

METALS COMPLEX



GOLD
SILVER
PLATINUM
PALLADIUM
COPPER
ALUMINUM



VISION IS OUR GREATEST COMMODITY™



NEW YORK MERCANTILE EXCHANGE METALS COMPLEX



The New York Mercantile Exchange, Inc. is the largest physical commodity futures exchange in the world. Its suite of metals futures and options contracts are cleared financial instruments that allow market participants to mitigate price risk in a transparent, liquid, financially secure marketplace.

Metals trading on the Exchange is conducted through the COMEX Division on which futures and options contracts for gold, silver, copper, and aluminum are listed; and through the NYMEX Division, which lists platinum futures and options and palladium futures. The NYMEX Division also lists an extensive slate of energy futures and options contracts.

The metals represented on the Exchange include the oldest metals known to mankind. Gold, silver, and copper were first used approximately 10,000 years ago. Some of the most sophisticated early metallurgical techniques evolved around the use of copper, the first industrial metal.

Platinum was discovered in South America in the early 18th century during the search for gold and silver, although it had been used even before the voyages of Christopher Columbus. Originally known as “little silver,” silver that hadn’t “grown up,” or “unripened gold,” platinum was thrown back into the streams that held the alluvial deposits. For many years it was used for counterfeiting gold coins in the New World and Spain.

ALL TRANSACTIONS ARE CLEARED

All transactions on the Exchange are processed through its clearinghouse, which mitigates counterparty credit risk by ultimately acting in effect as the buyer to every seller and the seller to every buyer. Transactions are backed by an extensive financial safety net including a guarantee fund of approximately \$135 million and a \$100 million default insurance policy. For the last several years, NYMEX Holdings, Inc., the parent company of the Exchange, has received and maintained an AA+ long-term counterparty credit rating from Standard & Poor’s. A list of the Exchange’s clearing members can be found on its website, www.nymex.com.

Costs to market participants are reduced because margin requirements are netted against cleared positions of economically related contracts on the Exchange. In the metals markets for example, this could involve a purchase of gold futures contracts and the simultaneous sale of platinum futures representing the same quantity of the underlying physical product.

Customer funds are segregated from those of brokers, clearing members, and the Exchange itself.

Futures contracts cleared on U.S. exchanges have a level of legal protection that is not available to participants in over-the-counter swaps transactions in the event of a bankruptcy by one of the parties to the trade.

The Exchange owns its clearinghouse, which gives it great flexibility and leeway in introducing new contracts, as well as close control over margin levels and market and financial compliance. All transactions are subject to the regulations of the Exchange, which operates as a self-regulatory organization serving as an additional layer of regulatory protection beyond the direct regulation of markets by the Commodity Futures Trading Commission, a U.S. government agency, which also maintains regulatory oversight of exchange markets.

MARKET TRANSPARENCY AIDS PRICE DISCOVERY

Market transparency is one of the hallmarks of trading on the Exchange. Prices are continuously reported during the trading day and trading volume, open interest, inventories of metal held in Exchange-licensed depositories or warehouses, and physical deliveries under the futures contracts are reported daily.

The prices quoted are used as global benchmarks for the underlying markets for precious metals and, in North America, copper and aluminum. This is an indication of the confidence that the market places in the integrity of these transactions. The Exchange maintains a vigorous regimen of trade, market, and financial surveillance to assure that business is conducted fairly and competitively among creditworthy market participants.

Given these resources, a decision not to manage price risk is made as deliberately as a decision to manage it.

WHAT ARE FUTURES CONTRACTS?

Futures contracts trade in standardized units in a highly visible, extremely competitive, continuous open auction. For a futures contract to be an effective financial instrument, the underlying market must meet three broad criteria: The prices of the underlying commodities must be volatile; the physical or financially settled contracts must be fungible; and there must be a diverse, reasonably large universe of buyers and sellers.

All market participants understand that the prices are quoted for products with precise specifications for grade and quantity, and for delivery to specified locations during a specified period of time.

Allowing for physical delivery ensures that market participants will be able to transfer physical supply and that the futures prices will be truly representative of cash market values. Most market participants, however, choose to buy or sell the physical commodities through their normal channels, while simultaneously liquidating their futures positions.

The futures markets help businesses manage their price risk by providing a means of hedging: matching buyers and sellers of a commodity with parties who are able and willing to bear market risk, or who have inverse risk profiles. A copper producer, for example, might sell a copper futures contract to protect sales prices while a wire manufacturer might buy copper futures to protect the cost of raw materials.

Because futures are traded on exchanges that are open public auctions with prices displayed for all to see, the markets perform the important function of price discovery. The prices displayed on the floor of the Exchange and on its electronic platform are disseminated to information vendors and news services worldwide. They reflect the marketplace's collective valuation of how much buyers are willing to pay and how much sellers are willing to accept. The diverse views of many market participants are distilled into a single price.

CASH VS. FUTURES PRICES — THE MARKETS CONVERGE

In general, futures markets compensate an individual for the cost of purchasing a commodity today, storing it, and delivering it in the future. As a result, one would ordinarily expect to see an upward trend in the prices of distant contract months. Such a market condition is known as *contango* and is typical of many futures markets. In most markets, the crucial determinant of the price differential between two contract months is the cost of storing the commodity over that particular length of time. As a result, markets which compensate an individual fully for carry charges—interest rates, insurance, and storage—are known as full contango markets, or full carrying charge markets.

Under normal market conditions, in situations of adequate supply, the price of a commodity for future delivery should be equal to the present spot prices plus contango. The contango structure of the futures market is kept

intact by the ability of metals dealers and financial institutions to bring carrying charges back into line through arbitrage.

If carrying charges are greater than prevailing interest rates, dealers will buy physical metal and sell futures. Conversely, if carrying charges are below prevailing interest rates, dealers will sell the physical and buy futures. The net effect of these transactions is to keep carrying charges in the futures market in line with interest rates.

The opposite of contango is *backwardation*, a market condition where the nearby month trades at a higher price relative to the outer months. Such a price relationship usually indicates a tightness of supply. The copper market, for instance, has been in backwardation more often than not since the 1950s, but has gone into contango for significant periods of time.

Regardless of a contango or backwardation market, over time, as a futures contract approaches its last day of trading, the futures and cash prices will get closer and closer, a process known as *convergence*.

OPTIONS CONTRACTS: A VERSATILE COMPLEMENT TO FUTURES

Options on futures offer additional flexibility in managing price risk as a form of insurance. They give the holder of an options contract the right, but not the obligation, to buy or sell the underlying futures contract at a specific price and time, allowing participation in favorable price

moves. If the market moves against the options position, the holder can let it expire worthless, with the only cost being the premium paid.

Options can be used alone or in combination with futures contracts resulting in strategies to fit any risk profile, time horizon, or cost consideration.

OPTIONS CONTRACTS CONVEY RIGHTS, INCUR OBLIGATIONS

There are two types of options contracts, *calls* and *puts*. A call options contract gives the holder of the option the right, but not the obligation to *buy* the underlying futures contract at the agreed upon *strike price*. Conversely, a put options contract gives the holder the right, but not the obligation to *sell* the underlying futures contract. Puts are usually bought when the expectation is for neutral or falling prices; calls are usually purchased when the expectation is for rising prices. The price at which an option is bought or sold is the *premium*.

Any market participant who believes that prices will rise sharply over the next few months might purchase a call. If prices rise, the options contract can be exercised or resold at a profit.

Similarly, puts can be bought in anticipation of a decline in prices.

On the opposite side of an options transaction, a seller, or *writer*, of an option *incurs an obligation* to perform should the option be exercised by the purchaser. The writer of a call incurs an obligation to sell a futures contract while the writer of a put has an obligation to buy a futures contract. In return for this risk, the writer receives the premium.

WHY TRADE NEW YORK MERCANTILE EXCHANGE METALS FUTURES AND OPTIONS?

The importance of the six metals in world markets, and the responsiveness of their prices to world events, make the metals futures and options contracts important risk management tools for commercial interests. They also present an exciting, potentially rewarding opportunity for individuals who seek to profit by correctly anticipating price changes.

- The contracts are standardized, liquid financial instruments.
- The Exchange offers cost-efficient trading and risk management opportunities.
- Contracts are traded competitively on the Exchange in an anonymous auction, representing a confluence of opinions on future values.
- Futures prices are widely and instantaneously disseminated, serving as benchmark prices.

- The contracts can be easily liquidated prior to the required receipt or delivery of the underlying commodity.
- A contract's financial performance is supported by a strong financial system backed by the Exchange clearing members, which include the strongest names in the financial services industry. The system of guarantees provided through the Exchange clearinghouse mitigates counterparty credit risk.
- The Exchange offers safe, fair, and orderly markets protected by its rigorous financial standards and surveillance procedures.
- The Exchange provides buyers and sellers with opportunities for price insurance and arbitrage that can be integrated into the cash market operations of commercial market participants.
- Trading Exchange contracts can reduce the working capital requirements and the physical storage costs associated with physical market operations.
- Trading Exchange contracts can improve the credit worthiness and add to the borrowing capacity of commercial market participants.

DEEP MARKET LIQUIDITY

Efficient and effective futures and options markets typically require a mix of hedgers and speculators. The NYMEX metals futures complex has attracted private and institutional investors who seek to profit by assuming the

risks that commercial market participants seek to avoid. These participants, in combination with hedgers, bring a balance of participants and liquidity to the metals futures markets.

AFTER-HOURS ELECTRONIC TRADING

Trading in the metals futures and gold options contracts continues electronically after the close of the open outcry session. The electronic trading session commences within approximately an hour of the close of floor trading Monday through Friday. Through Thursdays, the electronic trading session concludes within approximately a half-hour prior to the resumption of floor trading the following morning. On Fridays, the session closes late in the afternoon. Trading resumes electronically in the early evening on Sundays.

PREMIUMS FOR PHYSICALS OR DISCOUNTS FOR SCRAP

Differences in supply and demand conditions between market centers can cause a premium in the price of the delivered physical commodity to the price of the futures. Scrap items may be priced at a discount to the COMEX Division copper futures contract.



METALS



GOLD

The COMEX Division gold futures and options contracts are the world's principal exchange-traded instruments for this commodity. Gold futures opened for trading on December 31, 1974, coinciding with the lifting of a 41-year ban on the private ownership of gold by U.S. citizens imposed in the early days of President Franklin Roosevelt's administration during the Great Depression.

Perhaps no other market in the world has the universal appeal of the gold market. For centuries, gold has been coveted for its unique blend of rarity, beauty, and near indestructibility. Nations have embraced gold as a store of wealth and a medium of international exchange; individuals have sought to possess gold as insurance against the day-to-day uncertainties of paper money.

The COMEX gold futures and options contracts provide an important alternative to traditional means of investing in gold such as bullion, coins, and mining stocks.

Gold futures contracts are also valuable trading tools for producers and users of the metal. Commercial concentrations of gold are found in widely distributed areas: for instance, in association with ores of copper and lead, in quartz veins, in the gravel of stream beds, and with pyrites (iron sulfide). Even seawater contains astonishing quantities of gold, though its recovery is not economical.

The greatest early surge in gold refining followed the first voyage of Christopher Columbus. From 1492 to 1600, Central and South America and the Caribbean islands contributed significant quantities of gold to world commerce. Colombia, Peru, Ecuador, Panama, and Hispaniola contributed 61% of the world's newfound gold during the 17th century; by the 18th century, these areas supplied 80%.

Following the California gold discovery of 1848, North America became the world's major gold supplier; from 1850 to 1875, more gold was discovered here than during the previous 350 years. By 1890, the gold fields of Alaska and the Yukon were the principal sources of supply, and discoveries made shortly afterwards in the African Transvaal indicated even greater deposits. Today South Africa, Russia, Canada, the United States, Brazil, and Australia are major producers.

The United States first assigned a formal monetary role for gold in 1792 when Congress put the nation's currency on a bimetallic standard, backing it with gold and silver.

During the Great Depression of the 1930s, most nations were forced to sever their currencies from gold in an attempt to stabilize their economies.

Gold formally reentered the world's monetary system in 1944 when the Bretton Woods agreement fixed all the world's paper currencies in relation to the U.S. dollar,

Photo: Gold, platinum, and palladium photos courtesy of Johnson Matthey; silver photo courtesy of The Silver Institute and GFMS.

which in turn was tied to gold. The agreement was in force until 1971, when President Richard Nixon ended the convertibility of the dollar into gold.

Today, gold prices float freely in accordance with supply and demand, responding quickly to political and economic events.

Gold is an important industrial commodity. It is an excellent conductor of electricity, is extremely resistant to corrosion, and is one of the most chemically stable of the elements, making it critical for electronics and other high-tech applications.

A broad cross section of companies in the gold industry, from mining companies to fabricators of finished products, can use the gold futures and options contracts to hedge price risk. Gold also plays a role in investment strategies, and gold futures and options contracts can be found in investors' portfolios.

Gold futures contracts trade in units of 100 troy ounces and are priced in dollars and cents per ounce. The minimum price fluctuation is \$0.10 (10¢) per troy ounce.

In addition to open outcry trading of gold futures and options, the contracts are offered for trading electronically during the 18 hours that the trading floor is closed each day Mondays through Thursdays, and for two and a half hours on Fridays.

SILVER

Silver has attracted mankind's interest for thousands of years. In ancient times, silver deposits were plentiful on or near the earth's surface. Relics of ancient civilizations include jewelry, religious artifacts, and food vessels formed from the durable, malleable metal.

In 1792, silver assumed a key role in the United States monetary system when Congress based the currency on the silver dollar, and its fixed relationship to gold. Silver was used for the nation's coinage until it was demonetized in 1965.

The turn of the century saw an even more important use for silver as an industrial raw material. Today, silver is sought as a valuable and practical industrial commodity as well as an appealing investment. The largest industrial users of silver are the photographic, jewelry, and electronics industries.

Newly mined metal provides most of the needed supply, and Mexico, the United States, Peru, Poland, and China are the primary producers. Secondary silver sources include coin melt, scrap recovery, and liquidation of private stocks from countries where the export of the metal is restricted. Secondary sources are particularly price sensitive.

Mining companies, fabricators of finished products, and users of silver-content industrial materials can use COMEX Division silver futures and options contracts to manage their price risk. As a precious metal, silver also plays a role in investment portfolios.

Silver futures contracts trade in units of 5,000 troy ounces and are priced in cents per ounce. The minimum price fluctuation for outright transactions is \$0.005 (0.5¢) per troy ounce.

In addition to open outcry trading of silver futures and options, the futures contract is offered for trading electronically during the 18 hours that the trading floor is closed each day Mondays through Thursdays, and for two and a half hours on Fridays.

PLATINUM

Platinum is the principal metal of the six-metal group that bears its name; the other platinum group metals are palladium, rhodium, ruthenium, osmium, and iridium. All possess unique chemical and physical qualities that make them vital industrial materials.

The automotive and jewelry sectors account for more than 75% of world consumption of platinum. Other uses include glass manufacturing, chemical production,

petroleum refining, high-technology electronics, and medical applications.

Platinum is among the world's scarcest metals; new mine production totals only approximately 6.5 million troy ounces a year. In contrast, gold mine production runs approximately 80 million ounces a year, and silver production is approximately 595 million ounces.

Supplies of platinum are concentrated in South Africa, which accounts for approximately 77%; Russia, 13%; North America, 6%. Smaller producers make up the remainder.

Because of the metal's importance as an industrial material, its relative low production, and concentration among a few suppliers, prices can be volatile, and platinum is often considered attractive to investors.

Platinum futures contracts trade in units of 50 troy ounces and are priced in dollars and cents per ounce. The minimum price fluctuation is \$0.10 (10¢) per troy ounce.

In addition to open outcry trading of platinum futures and options, the futures contract is offered for trading electronically during the 18 hours that the trading floor is closed each day.

PALLADIUM

Palladium is the other major metal of the platinum group. It is mined with platinum, which it resembles in many respects, yet there are important differences between the two metals. As with platinum, palladium is also produced as a by-product of nickel mining. Russia supplies nearly half of production, South Africa, 36%, and North America, 15%. Annual production runs approximately 6.5 million ounces.

Automotive catalysts are the largest consuming sector of palladium, accounting for 66% of demand. Dental alloys account for 14%, electronics, 17%, and others, 3%.

Palladium futures contracts trade in units of 100 troy ounces and are priced in dollars and cents per ounce. The minimum price fluctuation is \$0.05 (5¢) per troy ounce.

In addition to open outcry trading of palladium futures, the contract is offered for trading electronically during the 18 hours that the trading floor is closed each day.

COPPER

One of the oldest commodities known to man, copper is a product which directly reflects the state of the world economy. It is the world's third most widely used metal, after iron and aluminum, and is primarily used

in highly cyclical industries such as construction and industrial machinery manufacturing. Profitable extraction of the metal depends on cost-efficient, high-volume mining techniques.

Copper was first worked about 7,000 years ago. Its softness, color, and presence in nature enabled it to be easily mined and fashioned into primitive utensils, tools, and weapons. Five thousand years ago, humans learned to alloy copper with tin, producing bronze and giving rise to a new age.

By the mid-1800s, Great Britain, with superior smelting technology, controlled more than three-quarters of the world copper trade. As the proportion of metal to waste in rock declined, it became economical to position smelters and refiners adjacent to mining sites and ship the final product directly to market. The discovery in the 19th century of major copper deposits in North America, Chile, and Australia challenged England's pre-eminent position.

In the early 20th century, new mining and smelting techniques were developed in the United States which made it possible to process lower-grade ores, resulting in a dramatic global expansion of the copper market.

Since the 1950s, more often than not, the copper market has been in backwardation, though it has gone into contango for significant periods of time.

Copper market participants across the board use the COMEX Division high-grade copper futures and options to mitigate price risk. Copper contracts are also found in investors' portfolios.

Copper futures contracts trade in units of 25,000 pounds and are priced in cents per pound. The minimum price fluctuation is \$0.0005 (0.05¢) per pound.

In addition to open outcry trading of copper futures and options, the futures contract is offered for trading electronically during the 18 hours that the trading floor is closed each day Mondays through Thursdays, and for two and a half hours on Fridays.

ALUMINUM

Aluminum, a lightweight, corrosion-resistant metal, is ubiquitous, finding use in aerospace, construction material, packaging, automobiles, railroad cars, and thousands of other applications.

Transportation is the largest single consuming sector of aluminum, absorbing approximately 30% of U.S. production. Packaging and aluminum cans take another 20%; building and construction absorbs 10%. The high-voltage electric transmission lines that are strung from one end of the nation to the other are often made of aluminum.

Aluminum scrap is among the most easily recycled metals available today. The turnaround between the time a can

is tossed into a recycling bin, re-smelted, fabricated, and back on a store shelf can be as little as 60 days.

Aluminum production is dependent on a large supply of uninterrupted electric power, making energy a key cost component.

The aluminum futures and options contracts provide price transparency to the extensive U.S. aluminum market.

Price risk management is critical because risk is incurred all along the supply chain from the smelters to fabricators of aluminum products to processors of scrap. Aluminum futures and options offer an economical and efficient way to manage the upside and downside price risks in these market segments. The futures contract provides benchmark pricing for the North American market. By using futures, buyers of aluminum can assess their costs in advance while sellers can value their inventory in advance of sales.

The futures contract is based on delivery in the U.S. Midwest market.

Aluminum futures contracts trade in units of 44,000 pounds and are priced in cents per pound. The minimum price fluctuation is \$0.0005 (0.05¢) per pound.

In addition to open outcry trading of aluminum futures and options, the futures contract is offered for trading electronically during the 18 hours that the trading floor is closed each day Mondays through Thursdays, and for two and a half hours on Fridays.



HEDGING AND SPREAD TRADING



HEDGING

Futures contracts have been used as financial offsets to cash market risk for more than a century. Hedging allows a market participant to lock in prices and profit margins in advance and reduces the potential for unanticipated loss or competitive disadvantage.

A hedge involves establishing a position in the futures market that is equal and opposite to a position in the physical market. For instance, a silver producer who holds (is “long”) 5,000 troy ounces of metal will hedge by selling (going “short”) one silver futures contract. The principle behind establishing equal and opposite positions in the cash and futures markets is that a loss in one market should be offset by a gain in the other market.

Hedges work because cash prices and futures prices tend to move in tandem, converging as each delivery month reaches expiration. Even though the difference between the cash and futures prices of the metal may widen or narrow as they fluctuate independently, the risk of an adverse change in this relationship is generally much less than the risk of going unhedged.

It should be remembered that the purpose of a hedge is not to make money but to avoid the risk of an adverse market move resulting in major losses. Because the cash and futures markets do not have a perfect relationship, there is no such thing as a perfect hedge—there will

almost always be some profit or loss. However, an imperfect hedge can be a much better alternative than no hedge at all in a potentially volatile market. See the basic hedging examples below.

SPREAD TRADING

To reduce risk in trading, many investors employ more sophisticated strategies that can significantly decrease their market exposure. One of the most widely used strategies involves the use of spreads, also called straddles. Spreads are market transactions that enable the trader to profit not from the rise or fall of a single commodity futures contract, but from a widening or narrowing in the price differential between several months of the same futures contract or two different futures contracts.

In spread trading, one futures contract is bought while, simultaneously, another is sold. Margins on metals transactions are considerably lower for spread trades than for outright transactions. Current margins are posted on the Exchange website, www.nymex.com.

The Exchange offers a single origination margin for traders of platinum/gold spreads in which a participant holds a buy or sell position in a 100-troy ounce COMEX Division gold futures contract and the opposite position in two 50-troy ounce NYMEX Division platinum futures contracts.

BASIC HEDGING EXAMPLES

The New York Mercantile Exchange's competitive, transparent markets are excellent indicators of price, allowing commercial market participants to engage in efficient hedging strategies. Actual transactions will not necessarily offset each other precisely. Indeed, the perfect hedge is a rarity, and some basis risk (the uncertainty as to whether the cash/futures spread will widen or narrow between the time a hedge position is implemented and liquidated) will almost always be present.

The examples below illustrate the principles of hedging. For a comprehensive review of hedging strategies, see the Exchange publication "A Guide to Metals Hedging."

SHORT HEDGE

One of the most common commercial applications of futures is the short hedge, which relates to the protection of inventory value. Once title to a shipment of metal is taken anywhere along the supply chain, from mine to consumer, its value is subject to price risk until it is sold or consumed. Because the value of metal in storage or transit is known, a short hedge can be used to essentially lock in the inventory value.

A general decline in prices generates profits in the futures market, which are offset by depreciation in inventory value. The opposite applies when prices rise. The advantage of short hedging is related to the risk associated with the resale margin obtainable and has a variety of commercial applications.

The Producer Hedge (Short Hedge)—Contango Market

In December, a high-cost copper production company developing production and sales projections estimates that it will produce and sell 5,000 tons (10 million pounds) of copper cathodes the following June. The company determines that it must receive 160.00¢ per pound on the copper to cover its production costs. The producer observes that the copper futures contract for delivery the following July is trading at 163.15¢ per pound and protects its profit by hedging future production as follows:

Cash Market	Futures Market
In December: Cash price is 159.50¢/lb. Producer determines production costs to be 160.00¢/lb.	Sells 400 July copper contracts at 163.15¢/lb.
In June: Producer sells its output at 155.00¢/lb. for a loss	Buys 400 July copper contracts at 155.40¢/lb.
Cash Loss: 5¢/lb.	Futures Gain: 7.75¢/lb.
Profit: 2.75¢/lb.	

The price of copper dropped to 155.00¢ per pound, and the company sold its production at a loss of 5¢ per pound. But it simultaneously repurchased July futures contracts, realizing a profit of 7.75¢ per pound on its hedge and a net profit of 2.75¢ per pound, or \$275,000, on the sale of copper cathodes. The producer would have maintained its profit margin through hedging even if the cash price of copper had dropped to substantially lower levels.

If the price of copper had increased, losses sustained on this futures position would have been offset by a higher cash price for copper. Thus, regardless of subsequent changes in copper prices, the producer has effectively fixed its selling prices in advance.

Purchasing a Call as Insurance Against Rising Prices

To guard against a copper price increase, a fabricator in September buys call options contracts on copper futures.

With December copper trading at 175.00¢ per pound, the fabricator buys two 175.00¢ December calls at 11¢ per pound.

By December, spot copper has risen to 206.90¢ per pound and the December 175.00¢ call to 31.9¢ per pound.

At expiration, the fabricator sells two December 175¢ calls and purchases 50,000 pounds of physical copper, the quantity of metal represented by the two options contracts, in the spot market for a net price of 186.00¢ (206.90¢ spot price minus the 20.9¢ per pound profit on the options contract).

Cash Price	Futures Price	Options Premium
In September:	December copper 175.00¢	December option 11¢
In December:	206.90¢	December option 31.9¢
Result: Purchase price for copper, 186.00¢ (cash price less profit on options, or 206.90¢ - 20.9¢)		

In this instance, the fabricator pays only 186.00¢ per pound to acquire the physical copper, despite the fact that copper prices rose considerably. Had the price of copper fallen, the fabricator would have let the options expire worthless and purchased cash copper at lower prices.

Hedging Against a Price Decline by Buying Puts

On March 16, spot copper is trading at 205.00¢ per pound, but a copper producer is concerned that prices will be lower in December when he will have product to ship. Since December futures are trading at 190.00¢ per pound, the producer considers selling futures to lock in that price to guard against a decline. However, he fears that if the current supply tightness persists, prices could rise above that level since copper is in backwardation, a market condition where a distant month trades at a lower price relative to a nearby month. The producer decides to use options instead of selling futures, buying a December put with a strike price of 186.00¢ for 4.0¢.

On December 1, the copper refiner sells spot copper and liquidates his option. The chart below illustrates the results if the spot price has decreased to 170.00¢ (Case A) or if it has increased to 210.00¢ (Case B).

In Case A, the producer receives only 170.00¢, but the financial offset provided by the 12.0¢ option profit gives it an effective selling price of 182.00¢ per pound. This is 12¢ more than its effective revenue when using futures to hedge, because the producer paid 4.0¢ for the option, but sold it for 16.0¢. This result is 8¢ less than the March futures price of 190.00¢. By purchasing

the put options contract and giving up the 8¢, the producer was assured a floor price of 182.00¢ which was still profitable.

In Case B, the producer receives 210.00¢ from the spot market sale. The put option with the 186.00¢ strike price, the right to sell futures at 186.00¢, is now worthless because futures are trading at 210.00¢. So, there is a net loss of 4.0¢—the option premium paid—on the position, giving the producer an effective selling price of 206.00¢, 16.0¢ higher than the futures price of 190.00¢. This allows the producer to take advantage of the favorable market move.

	Case A Prices Decrease	Case B Prices Increase
December 1:		
Spot Price	170.00¢	210.00¢
Futures	170.00¢	210.00¢
Cash Market Revenue	170.00¢	210.00¢
Less: Gain (Loss) on Options		
Sales Price, December 1	16.0¢	0
Purchase Price, March 16	4.0¢	4.0¢
Effective Option Revenue	12.0¢	(4.0¢)
Effective Copper Revenue	182.00¢	206.00¢

Producer Hedge (Short Price Fix Hedge)

The producer hedge is one of the most common hedge transactions. It is of particular use to producers, especially during periods of high price volatility. In addition, the concept of price and revenue forecasting has become important to producers because of the substantial cost and lead time required for new mining ventures.

In February, a mining company anticipates that it will have 3,000 ounces of newly mined and refined gold available for sale the following July. The company considers the current price of the August gold futures contract at \$457.70 to be favorable, given the company's production cost, including interest and depreciation, of \$400 an ounce.

Cash Market	Futures Market
In February:	
Spot gold futures price is \$443.70/oz. Mining company decides to hedge so as to lock in a sales price in excess of the break-even production cost level of \$400.	Sells 30 August gold contracts at \$457.70/oz.
In July:	
The price of gold drops over the intervening five months to \$428.40. The mining company sells 3,000 ounces of gold at this price, which is still above estimated production costs but below the price prevailing in February.	Buys 30 August gold contracts at \$431.10/oz.
Cash Loss: \$15.30/oz.	Futures Profit: \$26.60/oz.
Overall Profit: \$11.30/oz.	

The \$15.30 per ounce loss on the cash side of the transaction is not realized but simply represents the fall in spot gold prices over the five-month hedge. Had the producer not hedged, the 3,000 ounces of gold would have been sold at \$428.40. While still acceptable from a cost-of-production standpoint, an opportunity cost—that is, equal to the price risk of not hedging—is also implied. By hedging, the producer enjoyed a significantly more attractive return. The hedge side of the transaction was associated with a profit of \$26.60. Since the producer sold the newly refined bullion at \$428.40, the effective sales price, including the hedge profit, was \$455. This effective sales price is equivalent to the overall hedge profit of \$11.30 plus the February spot gold price of \$443.70.

Note that the effective sales price of \$455 per ounce is \$2.70 below the \$457.70 value for the August futures in February. Therefore, the hedge failed to lock in the entire value of the August contract at the inception of the transaction. This reflects the basis risk, which in this example is equivalent to the difference in the contango relationship between the August contract over the five months of the hedge.

The producer could have captured the entire contango by delivering its 3,000 ounces of newly refined gold onto the Exchange, thus fulfilling the obligation incurred by the 30 short August futures. In practice, however, producers generally opt to sell their metal through their normal distribution channels, and to liquidate their futures position.

LONG HEDGE

The Fabricator Hedge

The producer hedges detailed in the previous examples and the fabricator hedges below allow for the fixing of a price. In this example, a manufacturer locks in a purchase price for the silver needed as a raw material for manufacturing flatware.

The process of establishing this hedge, however, involves a different perspective on the contango, the differential between the spot and forward futures.

In the previous examples, the producer locks in a favorable price for anticipated output by selling the deferred contract, thus benefiting from the positive spread relationship which almost always prevails between a spot and forward gold or silver futures contract. In the long hedge, a manufacturer locks in his new material cost by buying the deferred contract.

In February, the flatware manufacturer accepts an order to be delivered in August. The manufacturer estimates that the project will require 5,000 ounces of silver, which will be needed in May when it begins fabricating the product.

The manufacturer could purchase the required silver upon acceptance of the customer's order. However, that would force the manufacturer to either tie up considerable working capital or arrange financing of the metal, as well as to make storage arrangements from February to May.

If the manufacturer waits until May to buy the silver, it will be speculating on stable or falling silver prices. Should prices fall, the manufacturer will make additional profits; however, if prices rise, it may see its anticipated profits reduced or even disappear.

The manufacturer does not wish to speculate or incur unnecessary costs, and so constructs a futures hedge as follows:

Cash Market	Futures Market
In February: Manufacturer sells flatware based on silver price of 750.00¢/oz.	Buys 1 May silver contract at 758.00¢/oz.
In late April: Manufacturer buys 5,000 oz. cash silver at 820.00¢/oz.	Sells 1 May silver contract at 823.00¢/oz.
Cash Loss: 70¢/oz.	Futures Profit: 65¢/oz.
Overall Loss: 5¢/oz.	

By engaging in a long hedge, the manufacturer, who realized a futures profit of 65¢ per ounce, was able to offset 93% of the loss implied by a 70¢ rally in the price of silver. Although the long hedge failed to cover 5¢ of the price advance, the result is still superior to the alternative of purchasing physical silver in early February and bearing the 8¢ per ounce carrying cost—the

difference between February and May futures—for three months.

If the price of May silver had fallen, the manufacturer would have closed its futures position at a loss, but a lower cash price for silver would have compensated for part, if not all, of that loss.

The Fabricator Hedge (Long Hedge)—Backwardated Market

Recall that since the 1950s, the copper market has been in backwardation more often than not, but has gone into contango for significant periods of time.

In March, a manufacturer of power generation equipment receives an electric utility's solicitation for a piece of equipment that will require the delivery of 50,000 pounds of electrolytic grade copper by September. The current price of copper is 180.00¢ per pound, but with the copper market in backwardation, September COMEX Division copper futures are quoted at 158.00¢ per pound. However, all things remaining equal, in September the current prices will likely be about 190.00¢ per pound.

In order to submit a competitive bid, the equipment manufacturer buys September copper futures at 158.00¢ per pound, and submits, and wins, a bid based on that cost.

By September, the cash market copper price is 188.00¢. The manufacturer liquidates its futures position by selling the futures contracts that were purchased for 158.00¢ for the now current futures price of 188.50¢, earning a profit of 30.5¢ a pound on the futures position. The manufacturer then buys physical copper for 188.00¢.

Cash Market	Futures Market
In March: Current cash price: 180.00¢/lb.	Buys two September copper futures at 158.00¢/lb.
Manufacturer signs contract to sell equipment based on copper price of 158.00¢/lb.	Sells two contracts of September copper at 188.50¢/lb.
In August: Manufacturer buys 50,000 lbs. cash copper at 188.00¢/lb.	
Cash Loss: 30¢/lb.	Futures Gain: 30.5¢/lb.
Profit: 0.5¢/lb.	

The manufacturer could have waited until September to buy the copper, but is “short” because it made the commitment to sell the equipment containing the physical copper. Its hedge, based on copper at 158.00¢, gave the manufacturer a competitive edge over the cash market of more than 30¢ per pound.

If, by September, the price of physical copper falls to 150.00¢, the manufacturer liquidates the futures at an 8¢ a pound loss. It still has the sale of the equipment based on copper at 158.00¢, however, and buys the physical for 150.00¢, for an 8¢ profit.

Copper dealers use the market to hedge along similar principles.

Copper options offer additional flexibility for hedging and investing, just as options do for gold, silver, and platinum. Calls can be purchased if the expectation is for rising prices, while the purchase of puts can be an effective strategy if there is a likelihood of a market decline.

SPECULATION

Speculation is the opposite of hedging. A speculator willingly assumes risk by trying to predict price movements and thus profit from market volatility. Speculators make decisions to buy or sell based on their evaluation of supply and demand, general price trends, and other factors. Speculators serve an important economic function by providing liquidity for the market and absorbing price risk.

Unlike a hedger, a speculator holds no offsetting cash market position.



MARGIN REQUIREMENTS, POSITION ACCOUNTABILITY LEVELS, AND EXCHANGE INFORMATION



MARGIN REQUIREMENTS

The New York Mercantile Exchange requires its market participants to post and maintain in their accounts a certain minimum amount of funds for each open position held. These funds are known as *margin* and represent a good faith deposit or performance bond that serves to provide protection against losses in the market. The Exchange collects margin directly from each of its clearing members who, in turn, are responsible for the collection of funds from their clients.

The Exchange uses the Standard Portfolio Analysis of Risk (SPAN®) margining system to establish minimum margin levels for clearing firms and their customers. SPAN, developed by the Chicago Mercantile Exchange, has become the futures industry's standard of margining. SPAN evaluates the risk of a trader's entire portfolio and establishes plausible movements in futures prices over a one-day period. The resulting effect of these "risk arrays" is to capture respective gains or losses on futures and options positions across the markets.

One of the special characteristics of options is that a long options position can never be at risk for more than its premium. In order to assess the risk of all positions in the portfolio and at the same time allow credit for the premium involved, SPAN allows the excess of the options

premium over the risk margin for any options position to be applied to the risk margin on other positions.

Margin requirements and contract specifications are subject to change; please contact the Exchange or your broker for current information.

POSITION ACCOUNTABILITY LEVELS

The Exchange sets guidelines for the net open positions that a single trader or a firm can hold on any one month or all months' combined basis in a commodity—with the exception of the spot month, when hard position limits apply. The Exchange will contact a market participant who approaches or exceeds a position accountability level and will require additional information related to such a position. If, upon review, the Exchange is concerned that the size of the position is a threat to the orderly operation of the market, the market participant will be directed either to not increase or to decrease its position. Position accountability levels are designed to effectively oversee markets and avoid any concentrations which may threaten the orderly operation of a market.

24-HOUR MARKET INFORMATION SERVICES

Exchange information is available to the public 24 hours a day through www.nymex.com, including futures and options prices and trading volume (available on a 30-minute delayed basis during the trading day), contract specifications, historical data, Exchange holidays, trading hours, rules, and important announcements.

For further information, please contact an Exchange marketing representative at (212) 299-2301 or e-mail marketing@nymex.com.

QUOTE SERVICES

The daily futures and options price quotations are disseminated by a large number of information service vendors. The Commodity Code Directory, available on the website in the "Resources" section, lists the principal information service vendors and the information retrieval codes for Exchange contracts.



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