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INDEX-BASED COMMODITY DERIVATIVES: MAKING THINGS DELIVERABLE

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Abstract: **Commodity derivatives such as futures or options are a powerful technique through which hedging, speculation, investment and arbitrage takes place in a modern economy. The major products of the commodity derivatives industry worldwide, is Index derivatives. Internationally, trading volume on index derivatives is multi times larger than that of commodity derivatives. Index Derivatives are mainly traded by professional traders, investors and portfolio managers to protect commodity portfolio, to arrange cost-effective exposure to an index whilst purchasing the underlying commodity, to take a trading view on the direction of the market. In this paper the study focused on importance of index derivatives in commodity portfolio construction and impact of index derivatives on risk and return.**

Keywords: **Commodity, Derivatives, Index-Based derivatives, Risk, Return, indices, Volatility, Risk Management.**

1. INTRODUCTION

Index derivatives are a powerful tool for risk management for anyone who has portfolios composed of positions in commodity. Using index futures and index options, investors and portfolio managers can hedge themselves against the risk of a downturn in the market when they should so desire.

The world of commodity investment consists of many different products which all have different dynamics and they therefore tend to offer a significant performance difference which often makes it difficult or even confusing to follow. In order to better understand and follow these markets several different commodity indices have emerged over the years.

Today, commodity indexes represent the easiest way of getting exposure to commodities or to a given sector since the most popular commodity indexes exist under several forms. Decades and centuries ago, an analogous form of investment was offered by commodity-linked notes. Such as 20-year bond issued in 1863 by the US confederation of the south denominated in both sterling and French francs and containing an option to convert the bond into bales of cotton. One of the most attractive aspect of commodity investment today is that there exist a number of indexes that allow passive strategies that can in turn be enhanced into active strategies. Most alternative asset classes do not have passive indexes and hence can be reconstructed over a vast time period, providing in turn a historical track record that is useful in developing asset allocation strategies

A commodity index either invests in or tracks the performance of a group of commodities based on predefined rules. It is often the performance of these indices that is used when comparing commodity performance with other markets such as stocks and bonds. Large investors often prefer a diversified approach, especially to commodities, given the high level of volatility that invariably goes with investing in individual commodities. Commodity index funds help investors to properly benchmark the performance and return of their investments and due to the increased popularity of commodities these funds have grown in recent years.

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Difference between Commodity and Index Trading:

Commodity trading is referred to trading of specific commodities, each with individual prices. Once bought you own the commodity and it has to be transferred to you from the seller.

Index trading is trading a basket of commodities which make up the index, through one instrument. The index tracks a basket of commodities that are used as indicators of a general representation of the whole commodity market (COMDEX) or are a specialized segment of a commodity markets such as technology, such as the CME.

Once traders become experienced enough, they can decide whether or not to trade indices based on their experience and understanding of the advantages of trading indices over trading commodities.

Hence market trading online has become increasingly popular and retail investors buy or sell indices either as investment or hedging tools to diversify their portfolio risks. Trading indices is normally more rewarding to an investor or a trader because in general indices have a higher return than the commodity market they represent partially or wholly. Another big advantage is that trading indices requires a minimum of research when compared to investing in individual commodities.

These are unique and new forms of risk management in the country. They are particularly appealing because the market index is highly correlated with *every* commodity portfolio in the country. By the time a portfolio contains more than 10 commodities, it is very likely that the correlation between this portfolio and a market index like the COMDEX would exceed 80%. This property holds, regardless of the identity of the commodities which make up the portfolio: whether a person holds index commodity or not, the index is highly correlated with every portfolio in the country.

Investment strategies based on indices have been around for decades, but in the past 10 years their popularity has risen significantly. There has been a proliferation of indices developed by banks and other financial services firms for investors wanting a performance target for their portfolios and, as a consequence, a rise in the number of index-linked securities offered by those institutions.

The movement of commodity market indices is a key component of financial news. Investors' interest in commodity market indices largely results from the increasing popularly of the "index" portfolio management style, which consists in building portfolios that mirror commodity market indices. Index futures and options whose value closely follows the price level of their underlying indices – providing management of commodity market risk and trading opportunities for both institutional and retail investors.

Benefits of trading in Commodity Index Derivatives:

- Price transparency and liquidity (narrow bid-ask spread)
- Broad commodity diversification in single transaction
- Efficient use of capital
- Flexibility to enter and exit the market at any time during the trading day
- No restriction for short selling the market
- Lower transaction fees than those incurred when buying or selling
- Immediate execution and confirmation
- Reduction of counter-party risk
- Standardised contracts available
- Cash settled contracts available
- No replication error when adding or retracting stocks from the index

Why Index Derivatives Matter:

On the commodity market, whenever derivatives are contemplated, the most natural and easily visualised kind of derivative product is *options on individual commodities*. These directly tap into the widespread interest in *speculation* in market. If a speculator thinks that the price of commodity might go up, instead of buying the shares of commodity, he can

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buy ``call options'' -- these ensure that he enjoys upside risk (i.e., profits if the price does go up) without downside loss (i.e., no further pay-outs in case the price does not go up). Conversely, a speculator who is bearish about commodity could buy ``put options'' -- these would yield a profit if the price of commodity drops, with no further pay-outs in case this fails to materialise.

However, the major focus of the commodity derivatives industry worldwide, is on *index* derivatives. Internationally, trading volume on index derivatives is often a hundred times larger than that seen on security--options.

The commodity indexes, however, cannot be traded directly and they are available for information only. Market data is available for the commodity indexes, and they can be charted, but there is no way to make either a long or short trade on the actual commodity indices. Futures and options are known as derivatives markets, because they are derived from the underlying stock index. There are futures and options markets available for all of the popular stock indexes.

There are some advantages to charting the commodity indexes instead of the futures or options. The commodity indexes do not expire like futures and options contracts do, so traders do not need to update their charting to a new contract every months/trimester

The most important thing is to choose markets that are applicable for your account size, risk level and trading style.

2. METHODOLOGY

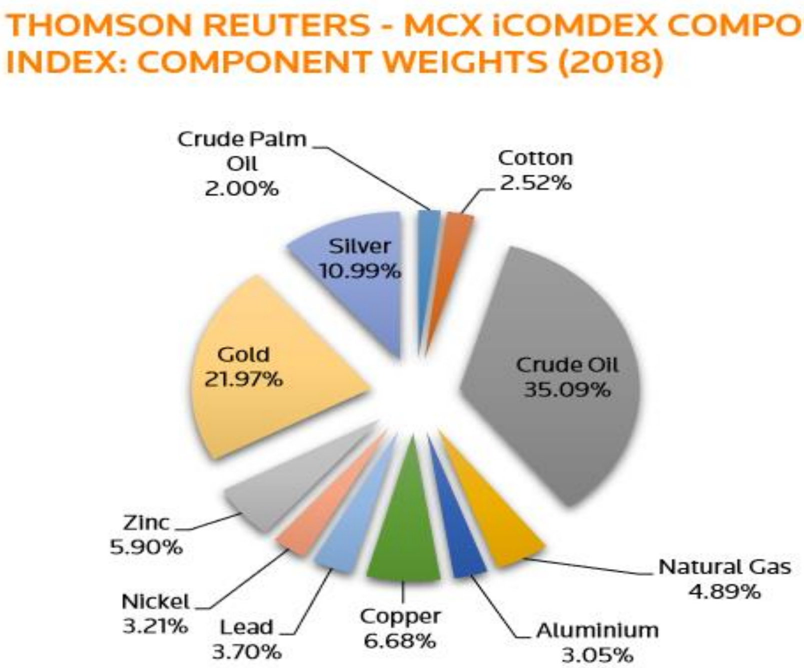
This research paper mainly focuses on how the commodity index trading different from individual commodity trading, the investors and trades main objective is optimal portfolio construction with risk-return neutralisation, this paper cover the Indian commodity market Multi Commodity Exchange (MCX) spot and index prices from the year 2010 to 2017 to calculate the portfolio and commodity risk, return and growth pattern for this descriptive research methodology adopted. Correlation between the returns of the commodity and commodity indices are also used to know the possibility of portfolio construction

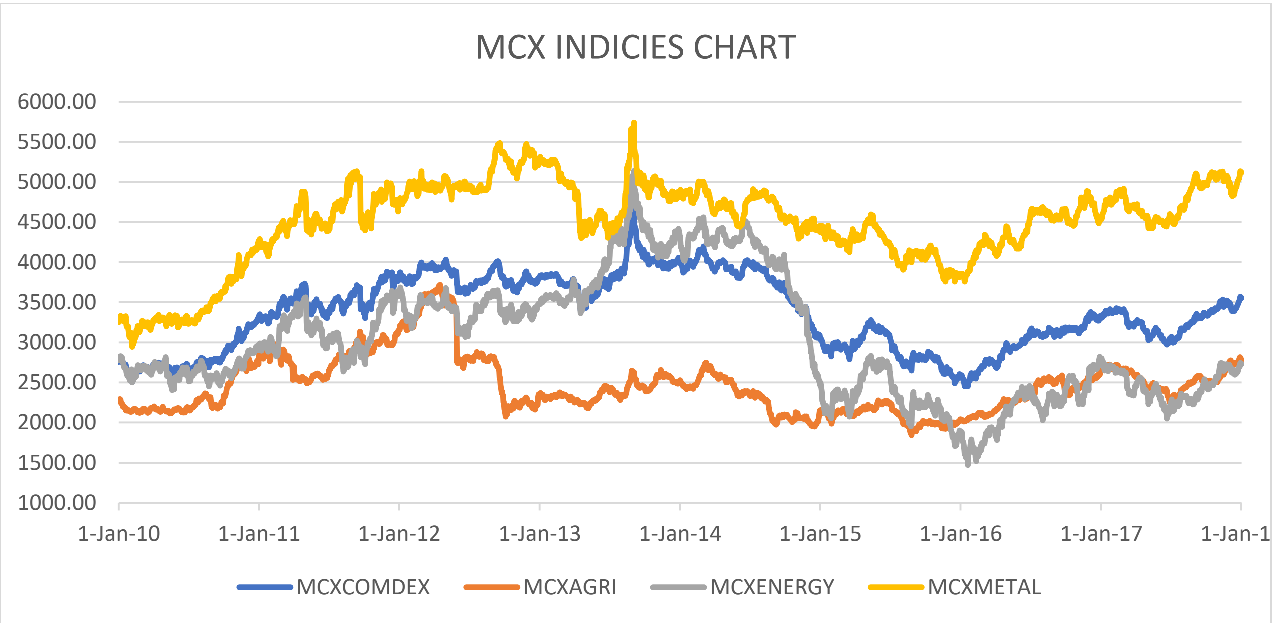
3. DATA ANALYSIS

The vibrant interest in commodity related funds seems likely to stay for some time. July 2004 Barclay global investors, a unit of Barclays PLC of London, launched a pooled commodity fund meant to provide European investors with an opportunity to track the performance of a benchmark index,

MCX COMDEX	Commodity	Weight (New)	Group Adjusted Wts.
MCX METAL INDEX	Gold	15.17%	40.0%
	Silver	3.98%	
	Copper	7.48%	
	Aluminium	2.57%	
	Nickel	4.91%	
	Zinc	3.74%	
	Lead	2.15%	
MCX ENERGY INDEX	Crude Oil	33.83%	40.0%
	Natural Gas	6.17%	
MCX AGRI INDEX	Cardamom	2.00%	20.0%
	Mentha Oil	2.29%	
	Crude Palm Oil	6.65%	
	Cotton	9.06%	

Major commodity market of India is Multi Commodity Exchange (MCX), its major index is MCXCODEX it is the composition of Metal, Energy and Agri indexes weighted average proportion basis, which help for risk minimisation with risk neutralisation. Highest composition in the index is crude oil i.e. 33.83%, next highest composition is gold i.e. 15.17%, put together of these two commodities are taking approximately 50% of index weightage.





Indices are moving in same direction form the year 2010 to 2017, for the analysis purpose 8 years' data are considered MCXCOMDEX is the composition of the agri, energy and metal indices.

Table 1: Shows the correlation matrix for MCX commodity indices return correlation matrix

	MCXCOMDEX	MCXAGRI	MCXENERGY	MCXMETAL
MCXCOMDEX	1			
MCXAGRI	0.319955	1		
MCXENERGY	0.806054	0.146548	1	
MCXMETAL	0.789072	0.109275	0.321745	1

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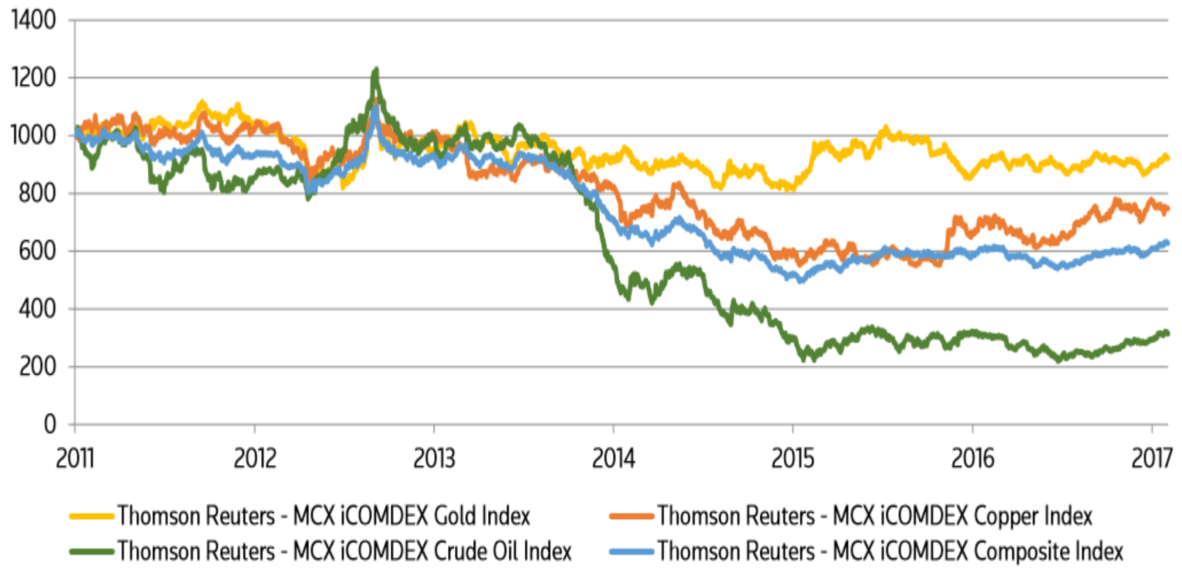
The entire correlation matrix shows the positive correlation, means that the portfolio construction between the indices are not advantageous to reduce the risk of the portfolio and investment, highest correlation between MCXCOMDEX and MCXENERGY its have 0.80 correlation, lowest correlation is between metal and agri which have only 10.9% correlation. Because all have positive correlation variance minimisation not possible to extent of 0.

HISTORICAL PERFORMANCE



From the year 2010 to 2014 the volatility of indices are less, after 2014 volatility between the indices are very high which have effect on risk return optimisation. This have the following return and risk historical data

CALENDAR YEAR PERFORMANCE

Index Returns – By Year					
	2013	2014	2015	2016	2017
THOMSON REUTERS - MCX iCOMDEX GOLD INDEX	-9.23	-3.81	-10.52	6.47	3.28
THOMSON REUTERS - MCX iCOMDEX COPPER INDEX	-1.92	-19.21	-26.74	10.72	16.93
THOMSON REUTERS - MCX iCOMDEX CRUDE OIL INDEX	15.03	-45.13	-44.51	6.07	-6.95

ANNUALIZED PERFORMANCE

Total Returns - Annualized					
	3M	6M	1Y	3Y	5Y
THOMSON REUTERS - MCX iCOMDEX GOLD INDEX	10.25	6.88	1.39	-0.74	-1.89
THOMSON REUTERS - MCX iCOMDEX COPPER INDEX	0.25	14.17	4.98	2.22	-6.01
THOMSON REUTERS - MCX iCOMDEX CRUDE OIL INDEX	75.21	54.27	2.34	-11.19	-18.55

RISK MEASURES

Annualized Standard Deviation					
	3M	6M	1Y	3Y	5Y
THOMSON REUTERS - MCX iCOMDEX GOLD INDEX	8.07	8.55	8.73	12.32	15.09
THOMSON REUTERS - MCX iCOMDEX COPPER INDEX	16.97	16.82	17.79	19.25	18.77
THOMSON REUTERS - MCX iCOMDEX CRUDE OIL INDEX	17.74	19.69	22.51	34.13	29.93

Annualized Sharpe Ratio					
	3M	6M	1Y	3Y	5Y
THOMSON REUTERS - MCX iCOMDEX GOLD INDEX	1.27	0.80	0.16	-0.06	-0.13
THOMSON REUTERS - MCX iCOMDEX COPPER INDEX	0.01	0.84	0.28	0.12	-0.32
THOMSON REUTERS - MCX iCOMDEX CRUDE OIL INDEX	4.24	2.76	0.10	-0.33	-0.62

4. CONCLUSION

Using index futures, the same objective would be accomplished at around one--tenth the cost, or less. Using index options, a very interesting kind of ``portfolio insurance" could be obtained, whereby an investor gets paid only if the market index drops. Index trading is always better option to manage the risk and unexpected shocks in the market. When compare to commodity and commodity index trading, index will give higher return in long them, when its not possible for predicting the individual commodity movements then the better choice is commodity index trading.

The commodity index trading is an efficient tool in risk management and allow asset allocation especially for portfolio adjustments. These contracts can also be used to hedge the profit realisation on an investment or to freeze a loss incurred. In the portfolio management context, they can serve to hedge a portfolio from the effect fluctuations in commodities. Lastly, these contracts enable investors to profit from short-term fluctuations in the stock market. This type of operation carries important risks, but it generates important potential profit; only well informed investors should consider it.

REFERENCES

[1] Abreu, D. and M. Brunnermeier (2002), "Synchronization Risk and Delayed Arbitrage," Journal of Financial Economics 66, 341-360.

[2] Acharya, V., L. Lochstoer and T. Ramadorai (2010), "Limits to Arbitrage and Hedging: Evidence from Commodity Markets," Working Paper.

[3] Anson, M. (1998), "Spot Returns, Roll Yield, and Diversification with Commodity Futures," Journal of Alternative Investment, Winter, 16-32.

[4] Barberis, N. and R. Thaler (2001), "A Survey of Behavior Finance," In: Constantinides, G., Harris, M. and R. Stulz, Handbook of the Economics of Finance. Elsevier.

[5] Bessembinder, H. (1992), "Systematic Risk, Hedging Pressure, and Risk Premiums in Futures Markets," Review of Economic Studies 5, 637-667.

[6] Bessembinder, H. and M. Lemmon (2002), "Equilibrium Pricing and Optimal Hedging in Electricity Forward Markets," Journal of Finance 62, 1347-1382.

[7] Buyuksahin, B. and J. Harris (2009), "The Role of Speculators in the Crude Oil Futures Market", Energy Journal, forthcoming.

[8] Casassus, J. and P. Collin-Dufresne (2005), "Stochastic Convenience Yield Implied from Commodity Futures and Interest Rates," Journal of Finance 60, 463-520.

[9] Chang, E. (1985), "Returns to Speculators and the Theory of Normal Backwardation," Journal of Finance 40(1), 193-208.

[10] Chen, H., G. Noronha and V. Singal (2004), "The Price Response to S&P 500 Index Additions and Deletions: Evidence of Asymmetry and a New Explanation," Journal of Finance 59, 1901-1929.

[11] Cootner, P. (1960), "Return to Speculators: Telser vs. Keynes," Journal of Political Economy 68, 396-404.

[12] Cremers, M., A. Petajisto and E. Zitzewitz (2010), "Should Benchmark Indices Have Alpha? Revisiting Performance Evaluation," Working Paper.

[13] Harris, L. and E. Gurel (1986), "Price and Volume Effects Associated with Changes in the S&P 500: New Evidence for the Existence of Price Pressures," Journal of Finance 41, 815-829.

[14] Hirshleifer, D. (1988), "Residual Risk, Trading Costs, and Commodity Futures Risk Premia," Review of Financial Studies 1, 173-193.

[15] Hirshleifer, D. (1990), "Hedging Pressure and Futures Price Movements in a General Equilibrium Model," Econometrica 58, 411-428.

[16] Morck, R. and F. Yang (2001), "The Mysterious Growing Value of S&P Index Membership," NBER Working Paper.

[17] Nash, D. (2001), "Long-Term Investing in Commodities," Global Pensions Quarterly, January, 30-36.

[18] Petajisto, A. (2010), "The Index Premium and Its Hidden Cost for Index Funds," Journal of Empirical Finance, forthcoming.

[19] Routledge, B., D. Seppi and C. Spatt (2000), "Equilibrium Forward Curves for Commodities," Journal of Finance 55, 1297-1338.

[20] Schwartz, E. (1997), "The Stochastic Behavior of Commodity Prices: Implication for Valuation and Hedging," Journal of Finance 52, 923-972.

[21] Stoll, H. and R. Whaley (2010), "Commodity Index Investing and Commodity Futures Prices," Journal of Applied Finance 20(1), 7-46.

[22] Tang, K. and X. Wei (2010), "Index Investing and the Financialization of Commodities," Working Paper.

[23] Working, H. (1960), "Note on the Correlation of First Differences of Averages in a Random Chain," Econometrica 28(4), 916 - 918.