banks and Savings Associations



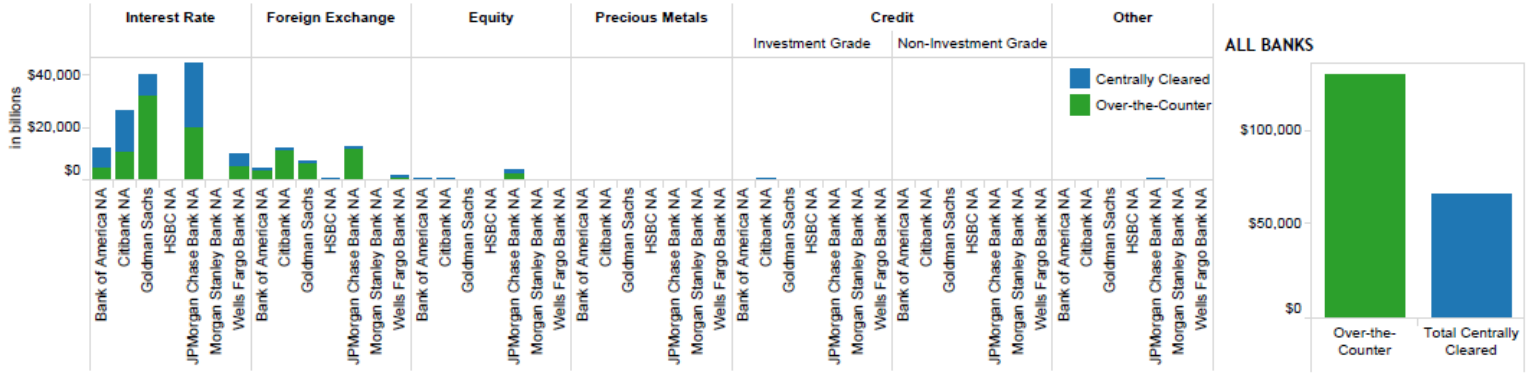
In billions of dollars

	2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Investment-Grade: < 1yr	$763	$758	$675	$781	$726	$619	$648	$554	$546	$539	$565	$601	$795	$642	$692	$617	$769	$658	$595	$635
Investment-Grade: 1-5 yrs	1,976	2,083	2,084	2,018	1,799	1,523	1,637	1,521	1,545	1,589	1,846	1,864	2,109	2,076	2,190	2,362	2,688	2,507	2,109	1,966
Investment-Grade: > 5 yrs	367	189	330	198	367	171	336	160	332	160	418	187	449	198	408	210	440	217	377	176
Total Investment Grade	$3,106	$3,030	$3,089	$2,997	$2,891	$2,313	$2,622	$2,235	$2,423	$2,289	$2,829	$2,651	$3,352	$2,916	$3,291	$3,189	$3,897	$3,382	$3,080	$2,777

	2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Sub-Investment-Grade: < 1yr	$259	$283	$275	$268	$247	$278	$233	$218	$245	$215	$244	$208	$225	$248	$247	$221	$252	$238	$218	$232
Sub-Investment-Grade: 1-5 yrs	661	701	708	624	743	608	618	533	570	551	654	632	777	751	747	778	826	804	696	683
Sub-Investment-Grade: > 5 yrs	119	60	111	56	105	56	108	48	119	49	125	49	150	51	105	53	104	51	120	53
Total Sub-Investment Grade	$1,039	$1,044	$1,093	$947	$1,095	$942	$959	$799	$935	$815	$1,023	$889	$1,152	$1,049	$1,099	$1,052	$1,182	$1,092	$1,035	$968

Source: Call reports, Schedule RC-L

Figure 21: Notional Amounts of Over-the-Counter and Centrally Cleared Derivative Contracts
Insured U.S. Commercial Banks and Savings Associations



In billions of dollars

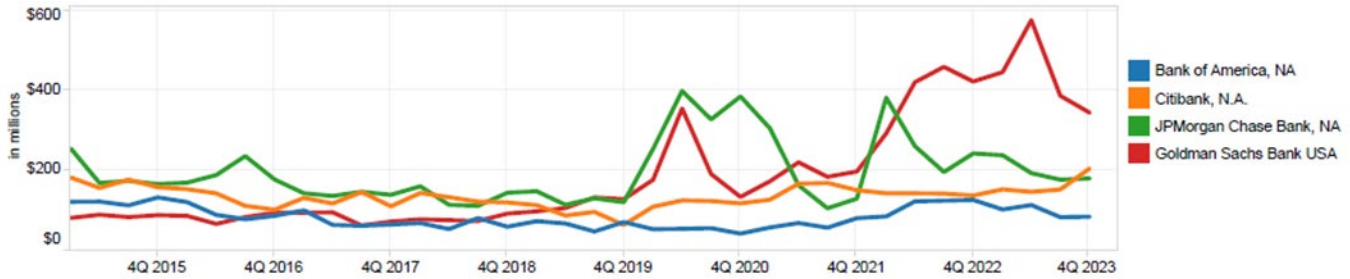
Bank Name	Interest Rate		Foreign Exchange		Equity		Precious Metals		Credit				Other		Total Centrally Cleared	Over-the-Counter	Total Notional
									Investment Grade		Non-Investment Grade						
	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter			
JPMorgan Chase Bank NA	23,663	20,695	572	12,284	1,017	2,872	0	247	247	219	299	346	75	805	25,873	37,468	63,341
Citibank NA	15,416	11,049	342	12,175	225	672	21	77	224	879	58	231	74	86	16,361	25,169	41,530
Bank of America NA	6,991	5,368	138	4,679	238	708	8	74	133	205	35	75	0	45	7,543	11,154	18,697
Goldman Sachs	8,372	31,997	173	6,937	55	546	0	0	28	379	6	134	0	58	8,633	40,051	48,685
HSBC NA	67	59	50	1,049	0	16	0	8	0	7	0	1	0	0	117	1,141	1,258
Wells Fargo Bank NA	5,011	5,442	0	2,260	116	337	0	5	0	37	0	22	0	80	5,127	8,183	13,310
Morgan Stanley Bank NA	2	87	0	73	0	38	0	0	0	16	0	4	0	0	2	218	220
Grand Total	59,522	74,696	1,274	39,458	1,651	5,188	29	411	633	1,742	398	813	150	1,075	63,657	123,384	187,041
ALL OTHER	2,856	1,955	8	3,963	0	33	0	0	1	37	0	30	23	94	2,888	6,111	8,999
TOTAL	62,377	76,651	1,282	43,422	1,651	5,221	29	411	633	1,779	398	842	173	1,169	66,544	129,495	196,040

% of Total

Bank Name	Interest Rate		Foreign Exchange		Equity		Precious Metals		Credit				Other		Total Centrally Cleared as a % of Total Notional	Total Over-the-Counter as a % of Total Notional
									Investment Grade		Non-Investment Grade					
	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter	Centrally Cleared	Over-the-Counter		
JPMorgan Chase Bank NA	53%	47%	4%	96%	26%	74%	0%	100%	53%	47%	46%	54%	9%	91%	41%	59%
Citibank NA	58%	42%	3%	97%	25%	75%	22%	78%	20%	80%	20%	80%	46%	54%	39%	61%
Bank of America NA	57%	43%	3%	97%	25%	75%	10%	90%	39%	61%	32%	68%	1%	99%	40%	60%
Goldman Sachs	21%	79%	2%	98%	9%	91%	0%	100%	7%	93%	4%	96%	0%	100%	18%	82%
HSBC NA	53%	47%	5%	95%	0%	100%	0%	100%	0%	100%	2%	98%	0%	100%	9%	91%
Wells Fargo Bank NA	48%	52%	0%	100%	26%	74%	0%	100%	0%	100%	0%	100%	0%	100%	39%	61%
Morgan Stanley Bank NA	2%	98%	0%	100%	0%	100%			0%	100%	0%	100%	0%	100%	1%	99%

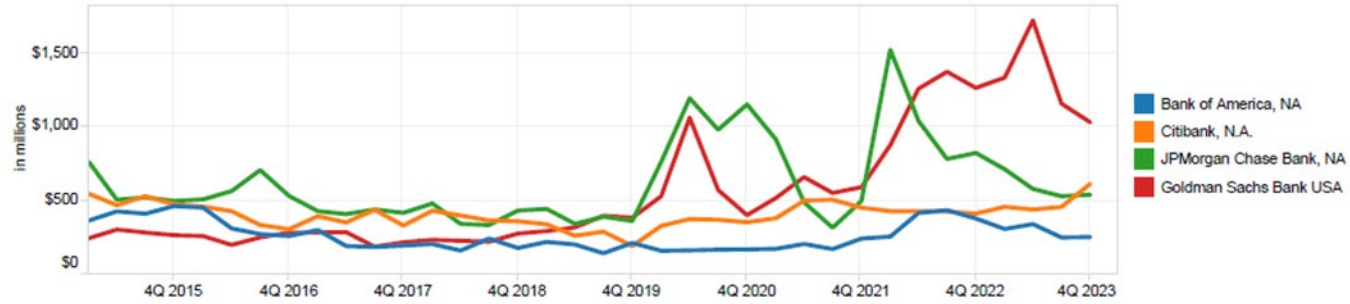
Source: Call reports, Schedule RC-R

Figure 22: Average 60-Day Value-at-Risk



	2017				2018				2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Bank of America, NA	$100	$63	$61	$64	$68	$53	$81	$59	$73	$67	$47	$71	$53	$54	$55	$42	$57	$68	$57	$80	$85	$122	$124	$126	$102	$113	$83	$84
Citibank, N.A.	131	117	146	110	144	133	122	120	113	87	96	64	109	125	123	118	127	167	169	151	143	143	142	137	153	146	152	205
JPMorgan Chase Bank, NA	143	136	146	139	160	114	111	144	148	114	130	120	254	399	328	385	306	163	105	129	382	261	196	242	238	193	177	180
Goldman Sachs Bank USA	94	95	62	72	77	75	73	92	97	106	132	128	176	355	191	134	173	220	184	197	293	421	459	423	446	576	387	344

VaR Capital Requirement



	2018				2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Bank of America, NA	$204	$160	$242	$177	$219	$201	$141	$212	$158	$161	$166	$167	$171	$204	$170	$241	$254	$416	$435	$378	$307	$340	$249	$252
Citibank, N.A.	431	399	365	359	338	261	288	191	327	374	370	353	380	500	506	452	428	428	425	411	458	439	457	615
JPMorgan Chase Bank, NA	480	342	334	432	443	341	390	361	762	1,197	983	1,155	917	489	315	498	1,528	1,043	784	824	714	580	530	540
Goldman Sachs Bank USA	232	226	220	275	292	317	397	384	529	1,065	572	401	518	660	552	592	878	1,262	1,378	1,268	1,338	1,728	1,161	1,033

Source: Market Risk Regulatory Report for Institutions Subject to the Market Risk Capital Rule—FFIEC 102