International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 08 Issue: 03 | March - 2024 SJIF Rating: 8.448 ISSN: 2582-3930

An Empirical Analysis on the Efficiency of Selected Commodities of Indian Commodity Market

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ABSTRACT

The commodities markets enable the exchange of goods and raw resources, making them an integral aspect of the global economy. A comprehensive analysis of commodities markets, including their structure, functioning, and impact on various demographics, is the overarching goal of this study. A variety of essentials, including energy sources and metals, are within the purview of scientific inquiry. Parts of the study selected six commodities—aluminium, zinc, copper, gold petals, silver, and crude oil—to compare and analyse their potential risks and profits on the Commodity Exchange (MCX). Three statistical tools are being used for analysis: standard deviation, correlation and coefficient. The study tracks how the commodities markets have evolved to include increasingly intricate financial tools and electronic trading platforms. Changes in regulatory frameworks, technological advancements, and geopolitical factors are a few of the factors that have affected the commodities market. An important part of the research is figuring out what different types of commodities are and how their markets work.

Introduction—

Beginning as a barter system, commodities trading has progressed to spot markets and, more recently, derivatives markets. Two parties with complementary but opposing needs would trade items in a barter system. The introduction of money as a medium of trade caused a dramatic shift in commodity trading. Nowadays, most transactions are done with money, and the worth of items is reflected in monetary terms. Buying and selling goods throughout the years To the uninitiated, commodities trading may seem like a novel concept. Definitely not! It's wrong. Commencing commodities futures trading in Japan in 1730, the Osaka Rice Exchange set up the first known regulated futures market in the nation. Chicago Board of Trade (CBOT) and London Metal Exchange (LME) were two trading platforms that started operating in 1848 and 1877, respectively. The decades that followed saw the proliferation of other exchanges, including those between India and China as well as Egypt, Russia, Hungary, and Chinese and Turkish. Commodity exchanges mushroomed in the 1990s, when market deregulation and the exponential growth of IT caused a flurry of activity.

In 1875, the Bombay Cotton Trade Association Limited handled cotton and other structured commodities futures, while the Gujarati Vyapari Mandali traded groundnuts, castor seeds, and cotton. Speculation, hoarding, war, and natural disasters have all caused temporary restrictions on the trading of certain goods. Both the MCX and the NCDEX are organized, regulated commodities exchanges that were set up at the national level in 2003. The Spot Market vs. Derivatives Market
There are primarily three marketplaces for trading commodities: spot, forward, and futures and options. The spot market is a real-time marketplace where things are bought and sold. While some participants were compelled to participate in this spot market deal, others preferred to secure price for future product exchanges. Customers and sellers alike started agreeing in advance to exchange goods for a set price.

Types of Commodities

There are different types of commodities in India which are classified into 2 parts

- Hard Commodities
  - Precious Metals
    - Gold
    - Platinum
    - Copper
    - Silver, etc
  - Energy
    - Crude Oil
    - Natural Gas
    - Gasoline, etc
- Soft commodities
  - Agriculture
    - Soyabeans
    - Wheat
    - Rice
    - Coffee
    - Corn
    - Salt, Etc
  - Livestock and Meat
    - Live Cattle
    - Pork
    - Feeder Cattle, etc

The parties hereto, the refiner (as seller) and the jeweler (as buyer), have entered into this Forward Contract under the law. The other party's default is a real risk in cases when there are no economic advantages to either side. If the price of gold rises over the agreed upon amount, the seller (refiner) is still under no obligation to fulfill the arrangement. There is no guarantee that the parties will keep their end of the deal if the conditions are unfavorable because of how agreements are made.

This risk of default may be reduced by changing Forward Contracts into Futures Contracts, in which the commodities exchange decides on the terms of the transaction. These exchanges also ensure the exchange of commodities when the contract expires.

Commodity futures and options

Commodity futures trading allows one to protect themselves from unfavourable price swings and shift the risk to another party by arranging to purchase or sell the underlying commodity at a predetermined price on or before a future date. If an investor wants to trade futures via a regulated broker, they need to put a small margin deposit with the exchange.

The holder of a commodity option has the right, but not the obligation, to buy or sell a commodity at a predetermined price and within a certain time period. After taking over the commodities market from the Forward Markets Commission (FMC), the Securities and Exchange Board of India (SEBI) allowed options trading in commodity futures and products. However, there is no monetary value to options on objects. A premium and a margin are the two amounts that investors pay when buying and selling options, respectively. An extensive examination of commodities futures and options will be presented to investors in the next chapters. Investors will have a solid foundation in the topic via our Futures and Options courses.

Research Gap

The importance of behavioral elements in commodities market dynamics has not been well studied, in contrast to fundamental and technical aspects. The effects of cognitive biases, herding behavior, and investor mood on commodity price fluctuations could be the subject of future research. The microstructure of commodities markets is often disregarded in empirical research, which instead concentrate on price patterns and macroeconomic indices. Possible areas for investigation include high-frequency trading's impact on commodity price discovery, trade volume, bid-ask spreads, and market liquidity.

Objectives of the study

- To study about Commodity market.
- To assess the metrics and methods used to assess commodities contracts.
- To analyze the selected commodities and correlate with the market indices.

Research Methodology

The research technique of the commodities markets study includes a systematic approach to gathering, analysing, and interpreting data. The chosen method takes into account the study objectives and ensures that the findings are reliable and valid.

The information is culled from a wide variety of secondary sources, such as books, websites, journals, and the like.To compare and evaluate the Risk and Returns against the Commodity Market (MCX), the following six commodities were selected: aluminum, zinc, copper, gold petals, silver, and crude oil. The

data was collected, analyzed, and interpreted in accordance with these specifications. Method for Analysis: We determine the standard deviation, correlation, and coefficient between the commodities market indexes and the contracts that were chosen.

Limitations of the study

- The accuracy of the data selection may or may not be the right time for analysis.
- The appropriateness of the data selection relative to the commodity under consideration
- The findings of the analysis may not be reliable enough to make a choice based on them

Literature Review

Performance of commodity Derivatives Market in India by Shaik Massod, (2016): Modern derivatives are innovative financial instruments that help market participants manage risk. Commodity futures are not new to the world community, despite their rebranding and return to the battlefield. Derivatives are being introduced to Indian commodities and securities, beginning with indices, to enhance markets and price discovery. With the advent of commodity derivatives, the commodities derivatives market got going, which was great for the economy. The futures contract trading volume and value have grown substantially since the 2003 simplification of the Indian commodities derivatives market. By contract volume, it climbed to the position of fifth-largest gold exchange among global powerhouses like the New York Metal Exchange (NYMEX), Chicago Board of Trade (CBOT), London Metal Exchange (LME), etc. By volume, it also ranked second-largest for silver, copper, and natural gas.

Commodity Futures Market in India – A Study of Trends in the National Multi-Commodity Indices by Sushmita Bose, (May 2008): This study's overarching goal is to ascertain whether or not prices represent efficient market functioning by investigating the features of the Indian commodities futures market. Due to its tumultuous past and several policy reversals, this market is not as mature as financial derivatives markets; hence, it is essential to comprehend its features. Our analysis of the commodities market's current notional price indices reveals that multi-commodity indices are as efficient and informationally flowing as equity indices. Metals and energy commodity prices are more heavily weighted in these indexes, and their worldwide and local price distribution is transparent and efficient. One way to mitigate price risk is to keep an eye on the futures market for data on current spot prices. This may help keep the key commodities' spot prices from fluctuating too much. Price discovery is influenced by both futures and spot prices. But these features aren't very noticeable in agricultural indices. Additionally, our research supports the notion that partial deregulation would be beneficial for the Indian agricultural futures market.

Performance Evaluation of Commodity Market in India: A study with special reference to NCDEX and MCX by Mrs. Madhu Druva Kumar and Dr. M.Lokanadha Reddy, (Dec 2018): The commodities futures market in India has seen phenomenal growth in the last decade, playing a significant role in the country's economy. Trading in commodities futures in India has a rich and distinguished history, which began in 1875 with the founding of the country's first commodity market by the Bombay Cotton Trade Association. The bullion futures market in Mumbai began to form in the year L920. As of right now, 22 commodities exchanges in India have formal recognition. Among them, six are national-level electronic multi-commodity exchanges: UCX in Mumbai, ICEX in Ahmedabad, ACE in Ahmedabad, MCX in Ahmedabad, NCDEX in Ahmedabad, and NMCE in Ahmedabad. The commodities derivatives markets in India have expanded at a phenomenal pace since the government loosened restrictions on futures trading in 2003. At the present time, six separate national level commodities exchanges call India home. The objective of this article is to analyze the MCX and NCDEX commodities exchanges in India, looking at their structure and performance.

Performance Analysis of Indian Commodity Market by Dr. A Seilan, (Jan 2012): Trading commodities and its derivatives is something India has done for a long time, and the country is also a global leader in producing a number of commodities. The commodities futures market seems to have finally reached its final destination after a great deal of turmoil. The sector has shown remarkable growth in

technological capability, transparency, and trade activity. Since futures trading volumes are so small compared to the underlying spot market, there is a huge amount of unrealized potential in this market. Most Indian investors see commodity investment as a high-risk venture since they are not acquainted with the organized commodities market. A lot of people have the wrong idea about the commodities market. The outcome is that they develop an unhealthy obsession with the commodities market. The relevant authorities need to take action to make commodities trading easier and more streamlined. It is imperative that non-governmental organizations (NGOs) join the government in raising awareness and encouraging investment in commodities markets. The commodities market, rather than the spot market, will soon emerge as the "hot spot" for Indian farmers. Not only will buyers benefit, but so will sellers and manufacturers.

A Study of Financialization of Commodity Markets in India by Joswin Prince Rodrigues and Vinnarasi B, (July 2023): Since the new century, several financial institutions have begun to hold commodities futures (CF) as an asset class. The number of commodities index traders quadrupled between 2010 and 2000, while the number of hedge funds tripled within the same time period. Investors in India's CF have been pouring money into the market recently. Concurrently, commodities price volatility and abnormally high prices are concerns in India. However, sufficient studies on financialization in India's Commodity Market (CM) are lacking. Examining the effects of financialization on CMs in India was the driving force for this study. Studying how CMs fit into the Indian stock market is the main focus of this investigation. This data is sourced from the S&P500 Index, the NSE, and the Indian-MCX.

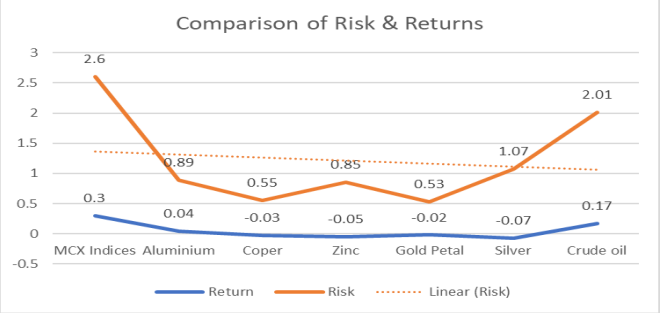
Data Analysis

Data Analysis

Products	From	To
Aluminum	01/11/2023	31/01/2024
Copper	01/11/2023	31/01/2024
Zinc	01/11/2023	31/01/2024
Gold Petal	01/11/2023	31/01/2024
Silver	01/11/2023	31/01/2024
Crude oil	01/11/2023	31/01/2024

Comparison of Risk & Returns from MCX Indices

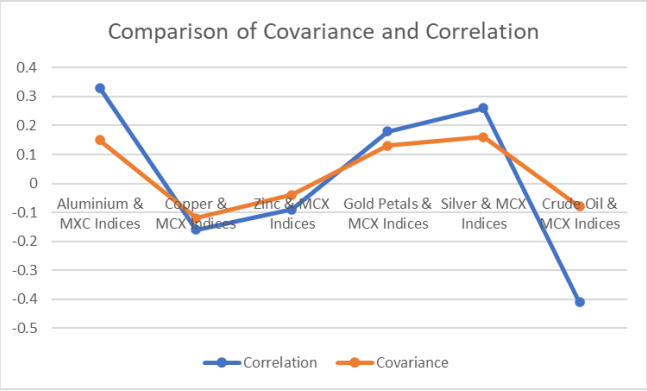
Commodities	Return	Risk
MCX Indices	0.30	2.60
Aluminum	0.04	0.89
Coper	-0.03	0.55
Zinc	-0.05	0.85
Gold Petal	-0.02	0.53
Silver	-0.07	1.07
Crude oil	0.17	2.01



Interpretation

From the above data we can state that, Crude Oil and Aluminum is showing the Positive Returns and rest of all the commodities are showing Negative values when comapre to market indicies.

Commodity	Correlation	Covariance	Relationship
Aluminum & MXC Indices	0.33	0.15	Positive Correlation
Copper & MCX Indices	-0.16	-0.12	Negative Correlation
Zinc & MCX Indices	-0.09	-0.04	Negative Correlation
Gold Petals & MCX Indices	0.18	0.13	Positive Correlation
Silver & MCX Indices	0.26	0.16	Positive Correlation
Crude Oil & MCX Indices	-0.41	-0.08	Negative Correlation



Interpretation

From the above data we can state that, there is a Positive Correlation in three commodities with the market indices are Aluminum, Gold Petals, Silver. Where as Negative Correlation with Zinc, Copper and Crude Oil

Commodity	Relationship	Status
Aluminum & MXC Indices	Positive Correlation	Very Low Correlation
Copper & MCX Indices	Negative Correlation	Very Low Correlation
Zinc & MCX Indices	Negative Correlation	Very Low Correlation
Gold Petals & MCX Indices	Positive Correlation	Very Low Correlation
Silver & MCX Indices	Positive Correlation	Very Low Correlation
Crude Oil & MCX Indices	Negative Correlation	Very Low Correlation

Interpretation

From the above table we can state that, all the commodities show very low correlations with market indices.

Findings

- MCX Indicies Avg Returns for the period of three months i.e November, December 2023 and January 2024 is 0.30 and Standard Deviation is 2.60.
- In base Metal category Aluminum Commodity Avg Returns for the period of three months i.e November, December 2023 and January 2024 is 0.04 and Standard Deviation is 0.89
- The base metal Copper Commodity Avg Returns for the period of three months i.e November, December 2023 and January 2024 is -0.03 and Standard Deviation is 0.55
- The base metal Zinc Commodity Avg Returns for the period of three months i.e November, December 2023 and January 2024 is -0.05 and Standard Deviation is 0.85
- The Bullion Market Goldpetal Commodity Avg Returns for the period of three months i.e November, December 2023 and January 2024 is -0.02 and Standard Deviation is 0.53
- The Bullion Market Silver Commodity Avg Returns for the period of three months i.e

November, December 2023 and January 2024 is -0.07 and Standard Deviation is 1.07

- The Energy Source Crude Oil Commodity Avg Returns for the period of three months i.e November, December 2023 and January 2024 is 0.17 and Standard Deviation is 2.01
- Crude Oil and Aluminum is showing the positive reurns and rest of all the commodities are showing negative values when comapre to Marketr Indices.
- There is a Positive Correlation in three commodities with the market indices are Aluminum, Gold Petals, Silver. Where as Negative Correlation with Zinc, Copper and Crude Oil
- All the commodities show very low correlations with market indices.

Suggestions

- Base metals are a good investment option compared to other markets.
- In order to stay in the market, investors need to have a long-term plan.
- Market indices are showing the risk factor more, so investors need to make a good decision when investing in the commodity markets.
- Those willing to take risks can see this market as a golden opportunity.
- Only investors with a long-term vision can survive in this market. Many people don't know what to do with the commodities markets, and investors assume that the markets are reserved for high-volume traders; SEBI should establish rules for these markets.

Conclusion

A better understanding of the bigger picture was gained from the historical review. The agricultural, energy, and metals markets were analysed in detail to reveal the subtle dynamics at play. Many different types of people and organizations are involved in the commodity market, from farmers and consumers to traders and speculators as well as large institutional investors. The effectiveness of derivative contracts as a tool for hedging and speculation as well as mitigating the effects of price volatility was the primary focus of studies examining risk management strategies.

Both the global and national economic impacts of commodities markets and the correlation between commodity price swings and macroeconomic variables were the primary areas of investigation.

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