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CME Group

Precious Metals Shining Brightly in 2023

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CME Group Gold Futures and Options

May 2023

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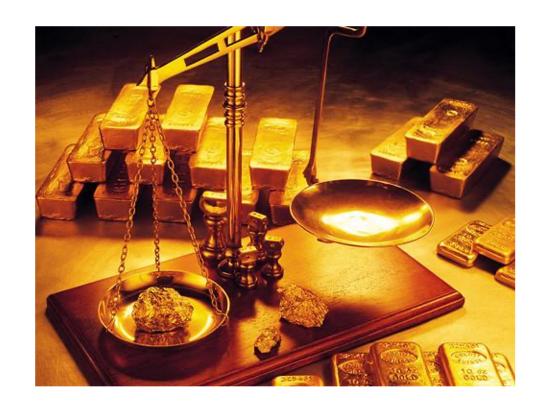
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Agenda

- 1 CME Group Who are we?
- 2 Gold Futures
- 3 Gold Options
- 4 CME Tools and Things to Note
- 5 Hypothetical Trade Examples
- 6 Q&A



CME Group – Who are we?

CME Group is the world's leading and most diverse derivatives exchange. It is where companies, institutions, and individuals from around the globe come to manage their business risks, hedge against fluctuations, and protect themselves against price volatility.



- CME Group exchanges handle 5 billion contracts, worth approximately \$1 quadrillion, annually
- Benchmark contracts across all major asset classes: interest rates, equity indexes, FX, metals, energy, and agricultural products



Why trade futures at CME Group?

Execution costs and liquidity

Pure direct participation in "markets" and asset classes

Tax considerations

Capital efficiencies

Technical indicators used for stocks/ETFs applicable to Micros

CME Group has been in business nearly two centuries

Around-the-clock trading

Clearing house margining system forces active risk management

Gold Futures

Widely viewed as a "safe haven" asset in times of economic stress and uncertainty

Frequently used as an Inflation hedge

Sometimes viewed as a global currency

Correlation (or lack thereof) with other asset classes



Gold Prices – Historical View



1942-1967

US Equity prices began to rally in 1942 as allies began to turn the tide of the WWII

US Dollar was fixed to Gold at \$35/ounce

US Equity markets soared

1967-1980

Inflation begins to rise

August, 1971 President Nixon takes US off of the Gold standard | Price of Gold rises from \$35 to \$177 by 1975

US withdrawal from Vietnam led to global unrest

- Arab oil embargo led to 400%+ increase in price of oil (\$3 to \$14)
- Iran government collapse and Russian invasion of Afghanistan 1979 – Oil price soared to over \$40

1980 - 2000

Paul Volcker raises interest rates to 20%

President Reagan deregulates economy and reduces corporate tax rate and inflation falls to 4% by 1989

Recession reduces inflation to 2% in 1990-91

Equity prices soar – Gold falls to \$280

2000-2011

"Dot com" bust and 9/11

Nasdaq falls by 85%

Fed cuts rates from 6.5% to 1%

Gold rallies to nearly \$2,000

2011-2021

Inflation remained low and stable

Stock prices soared

Gold prices fell

Most of the Equity vs Gold gains between 2011-2018

Federal spending as a % of GDP increased from 21% to 35% between 3/2020 and 3/2021 – COVID spending

Inflation has surged to levels not seen since the 1970s

Since 2021, Gold has outperformed Equity prices but not exceptionally

WHY HASN'T IT OUTPERFORMED BY MORE?

Rapid IR tightening

What could move Gold prices?

- Equity Valuations?
- · Persistent inflation?
- Continuing geo-political uncertainty?



Gold Prices – Historical View

Largest Daily Price Changes – Gold Futures since August, 2008

9/17/2008 Gold +9% | YM -4% | ES -4.7% | NQ -4.9% | 2 Davs after Lehman Bankruptcy

12/1/2008 Gold -5.1% S&P 500 -9% Bonds Rallied

3/19/2009 Gold +7.8% | Stock prices lower | Yields higher

8/24/2011 Gold -5.6% | Stocks rallied

4/15/2013 Gold -9.4% I Stock market sell-off I News of slow China growth

3/24/2020 Gold +5.9% Stocks Limit Up | COVID-19 stimulus bill in the news























vaccine



11/21/2008 Gold +5.8% Stock Rally

10/2/2008 Gold -4.7% | Stocks tumble, credit frozen

11/9/2009

Gold +5.9% Stocks rally Dollar Falls 9/22,23/2011 Gold -9.5% | Stocks, commodities fell | bonds rallied

6/20/2013 Gold -6.4% | Bernancke suggests end to QE I Equities sell-

11/9/2020 Gold -5% | Dow, S&P 500 strong rally | news of successful off I Bonds sell-off



COMEX Gold Futures

Gold Futures – Price History







Gold Futures

Specifications	Gold Futures (GC)	Micro Gold Futures (MGC)							
Contract Unit	100 troy ounces	10 troy ounces							
Price Quotation	U.S. dollar and cents per troy ounce								
Trading Hours	Sunday – Friday 6 p.m. – 5 p.m. (Chicago Time)								
Minimum Price Fluctuation	\$0.10 / troy ounce = \$10 / contract	\$0.10 / troy ounce = \$1 / contract							
Listed Contracts	3 consecutive monthly contracts + Feb, Apr, Aug, Oct in the nearest 23 months + Jun and Dec in the nearest 72 months	Feb, Apr, Jun, Aug, Oct, and Dec in the nearest 24 months							
Termination of Trading	Trading terminates on the third last business day	of the contract month							
Settlement Method	Deliverable								
Delivery Period	Delivery may take place on any business day beginning on the first business day of the delivery month or any subsequent business day of the delivery month, but not later than the last business day of the current delivery month								
Grade and Quality	Gold delivered under this contract shall assay to	a minimum of 995 fineness							

https://www.cmegroup.com/markets/metals/precious/gold.contractSpecs.html https://www.cmegroup.com/markets/metals/precious/e-micro-gold.contractSpecs.html



Gold Futures

X	CC	Product	Description	Status	+	Qty	Bid	Ofr	Qty	Last	Change	Settlement	High	Low	Volume	Open Interest	Net Cha
— Go	old Future	:															● ※ R
x G		Gold Future	Aug23	Open	+	3	1,978.5	1,978.6	18	1,978.5	+20.1	1,958.4	1,985.7	1,955.2	179,831	370,767	+1.03%
× M	GC	Micro Gold Future	Aug23	Open	+	3	1,978.5	1,978.6	6	1,978.5	+20.1	1,958.4	1,985.6	1,955.1	61,365	19,448	+1.03%

GC: 100 OZ

100 * 1,978.50 = **\$197,850**

MGC: 10 OZ

10 * 1978.50 = **\$19,785**

GC: Px Change from 1,978.50 to 1,978.60 represents \$10.00 MGC: Px Change from 1,978.50 to 1,978.60 represents \$1.00

COMEX Gold Options



Gold Monthly Options (OG)

Specifications	Gold Monthly Options (OG)
Contract Unit	100 troy ounces
Price Quotation	U.S. dollar and cents per troy ounce
Trading Hours	Sunday – Friday 6 p.m. – 5 p.m. (CT)
Min. Price Fluctuation	\$0.10 / troy ounce = \$10 / contract
Listed Contracts	20 consecutive monthly contracts + Jun or Dec in the nearest 72 months
Strike Price Listing	Minimum 40 strikes at \$5.00 per troy ounce increment above and below the at-the-money strike + 10 strikes at \$10.00/troy ounce increment above & below the highest & lowest \$5.00 increment strike + 8 strikes at \$25.00/troy ounce increment above & below the highest & lowest \$10.00 increment strike + dynamic strikes at \$5.00/troy ounce increment above & below the highest & lowest pre-listed strikes
Termination of Trading	Terminates at 12:30 p.m. CT on the 4th last business day of the month prior to the contract month. If the 4th last business day occurs on a Friday or the day before a holiday, trading terminates on the prior business day.
Exercise Style	American
Settlement Method	Deliverable (Exact At-The-Money: exercise calls, abandon puts)
Contrary Instructions	None
Underlying	100 troy ounces Gold Futures (GC)



Gold Weekly Options

Specifications	Gold Weekly Friday Options (OG1-5)
Contract Unit	100 troy ounces
Price Quotation	U.S. dollar and cents per troy ounce
Trading Hours	Sunday – Friday 6 p.m. – 5 p.m. (CT)
Min. Price Fluctuation	\$0.10 / troy ounce = \$10 / contract
Listed Contracts	Weekly contracts listed for 4 consecutive weeks. No weekly contract listed with the same expiry day as the monthly option.
Strike Price Listing	Minimum 40 strikes at \$5.00/troy ounce increment above & below the at-the-money strike + dynamic strikes at \$5.00/troy ounce increment above & below the highest & lowest pre-listed strikes.
Termination of Trading	Trading terminates on Friday of the contract week. If Friday is not a business day, trading terminates on the prior business day.
Exercise Style	American
Settlement Method	Deliverable (Exact At-The-Money: exercise calls, abandon puts)
Contrary Instructions	None
Underlying	100 troy ounces Gold Futures (GC)

https://www.cmegroup.com/markets/metals/precious/gold.contractSpecs.options.html#optionProductId=7488



Gold Options

Open Int	Volume	Last	Vol	Δ		QS	+	C Qty	C Bid	Theo	C Ofr	C Qty	Strike	P Qty	P Bid	Theo	P Ofr	P Qty	+	QS	Δ	Vol	L	ast	Volume	Open Int
- Gold 0	ption Jul2	3, 18.94 da	ys, F: 1,9	80.0									ATM		1980	.0 ▼ △	4 strike	es – +		11						
Gold Futu	re Aug23													19	1,979.9		1,980.1	12	+				-	1,980.0	181,990	370,767
2,068	226	↑ 23.	7 12.27	% 0	.54	Q5	+	20	24.4	24.6	24.8	44	1975.0	21	19.4	19.6	19.8	61	+	Q5	-0.46	12.27%	+	19.7	231	1,610
1,087	37	↑ 22.	6 12.28	% 0	.50	QS	+	14	21.9	22.0	22.3	61	1980.0	98	21.8	22.0	22.3	61	+	Q5	-0.49	12.28%	1	21.8	59	754
464	75	↑ 21.	0 12.31	% 0	.47	QS	+	22	19.5	19.7	19.9	47	1985.0	20	24.5	24.7	24.9	50	+	Q5	-0.53	12.31%	+	24.4	53	458
665	184	♣ 16.	8 12.34	% 0	.43	Q5	+	22	17.4	17.6	17.7	4	1990.0	37	27.3	27.5	27.8	15	+	QS	-0.56	12.34%	+	27.0	6	337
- Gold F	ri Week2 (pt Jun23,	0.94 days	, F: 1,980	0.0								ATM		1980	.0 ▼ △	4 strike	es – +								
Gold Futu	re Aug23													19	1,979.9		1,980.1	12	+				-	1,980.0	181,990	370,767
440	205	7.	6 13.32	% 0	.65	QS]	+	1	8.1	8.2	8.5	1	1975.0	25	3.1	3.2	3.4	59	+	QS	-0.35	13.32%	-	3.7	248	165
253	270	↑ 5.	2 13.33	% 0	.50	QS)	+	25	5.2	5.3	5.6	57	1980.0	24	5.2	5.3	5.6	57	+	QS	-0.50	13.33%	1	7.1	154	168
464	168	↓ 3.	4 13.53	% 0	.36	QS	+	28	3.2	3.3	3.5	54	1985.0	2	8.1	8.3	8.6	1	+	Q5	-0.64	13.53%	+	8.5	4	28
486	78	↓ 2.	0 13.92	% 0	.24	QS	+	79	1.8	2.0	2.1	22	1990.0	1	11.8	12.0	12.2	1	+	Qs)	-0.76	13.92%	+	10.6	8	252
Gold M	1on Week2	Opt Jun2	, 3.94 da	rs, F: 1,9	80.0								ATM		1980	.0 ▼ △	4 strike	es – +								
Gold Futu	re Aug23													19	1,979.9		1,980.1	12	+				-	1,980.0	181,990	370,767
33	26	↑ 7.	6 9.53			_	+	1	10.4	10.6	10.9	2	1975.0	20	5.4	5.6	5.8	53	+	Q5	-0.40	9.53%	1	5.9	4	21
31	18	↑ 9.	7 9.57	% 0		_	+	54	7.6	7.9	8.1	54	1980.0	54	7.6	7.9	8.1	53	+	QS	-0.50	9.57%	1	8.9	19	24
20	4		6 9.65	% 0	.40	QS	+	54	5.4	5.7	5.9	100	1985.0	1	10.4	10.7	10.9	1	+	Q5	-0.60	9.65%	+	8.5	4	67
25	20	↓ 3.	6 9.77	% 0	.31	Qs)	+	58	3.7	4.0	4.2	108	1990.0	1	13.7	14.0	14.2	1	+	Qs	-0.69	9.77%		18.7	1	33
— Gold W	/ed Week2	Opt Jun2	3, 5.94 da	ys, F: 1,9	80.0								ATM		1,000,000	.0 ▼ △	4 strike	es – +		-		,				
Gold Futu	re Aug23													19	1,979.9		1,980.1	12	+				-	1,980.0	181,990	370,767
29	112		8 12.40			Q5	+	14	14.9	15.1	15.4	35	1975.0	20	9.9	10.1	10.4	88	+	Q5	-0.43	12.40%	†	10.3	7	44
8	57	↑ 13.	4 12.41	% 0		QS	+	57	12.2	12.5	12.7	57	1980.0	90	12.2	12.5	12.7	56	+	Q5	-0.50	12.41%	+	12.0	20	7
163			12.45			Qs)	+	57	9.9	10.2	10.4	57	1985.0	15	14.9	15.2	15.4	15	+	Q5	-0.56	12.45%				170
4	7	3.	3 12.50	% 0	.38	QS	+	57	7.9	8.2	8.4	57	1990.0	1	17.9	18.2	18.4	1	+	Q5	-0.62	12.50%				7
 Gold 0 	ption Aug	23, 47.94 c	ays, F: 1,	980.0									ATM			.0 ▼ △		es – +	_							
Gold Futu	_													19	1,979.9		1,980.1	12	+						181,990	
521	17	-	1 12.59			Q5	+	2	46.2	46.5	46.6	8	1960.0	70	26.3	26.6	26.7	1	+	Q5	-0.40	12.59%	•	25.0	63	447
604	5					Q5	+	14	43.4	43.7	43.9	14	1965.0	67	28.5	28.8	28.9	1	+	Q5	-0.42	12.61%		28.9	18	548
523	60	-				Q5	+	11	40.8	41.0	41.2	44	1970.0	19	30.9	31.1	31.3	64	+	Q5	-0.44	12.63%		31.7	98	463
759	117					Q5	+	13	38.3	38.5	38.7	46	1975.0	14	33.3	33.5	33.8	125	+	Q5	-0.47	12.66%	†	34.0	45	805
410	55	↑ 36.	0 12.69		.51	_	+	14	35.9	36.1	36.3	48	1980.0	14	35.9	36.1	36.4	123	+	Q5	-0.49	12.69%	-	34.8	64	789
194	21		12.72			QS	+	14	33.6	33.8	34.0	92	1985.0	91	38.5	38.8	39.0	98	+	Q5	-0.51	12.72%				316
322	5	↑ 33.	7 12.75	% 0	.46	_	+	14	31.4	31.6	31.9	65	1990.0	50	41.3	41.6	41.8	94	+	Q5	-0.53	12.75%				136
204	21	↑ 25.	1 12.79			QS	+	14	29.4	29.6	29.8	96	1995.0	9	44.3	44.5	44.8	16	+	Q5	-0.55	12.79%				92
3,874	300	↓ 28.	2 12.83		.42	_	+	19	27.4	27.6	27.8	88	2000.0	6	47.3	47.5	47.8	6	+	Q5	-0.57	12.83%	+	45.5	46	1,777
541	22	26	9 12.87	% 0	.40	QS	+	16	25.6	25.7	26.0	104	2005.0	14	50.4	50.6	50.9	2	+	QS	-0.59	12.87%				272



Gold Options

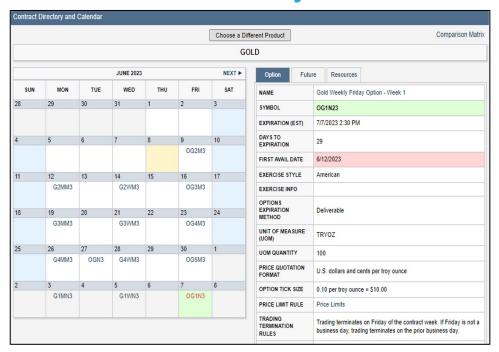
Open Int	Volume	Last	Vol	Δ	QS	+	C Qty	C Bid	Theo	C Ofr	C Qty	Strike	P Qty	P Bid	Theo	P Ofr	P Qty	+	QS	Δ	Vol	Last	Volume	Open Int
- Gold O	ption Jul2	3, 18.94 day	s, F: 1,980.	.2							1	ATM		1980	0.0 ▼ ▲	2 strike	s - +							
Gold Futu	Gold Future Aug23												12	1,980.1		1,980.2	2	+				1,980.2	182,233	370,767
1,087	37	↑ 22.6	12.26%	0.51	Q5	+	61	21.9	22.1	22.4	137	1980.0	7	21.8	21.9	22.2	61	+	Q5	-0.49	12.26%	21.8	59	754
464	75	↑ 21.0	12.28%	0.47	Q5	+	22	19.6	19.8	20.0	54	1985.0	20	24.4	24.5	24.8	50	+	Q5	-0.53	12.28%	↓ 24.4	53	458
- Gold F												ATM		1980	0.0 ▼ ▲	2 strike	s – +							
Gold Futu	re Aug23												12	1,980.1		1,980.2	2	+				1,980.2	182,233	370,767
253	270	↑ 5.2	13.48%	0.51	QS	+	25	5.3	5.5	5.7	58	1980.0	24	5.1	5.3	5.4	1	+	Q5	-0.49	13.48%	7.1	154	168
464	168	↓ 3.4	13.65%	0.36	QS	+	35	3.2	3.4	3.6	67	1985.0	2	8.0	8.2	8.5	1	+	Q5	-0.64	13.65%	▶ 8.5	4	28
- Gold M	1on Week2	2 Opt Jun23,	3.94 days,	F: 1,980.2	2							ATM		1980	0.0 ▼ ▲	2 strike	s – +							
Gold Futu	re Aug 23												12	1,980.1		1,980.2	2	+				1,980.2	182,233	370,767
31	18	♠ 9.7	9.57%	0.51	QS	+	54	7.7	7.9	8.2	54	1980.0	87	7.5	7.7	8.0	53	+	Q5	-0.49	9.57%	↑ 8.9	19	24
20	4	↓ 5.6	9.65%	0.41	QS	+	14	5.5	5.8	5.9	54	1985.0	2	10.3	10.6	10.8	9	+	Q5	-0.59	9.65%	▶ 8.5	4	67
- Gold W	Ved Week	2 Opt Jun23,	5.94 days,	F: 1,980.	2							ATM		1980	0.0 ▼ ▲	2 strike	s – +							
Gold Futu	re Aug23												12	1,980.1		1,980.2	2	+				1,980.2	182,233	370,767
8	57	↑ 13.4	12.37%	0.51	Q5	+	57	12.3	12.6	12.8	57	1980.0	90	12.1	12.4	12.6	56	+	Q5	-0.49	12.37%	12.0	20	7
163			12.39%	0.44	Q5	+	57	10.0	10.2	10.5	92	1985.0	16	14.8	15.0	15.3	16	+	Q5	-0.56	12.39%			170

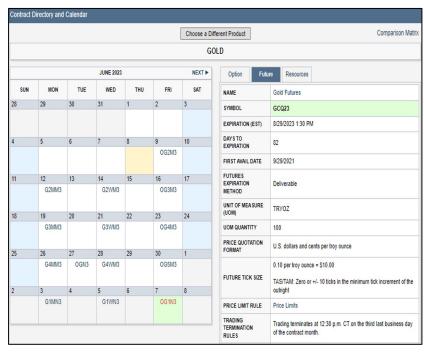
ATM Straddle:

19 DTE: 44 (\$4,400) 6 DTE: 25 (\$2,500) 4 DTE: 15.6 (\$1,560) 1 DTE: 10.8 (\$1,080)

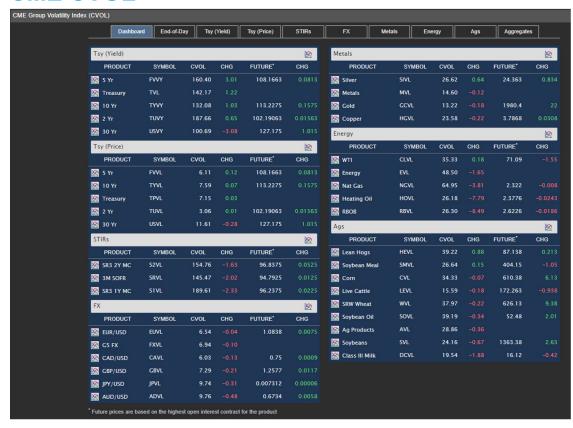


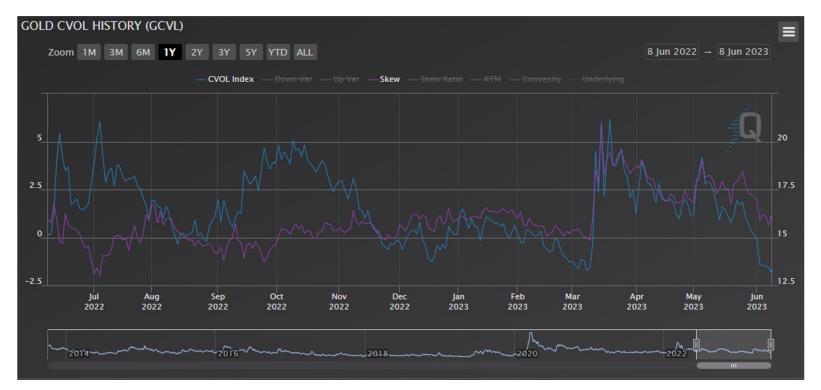
CME Contract Directory and Calendar Tool



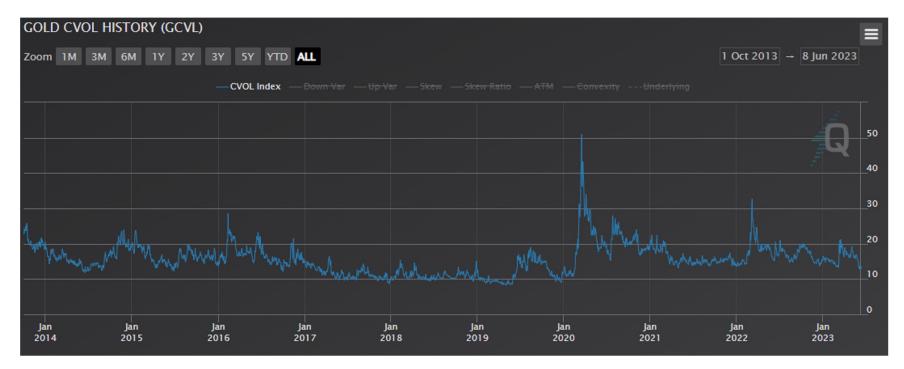


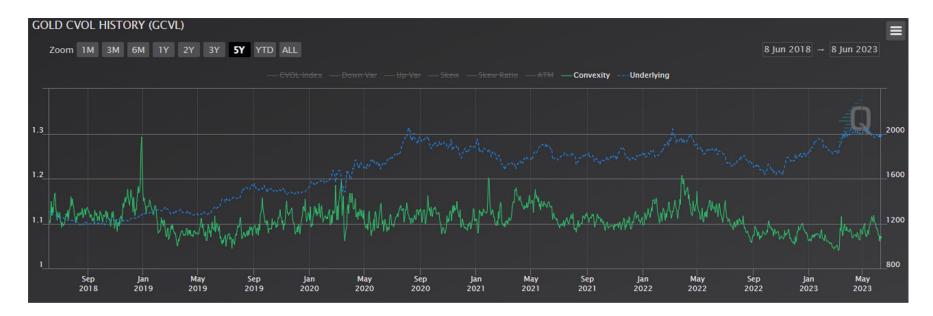












Hypothetical Trade Examples



Hypothetical Trade Example 1

Assume a trader believes that an upcoming CPI number will be higher than market expectations and that it will lead to expectations of tighter Fed policy and higher interest rates. They want to express their view that Treasury yields will increase and the price of Gold will decrease. They decide to use CME's Micro 2-Year Treasury Yield and Gold Futures contracts.

- Buy 5 Micro 2-Year Treasury Yield contracts for 4.510
- Sell 1 Gold futures contract @ 1,975

Now assume the trader was correct in their view and the Micro 2-Year Yield rises to 4.75 and the price of Gold falls to 1,900.

P&L

- 4.750-4.510 = 24 basis points * \$10 * 5 contracts = \$1,200
- 1,975 1,900 = 75 * 100 = \$7,500

Hypothetical Trade Example 2

Now assume that a trader believes the price of Gold futures will decline based on a technical indicator on their charts. They wish to take advantage of the flexibility that the Micro Gold futures contract offers to scale into or out of positions.

- Trader sells 5 MGC contracts for 1,975
- · Assume the market falls to 1,950
- · Trader believes that the market will decline further but wishes to take some of his risk off
- Buys 2 MGC contracts for 1,950 leaving him long 3 contracts
- Assume the market falls to 1,940
- Trader Buys 3 MGC contracts for 1,940, leaving them flat

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P&L
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1,975 - 1,950 = 25 * $10 * 2 contracts = $500.00
1,975 - 1940 = 35 * $10 * 3 contracts = $315.00
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Hypothetical Trade Example 3

Finally, assume trader has a fundamental belief that the price of Gold will increase. They want to take advantage of Gold Options at CME Group to express this view. They know from CVOL that implied volatility is historically high right now so want to sell premium, or, in trader parlance, "sell vol".

They decide to sell a Put Spread which will result in a positive Delta value, consistent with their belief that the price of Gold will increase.

Futures Price: 1,975

Sell 1 1,965 Put (delta -.34) with 5 days until expiration for 6.0

Buy 1 1,950 Put (delta -.16) with 5 days until expiration for 2.3

Collect 3.7 points, or \$370

Now assume that over the next week, the price gradually rises to 1,985. Both the short and long Put in the trader's position expire worthless and the trader keeps the \$370 they collected.



Q&A



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