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# Risk Management Practices in Commodity Market

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***Abstract – The commodity market poses a variety of risks which can all greatly influence trade profits and therefore need to be monitored and managed. The high volatility of the market creates uncertainty about future prices and thus poses a significant threat. The Commodity Market is a complex industry where raw materials are traded on a regulated exchange. In India, it is only in the last decade that commodity futures exchanges have been actively encouraged after the set-up of national level exchanges witnessed exponential growth in trading with the turnover increasing from 5.71 lakh crores in 2004-05 to 52.48 lakh crores in 2014-15. Commodity price risk management is important for stabilising incomes of corporate, individuals (especially farmers) and the economy. Commodity prices are considered as the main source of market risk and are used to be the main consideration for most of the organisation engaged with commodity market.***

***Key Word: Commodity Market, Risk Management***

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## 1.1 INTRODUCTION

Indian economy in the post reform period has witnessed a phenomenal change and has many positive features. The structural change in Indian economic policy and financial system has given opportunities for capital market to grow and prosper. The capital market is a very important instrument of the financial system of the country. The number of reforms in the economic system initiated by the successive government in the last three decades has influenced the functioning and governance of the capital market. The Indian capital market is also passing through transformational stage and undergoing several structural reforms since liberalisation. The main aim of the reforms exercise is to enhance market efficiency, bring transparency in the system, and make stock market transactions more transparent, control unfair trade practices and to bring the standards of our financial markets at par with the international ones. Further, the continuous reforms in Indian capital market, especially in the secondary market, through digitalisation, with the help of modern technology and online trading have revolutionized the stock exchange.

The capital market in India is a market for securities designed and developed for the companies and governments to raise long term funds. It is a market developed with the motive of the selling and buying of stocks and bonds. For generating capital and long term funds, stocks and bonds are the two major ways for the companies. Basically, the bond and stock market are the two important means that are considered as source for capital markets. The capital markets are composed of primary and secondary market. The primary market is one, where new issues are distributed to the investors, and the secondary market is the one where existing securities are traded. Apart from this, there are chiefly basically two components, in the Indian Capital market. One is the Indian Equity Markets and another is the Indian Debt Markets. The performance of Indian Equity Market depends on many factors of which, the arrival of monsoons is the dominant of all. Another factors like, global funds flowing into equities and the performance of various companies affect the performance of the Indian equity market. The National Stock Exchange of India Ltd. (NSE) and The Bombay Stock Exchange (BSE) are the two major stock exchanges that pre dominantly control the Indian Equity Market and the entire equity market is almost wholly dominated by these two major stock exchanges. The major indicators as the benchmark indices of the two exchanges are Nifty of NSE and Sensex of BSE that are closely monitored by the investors across the country.

The two stock exchanges also have an F and O (Futures and options) segment for facilitating and promoting trading in equity derivatives, including the indices. The major players among the financial instruments in the Indian Equity Market are Mutual Funds. The others are the Financial Institutions and FIIs representing mainly Venture Capital Funds and Private Equity Funds. In the last one decade, the Indian Equity Market has emerged as a very lucrative field for investors. The Indian stocks has become important and profitable not only for long and medium-term investors, but also for the position traders, short-term swing traders and also very short term intra-day traders and speculators. With the growth of Indian equity market and the enormous benefits that it has reaped to its investors, this exponential growth in the financial market has also posed many risks before the management. The different risks associated with financial markets include uncertainty, volatility, default risk, counterparty risk and interest rate risk. Different asset classes have different types of risk which are briefly explained as given below:

### 1.1.1 Uncertainty

Uncertainty is a potential, unpredictable, and uncontrollable outcome. In the prevailing economic paradigm, there is no well-developed process that recognizes and deals with market uncertainty. An investment strategy based on maximizing profit with respect to market risks naturally omits market uncertainty.

### 1.1.2 Volatility

Volatility is a major risk for all markets. Volatility is the uncertainty in the change of an asset's value. In finance, volatility is the degree of variation of a trading price series over time as measured by the standard deviation of returns. Historic volatility is derived from time series of the past market prices. An implied volatility is derived from the market price of a market traded derivative. There are statistical measures that can define the historical volatility for an asset. A higher level of volatility indicates larger moves and a wider change in the asset's value. Volatility is a non-directional value. A higher volatility asset has a good likelihood of making a larger move up as it does down. Higher volatility assets have a larger impact on the value of a portfolio. Some investors like volatility, while others try to avoid it as much as possible.

### 1.1.3 Counterparty Risk

Counterparty risk is part of the derivatives swap market. Counterparty risk is the risk that one party to a credit swap may default on an agreement. Credit swaps are the exchange of cash flows between two parties and are based on changes in the underlying interest rates. Counterparty defaults on swap agreements were one of the main causes of the 2008 financial crisis.

### 1.1.4 Default Risk

Default risk is a part of the bond and fixed income markets. It is the risk that a borrower may default on its loan obligations and not pay the lender outstanding amounts. Generally, a higher possibility of default results in a larger amount of interest paid on a bond. Thus, there is a risk/reward trade-off that investors must consider.

### 1.1.5 Interest Rate Risk

The interest rate risk is the risk that an investment's value will change due to a change in the absolute level of interest rates, in the spread between two rates, in the shape of the yield curve, or in any other interest rate relationship. Interest rate risk is another risk in the bond market where the price of bonds decreases with a rise in interest rates. Such changes usually affect securities inversely and can be reduced by diversifying (investing in fixed-income securities with different durations) or hedging (such as through an interest rate swap).

## 1.2 FINANCIAL RISK MANAGEMENT

Risk management is one of the important management functions to be handled with utmost care. In simple term the risk is the potential of gaining or losing something of value. From the financial term, risk means the uncertainty of a return and potential financial loss. To put it differently, financial risk is the probability of the actual return from the investment being different from its expected return. A most important concept of risk in finance is the idea that an investment that carries a higher amount of risk has the stronger potential of return. Certain types of risks are easier to quantify than the others. To the extent that risk is quantifiable, it is generally calculated as the standard deviation on an investment's average return. Risk is the possibility which may impair the ability to provide an adequate return on an investment. The size of the difference between the expected and actual return may also vary from the loss of the part to the entire investment financial risk management is an important aspect of future market. It is a process that facilitates companies for setting guidelines to describe their policy for accepting financial risk. In general, the financial risk management is the practices and procedures that a company uses to optimize the amount of risk it handles with its financial interests. Managing financial risk gives remarkable value to the firm. It may be in qualitative or quantitative terms to the firm as well as to the investors investing in the stock. Classic portfolio theory tells us that investors can minimise the asset related risk by diversifying their holdings into many different assets.

Considering the management the financial risk management is considered as a process for handling the uncertainty and to deal with the uncertainties in an effective and appropriate way. The different financial risk management strategies include; quantifying and assessing the different aspects of the financial risks facing an organisation and developing the management strategies which is in conformance with the firm's internal priorities and policies. The basic financial risk management strategies are managing the derivatives that are traded extensively among financial institutions and on different organised stock exchanges. The value of different derivatives contracts such as futures, forwards, options, and swaps are derived from the among of pricing of the underlying assets. The most common practices used for derivatives trades are trading on interest rates, currency exchange rates, commodities trading, equity and fixed income securities, credit, and even trading on weather.

An empirical study on the subject indicates that there are similarities in the products and strategies which are commonly used by market participants to handle financial risk and by speculators to enhance and increase leverage and risk. It is generally argued that widespread use of derivatives increases risk. The existence of derivatives makes enable the financial experts and planners who wish to decrease the risk by passing it along to those who seek risk and its related opportunities.

It is highly desirable to develop the ability among financial planners and investors to estimate the probability and possibility a financial losses. However, standard principles and theories of measuring probability fail in analysing the financial markets. It is generally a well-known fact that the risk does not exist in isolation. Hence, interactions of several exposures have to be considered while developing an understanding about the financial risk and various reasons and factors promoting it. Since most the factors are subjective factors, and hence, these factors cannot be forecasted since they depend on human behavior, which is highly subjective.

The financial risk management as a subject is very critical and is an ongoing process that needs comprehensive and analytical approach. A comprehensive Strategy is needed to be developed and implemented as the market and requirements change very fast. Microanalysis of the financial risk management practices may help in knowing investors' changing expectations about market rates, rapid changes in the business environment, at both national and international level, and changing political conditions. In general, the process may be summarized as follows:

- Identify elements of financial risks and systematically prioritize the different financial risks.
- Analyse and establish level of risk tolerance.
- Implement the strategies for managing different risk in conformance with the firm's financial policy and defined procedure.
- Develop the scale to measure the risk, reporting performance, monitor, and refine the scale as and when needed.

## 1.3 HEDGING AND CORRELATION

Hedging is considered as one of the important techniques of managing financial risk. Hedging is a strategy designed to reduce investment risk using different risk management techniques like call options, put options, short-selling, or future contracts. It is the business of looking for an asset or event/events that counteract with the organisation having weak or negative correlation to financial exposures. With the help of Correlation, an effort is made to analyse the tendency of two assets as to whether or not they are in the process of financial management, the risk management involves the effort of pairing a financial exposure with an instrument or strategy that is negatively correlated to the exposure. The risk management process involves conducting both internal and external analysis. The first part of the process involves identifying and prioritizing the financial risks that an organization is facing and understanding its relevance and importance. This may be achieved by carefully examining the organization and its products, management orientation towards handling the risk, nature of customers, suppliers, competitors, pricing policy and strategies, industry movement trends, balance sheet structure, and firm position in the industry. It is also essential to examine stakeholders and their objectives and their level of tolerance to the risk.

Once the clear factors of the emerging risks are identified, the appropriate risk management strategies can be executed in association with firm risk management policy. For an example, it can be made possible for firm to change the procedure about how business is taken on and thereby reducing the organisation's exposure and risk. Consequently, the existing exposures can be managed appropriately with derivatives. Another strategy for managing the risk is to accept all financial risks and the possibility of losses. Basically there are three broad alternatives for managing risk:

1. Accept all risk as a result of doing nothing actively or passively.
2. Determining the exposure and hedge a portion of exposures which can and should be hedged.
3. Hedge all possible exposures.

## 1.4 COMMODITIES MARKETS

Commodity trading is an age-old phenomenon, which involves the buying and selling of primary products packaged as standardized contracts. It is very similar to the trading of equity on a stock exchange; however, an investor buys and sells commodity products instead of the shares of a company. The current global economy is marked by uncertainty, and so, the biggest advantage of commodity trading is that it acts as a hedged (risk control) against inflation, even in a modest portfolio. In periods of high inflation, assets like bonds and stocks tend to suffer; however, the value of commodities tends to rise. For this reason, it is advisable to invest a small part of your portfolio in commodities think of it as your own hedge fund. Commodity markets are harder to manipulate than equity markets, because prices are driven by demand, supply, inventory and trading patterns. A physical or virtual marketplace for buying, selling and trading raw or primary products is basically a commodity market. For investors' purposes there are currently about 50 major commodity markets worldwide that facilitate investment trade in nearly 100 primary commodities. Commodities are split into two types: hard and soft commodities. Hard commodities are typically natural resources that must be mined or extracted (gold, rubber, oil, etc.), whereas soft commodities are agricultural products or livestock (corn, wheat, coffee, sugar, soybeans, pork, etc.) There are numerous ways to invest in commodities. An investor can purchase stock in corporations whose business relies on commodities prices, or purchase mutual funds, index funds or exchange-traded funds (ETFs) that have a focus on commodities-related companies. The most direct way of investing in commodities is by buying into a futures contract. In comparison to over-the-counter commodity derivatives markets, a large number of commodities exchange markets offer futures and option products. Presently, the commodity market continues to emerge with the new products such as, economic statistic and weather derivatives, which are significantly gaining popularity among both, the hedgers as well as the speculators.

## 1.5 COMMODITY FORWARDS AND FUTURES: A BRIEF DESCRIPTION

In the financial term, basically the onward and futures contracts carry the same function, i.e., both future and forward contract allow people to buy or sell a specific type of asset at a specific time at a given price. Forwards are negotiated, non-standardized contracts – they include whatever the two parties want to include whereas futures contracts are standardized and limited to what the exchanges have approved for trading. The Futures trade on regulated exchanges where as forwards trade less often and only through the over-the-counter market. There is no mark-to-market or margin requirement with forwards unless the two parties agree to it, but futures always require margins and have daily mark-to-market and at last the forward involve significant credit and counterparty risk, whereas futures contract have virtually no such provision.

A forward contract is an agreement between a buyer and a seller for the delivery of a physical asset at a certain time in the future for a certain price that is fixed at the inception of the contract. Forward contracts can be customized to accommodate any commodity, in any quantity, for delivery at any point in the future, at any place. On the other hand, futures contract is a standardized forward contract that trades on an exchange. There is much surety in the performance as counterparties to a futures contract are guaranteed by a clearing corporation, where as this provision in not available in the forward contract. Both the commodity forward and futures contracts provide indistinguishable security against commodity price fluctuations.

### 1.5.1 Forward Pricing

In financial terms, the forward pricing is the practice of pricing an asset based on a net asset value which is yet to be determined. A forward price is the predetermined delivery price for an underlying commodity, currency or financial asset decided upon by the long term buyer and the short term seller to be paid at predetermined date in the future. At the inception of a forward contract, the forward price makes the value of the contract at that time, zero. There may be a difference between the price of the commodity for future delivery and the cash paid by an amount, called as the Basis. The basis includes carrying charges associated with owning the commodity. These include - storage, interest charges on money borrowed to buy the commodity and insurance. If the basis is not absorbed of carrying charge factors, speculators can earn profit by buying the cash commodity and holding it.

### 1.5.2 Futures Contracts

In simple term, a future contract is a legal agreement between a buyer and a seller, wherein the buyer agrees to purchase from the seller a fixed amount of a particular commodity, at a specific time in the future at a price predetermined by both the parties. An organisation with the vulnerability to commodity prices uses futures or forward contracts to deal with it. The broker acts as an intermediary between buyer and seller and facilitates exchange and transaction. The future contract minimises the risk of unfavorable price movements for both buyer and seller for future delivery but it does not explains the reasons and basis risk. The financial explanation and the calculation of Basis are defined as the difference between the cash price and the forward price. It may be caused by the differences in delivery date, location, or other factors. A movement in the basis, where the pricing relationship has changed, can have a negative impact on the performance of a hedge.

### 1.5.3 Delivery

In the commodity price risk management process, a minor percentage of futures contracts involve delivery. Most of the future contracts are offset before their expiry. Most of the times, hedgers find the future contract works effectively as a hedge, and at the time of expiry, the future contract is counter balanced with another. The sale or purchase of a commodity is then transacted through normal even through local channels.

### 1.5.4 Mark-to-Market and Margin

In the commodity market, the mark to market (MTM) is a measure of the fair value of accounts that can change over time, such as assets and liabilities. Mark to market is used with the objective to provide a realistic appraisal of an institution's or companies current financial situation. Margin, in simpler terms, is an amount of money deposited with the futures broker as a security. The minimum initial and maintenance margin requirements in such cases are set by the exchange and these are dependent on the contract and the type of trade under consideration. The margin account is altered on a regular basis as contracts are marked to market in order to reflect changes in the value of the futures position.

### 1.5.5 Price Limits

The price is affected by many factors. Among the factors, the new or announcement is the most important consideration. Price limit is initiated in order to safeguard the market participants against the panic caused by major news, giving them enough time to evaluate the new information in commodity trading. A price limit is an established amount in which a price may increase or decrease in any single trading day from the previous day's settlement price. In financial and commodity markets, prices are only permitted to rise or fall by a certain number of ticks per trading session. The trading in futures contracts is regulated by stock exchange regulations. In case of such regulations, the daily price limit limits the price fluctuation during a trading session. A contract is said to be limit up or limit down if it has reached its upper price limit or lower price limit, respectively.

### 1.5.6 Spreads

In simple term a spread is the difference between the bid and the ask price of a security or asset. Spreads allows hedgers and speculators to deal with the differences between contracts and find a use generally in the commodities markets. There are three basic types of spreads. These are fundamentally. Intra-market spreads, Inter-market spreads and Inter-commodity spreads

### 1.5.7 Commodity Swaps

A commodity swap is an agreement whereby a floating price based on an underlying commodity is traded for a fixed price over a specified period. A Commodity swap is similar to a Fixed-Floating Interest rate swap. Commodity swaps helps hedgers to exchange production or consumption prices against the return on index or another market.

### 1.5.8 Commodity Options

According to business dictionary, the Commodity ption is a contract permitting the option buyer the right without any commitment to buy or sell an underlying asset in the form of a commodity such as precious metals oil, or agricultural products at a designated price until a designated date. Commodity options provide means of a flexible and an effective way to trade in the futures markets. The underlying asset of the commodity options may be either a physical commodity or a futures contract. The underlying futures contract is based on a commodity index or the physical commodity. The delivery process in a commodity futures contract is easier to understand than in the physical delivery. A put option gives an option to the buyer to sell the underlying commodity or future contract at an agreed price on or before a particular date. Likewise, the call option gives the buyer an option to buy the underlying commodity or futures contract at the strike price.

### 1.5.9 Buying and selling Options

Investopedia defines option as a contract that gives the buyer the right, but not the obligation to buy or sell an underlying asset at a specific price on or before a certain date. Similar to a sock or a bond, an option is a security. Option is an irrevocable contract with rigidly defined terms and properties. An organisation that is vulnerable to rising commodity prices can purchase a call option to safeguard it against increased predetermined strike price. On the other hand, selling options is another way to gain profit from option trading. The basic idea behind the option selling strategy is to hope that the options you sold expire worthless so that you can pocket the premiums as profits. The sale of options is different from the purchase of options. If the seller exercises the option, he receives an option premium and accepts an obligation to buy or sell the commodity under the terms and conditions of such option. The premium received by the seller is decided by a number of factors that affect the price of an option including volatility and time to expiry. The option seller must deliberately manage the exposure and might have to take alternative remedial measures in case of adverse movements in prices.

### 1.5.10 Commodity Collar

Purchasing of options for the purpose of hedging is often expensive. To prevent this, options are packaged together so as to decrease the hedging costs, but still provide protection against an adverse price change. In return of the security against adverse prices, the hedger limits the potential for favorable prices using a collar. It is also known as a fence or range forward where the collar involves the simultaneous purchase and sale of an option for the same underlying commodity and on the pre-decided contractual expiry date.

### 1.5.11 Closing Out a Commodity Futures Contract and Option

When the contract expires, the margin account is marked to market and the gain is posted in the account. There are basically three methods of closing the future contract: Delivery or cash settlement, offset or reversing trade and Exchange-for-Physicals (EFP) or ex-pit transaction. The reason that a gain is posted is because in most cases the trader would close out the position prior to expiration if it is a loser. The efficacy of the hedge depends on numerous factors, such as relationship between futures prices and the underlying exposure and the number of contracts used to hedge. A considerable difference between the exposure and the futures contract may out-turn in being under hedged or over hedged.

Whether to exercise an in-the-money option or close it out is decided by the by the ease with which it can be exercised and the causes for buying the option in the first place. The holder of an option has an option to exercise it or allow it to expire. If an option has intrinsic or time value it can also be sold. In case of exercising the sell option, the only way to shut out the associated obligation is to buy back an offsetting option, which can be costly if the market is not in favor of the option seller or if the option is in-the- money. In case the sold option is not bought back, the obligation remains in force as the option holder may still apply it any time as per the terms of the contract.

Future markets contribute in two important ways to the organization of economic activity:

i) They facilitate price discovery; and

ii) They offer means of transferring risk or hedging.

In this chapter, we shall pay attention to the first contribution. Price discovery is derived from the application of future prices for pricing cash market transactions. In general, price discovery is the process of determining the exact price or value of an asset, commodity or service by taking into account a number of factors. The fundamental value of the stock or commodity is reflected by the unnoticeable permanent price. It distinguishes from the observable price by the fact that it can be decomposed into its fundamental value and transitory effects. The latter consists of price movements due to factors such as bid-ask bounce, temporary order imbalances or inventory adjustments.

## 1.6 FACTORS AFFECTING COMMODITY PRICES

Keeping the size and of the commodity market and the variety it has got at present, it is not easy to identify the exact reasons of its instability and performance of the commodity market. However, there are some common factors that affect the movements of prices in the long term and short term in commodity market. Some of the important factors influencing commodity market can be summarised as:

### 1.6.1 Demand and Supply

If demand for a commodity is higher than the supply of its commodity, its price increases, and vice versa. There is always some disequilibrium between the two when it comes to commodity market, because of this its prices constantly fluctuating.

### 1.6.2 Weather Situation

India is an agriculture based economy and majority of the commodities traded in this market are agricultural goods, and the production of these goods depends on the weather. A change in weather conditions might affect the availability of agricultural goods in the world market, so weather condition affects the commodity market.

### 1.6.3 Economic and political Situation

Commodities prices are also affected by the economic and political situations of the countries that are producing and consuming that commodity. The weak condition of that economy reduces the purchasing power of its consumers, which will lead to fall in the demand and overall results in movement in prices. Whereas strong condition of economy boost the demand for the product and the prices go higher.

### 1.6.4 Government policies

Government policies also affect the commodity price; especially the import/export policy to the buyer or seller will have a big impact on commodity prices. If, for instance, the government increases import duty on crude oil, its price will show a similar increase in the price, and vice versa.

### 1.6.5 Storage and Transportation factors

All type of commodities has a real physical form and therefore, these commodities are stored prior to their distribution. It is not a financial product so inventory cost and storage does not have a large impact on the market prices. However, this factor does not affect the prices across all commodity assets classes in the same quantity, but it depends on the type of commodity in question.

### 1.6.6 Seasonality factor

The factors included under this are - weather conditions, operational conditions, climatic conditions and political thinking of such area.

### 1.6.7 Risk & Return

High risk always gives high return. It is based on an investor's hunger to take risk and the expectation of return. Trading of commodity is not like trading of shares at spot prices. It is a futures trading process. The uncertainty and risk involved in it are the part of the commodity trading.

Other factors such as the level of inflation, particularly for precious metals, Interest rates, Exchange rates, depending on how prices are determined, general economic conditions, Costs of production and ability to deliver to buyers and availability of substitutes and shifts in taste and consumption patterns influence the commodity prices.

The opening of Indian market with new avenues, for retail investors and traders to participate in commodity derivatives for the investors who want to diversify their portfolios beyond shares, bonds and real estate, commodities, is the best option. With the setting up of three multi-commodity exchanges in the country, the opportunities for retail investor has increased and can now trade in commodity futures without having physical stocks.

## 1.7 RISK MANAGEMENT PRACTICES IN COMMODITY MARKET

Commodity price risk management is important for stabilising incomes of corporate, individuals (especially farmers) and the economy. Commodity prices are considered as the main source of market risk and are used to be the main consideration for most of the organisations engaged with commodity market. Management of Commodity price risk can be made stronger by combination of variety of hedging products such as weather risk contracts, environmental credits, derivatives on economic indicators. In comparison to other financial securities, commodities are physical assets with unique attributes. A commodity has to be stored and in many cases and are subjected to damage or deterioration. As a result the market trend for a particular commodity may not be strong enough to warrant actively traded derivatives. Depending upon the product and market, the different risk management techniques are used, like in certain markets, there may be a difficulty in selling the products in short as it requires the potential to borrow the product. While in some other markets, the customers may be offered fixed prices by the sellers i.e. forward contracts. Some other possible risk management mechanisms also exist in the commodity market, such as - crop insurance for agricultural products that may provide a recovery of some portion of losses and thereby minimising and managing commodity risks. Commodity price risk management requires a deep comprehension of the character of the commodity risk and to the extent it can affect an organization along with the remedial products that are available to help in developing a risk management strategy. An effective risk management strategy can then be considered in context of the organization’s priorities and the amount of risk tolerance.

A fixed-price contract is generally considered as a type of contract where the payment amount does not depend on the nature of resources, used or time extended. Today, a large number of commodities participants put forward the fixed-rate contracts to clients for managing hedge. These arrangements are considered as a substitute to forward contracts, contributing convenience to the small organizations to obtain price protection. The major benefit of a fixed-rate contract arrangement is the ease, with which objectives of price protection can be achieved.

Commodity price risk depends upon the type of participant in the commodity market. The Participants in the commodities markets are of basically of two categories i.e. dealer and end users. In general, the dealer tries to make prices with the others and frequently trades speculatively whereas end users in the commodity business directly or indirectly, safeguard themselves for protection against price and supply fluctuations. Since commodity prices directly affect and have an influence on the production revenues and they also influence decisions about production, when price of commodity increases, production, the production level increases and due to the production decision, both demand and supply are affected by remarkable price changes.

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