AN ANALYSIS OF COMMODITIES MARKET IMPACT ON EQUITY INVESTMENT

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ABSTRACT:

The study of Indian equity and commodity markets were considered with the analysis of commodities market impact on equity markets. This analysis has been bifurcated from the pre and post commodity market inception. ADF test has been applied to measure the stationery of the selected variable data. Johensen co-integration test has been applied to measure the data integration between the select variables. The Granger Causality test had shown that the commodity market where not effected on the equity markets, during the analysis period. Eugene Fama had shown the performance of equity markets before and after the inception of MCX. This tool in fact reflected the actual performance after the inception of commodity markets. This research is useful for the investors of both segments of equity and commodities, regulators, financial institutions and FII's.

KEYWORDS: MCX comdex , agri , metal , energy, nifty, BSE-IPO, BSE-100, repo rate.

INTRODUCTION:

As the Indian equity markets have experienced their most explosive growth over the several past years, commodities market was initiated in the 2003.As stock market is playing a vital role in the economy. Stock market consists of three equity investments; they are NSE, BSE, MCX-sx and Commodities market MCX. Equity investment started in the year 1994 and commodities market in the year 2003. This study explains the relationship between commodity market (MCX) and equity markets (NSE,BSE), Whether the equity market effected by investing in commodity markets .commodity market effects equity market business growth and nifty returns .there is a relation between commodity indices and nifty returns. A commodity market plays a major role in the market when compared to equity market because most of the investors know about the commodity market but not equity market. Investing in commodity market is very risk because it is not an open ended market (free to entry and free to exist), the investor should exist within a specific period of time after entry if not system will square off. This study mainly focus on in the impact of commodities investment on equity market, commodities

like Gold, Silver etc. Impact on economy and it's reflecting on stock market that is equity market. This research mainly explains about whether the bifurcation of capital towards the commodities is having any change in equities market or not.

OBJECTIVES:

1. To find the equity market performance before & after of commodity markets evolution.
2. To know the commodity market capital impact on equity benchmark returns and its market capital growth.
3. To find the future movement of equity benchmark based on MCX-comdex.
4. To know the select economic factors effected on equity and commodities.

SCOPE: This analysis has been bifurcated from 1994 –2002 that is before initiation of commodities market and 2003 – 2014 after commodities market inception. In this analysis 3 equity stock exchanges NSE, BSE, MCX-sx were considered. Commodities markets segment MCX India has been considered. The focus of this analysis is confined to commodities markets investments effect on equity markets flows and its returns.

EMPERICAL STUDY:

⇨ Nifty figures.
⇨ Market capital of MCX Comdex, MCX Agri, MCX Metal, MCX Energy.
⇨ MSCI, IIP, WPI.
⇨ IPO index in primary market.
⇨ RBI Repo rates.

NEED: The need of this study is to explain whether investing into commodities are influencing the equity market and vice versa. It helps in finding the equity market performance over a commodity market performance. It strongly felt that investors having influence when commodity prices increases. This study helps in knowing that most of the investors in India are aware of commodities but not the equities so the investors are investing in commodity markets by this equity market got effected or n. And also global economies deflected if consumptions are more in commodity markets. By observing the emphasis it explains that when prices increased in commodity markets it influences the inflation and inflation rates will be decreased.

REVIEW OF LITERATURE:

Jan tore klovland: Amidst a sharp elevate in commodity investing, many have asked whether commodities nowadays move in sync with traditional financial assets. We provide evidence that challenges this conception. Using dynamic correlation and recursive co-integration techniques, we find that the cognation between the returns on investable commodity and U.S. equity indices has not transmuted significantly in the last fifteen years. We additionally find no evidence of any secular increase in co-kineticism between the returns on commodity and equity investments during periods of high returns.

Klas Ronnback: In this article, I test whether there is any corroboration of price convergency on intercontinental commodity markets earlier to the nineteenth century. I accumulate price data on eleven

commodity markets paramount to early modern intercontinental trade. The main finish is that many of the commodity markets do show denotements of price convergency even prior to the nineteenth century. The enquiry of an early globalization can thus not be dismissed as facilely as has often been done so far.

Gurbandini Kaur: The commodity derivative market in India has observed significant growth since commodity futures trading was permitted in the year 2003.Although the size of commodity futures trade increased substantially since its commencement in 2003. The working of the future market came under study during the year 2008-09. This study focuses at testing the weak form of Efficient Market Hypothesis in the backdrop of an emerging commodity market NCDEX, which is considered to be the main commodity derivatives market in the Indian subcontinent. The study has taken into consideration daily spot and future prices of 4 agriculture commodities traded on NCDEX over a period of 13 months. Those commodities were pepper, refined soya oil and chana, as they account for about two-thirds of the total agricultural commodity derivatives traded over NCDEX. 27 future contracts relating to the above mentioned commodities were analyzed for the study, for which auto correlation and run test have been implemented in order to test efficiency of the agricultural commodity market. It has been noticed that the coefficients are high for lags in the beginning, and the values drop as the lags increase. Nevertheless, there is not much fall in the autocorrelation coefficient values. It can be suggested that the information implemented in longer period of lags would be as noteworthy in determining the future price, as that of information embedded in shorter lag periods. The results of both the tests infer that both spot and future prices are weak.

RESEARCH METHODOLOGY:

1. **Augmented Dickey–Fuller test:** In statistics, the Dickey–Fuller tests tests whether a unit root is present in an autoregressive model. It is named after the statisticians David Dickey and Wayne Fuller, who developed the test in 1979.

$$\nabla y_t = \delta y_{t-1} + u_t$$

Eugene Fama:
R1=βp(Rm-Rf),R2=[((stdevp/stdevm)-βp)]-(Rm-Rf),R3=Rp-(Rf+R1+R2),Rp(Risk portfolio)=SLOPE(BSE100/NIFTY), Risk premium=R1+R2, Excess returns=Risk premium+R3, Total Return=Rfr (Risk free return)+Excess returns, β =bse100/NIFTY, Rf = reporate average of each year, Rm(market return)=100/base price of particular year of nifty*(last price of particular year of nifty-βp)

2. Bivariate correlation: Bivariate correlation is a measure of the relationship between the two variables; it measures the strength of their relationship, which can range from absolute value 1 to 0. The stronger the relationship, the closer the value is to 1. The relationship can be positive or negative; in positive relationship, as one value increases, another value increases with it. In the negative relationship, as one value increases, the other one decreases.

$$r = \frac{\sum XY - \frac{\sum x \sum Y}{N}}{\sqrt{(\sum X^2 - \frac{(\sum X)^2}{N})(\sum Y^2 - \frac{(\sum Y)^2}{N})}}$$

3. Intercept: There is an important theorem in elementary geometry about the ratios of various line segments that are created if two intersecting lines are intercepted by a pair of parallels. It is equivalent to the theorem about ratios in similar triangles. Traditionally it is attributed to Greek mathematician Thales.

Y=a+bx; a=NIFTY (Last year average), b= β (slope) Nifty/ comdex, x=intercept value

4. Granger causality test: The Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another.

$$X(t) = \sum_{\tau=1}^{L} A_\tau X(t - \tau) + \varepsilon(t),$$

$X_1(t) = \sum_{j=1}^{p} A_{11,j} X_1(t-j) + \sum_{j=1}^{p} A_{12,j} X_2(t-j) + E_1(t)$

LIMITATIONS:

1. Commodities benchmark mcx comdex is considered and for equities benchmark nifty has been considered.
2. WPI data considered for the Inflation.
3. Comdex data has been considered from June 7th 2005.
4. For the benchmark of the equity BSE 100 has been considered from June 1st 1994 to Nov 15th 2007 and MSCI data has been considered Jan 1st 2008 to Nov 10th 2014.
5. For the calculation of performance measure the Eugene Fama Nov 16th - Dec 31st of 2007 were not considered.
6. Repo-rate has been considered 6 for the period of 1994-2000.In the year 2014 average of 8 months data.

DATA ANALYSIS:

1. To find the equity market performance before & after of commodity markets evolution.

Table 1: Analysis of equity market performance from 1994 - 2002

years	R1	R2	R3	Total return
1994	503.4377556	-536.7801098	-503.4377556	-27.34235418
1995	649.722307	-677.644801	-649.722307	-21.92249402
1996	595.9113118	-555.9952061	-595.9113118	45.91610575
1997	363.1907896	-651.5773004	-363.1907896	-282.3865108
1998	617.0261103	-744.9987839	-617.0261103	-121.9726737
1999	565.8346958	-555.2139757	-565.8346958	16.62072005
2000	621.8602089	-408.3886035	-621.8602089	219.4716054
2001	719.1557661	-634.2391935	-719.1557661	93.60407256
2002	488.7934713	-664.8439569	-488.7934713	-168.0088186

Interpretation: The performance measure tool Eugene fama has been applied on nifty before inception of commodities market MCX. The performance is observed negative for five years out of eight years of history.

Table 2: Analysis of equity market performance from 2003 - 2014

years	R1	R2	R3	Total return
2003	435.2059388	-527.4685249	-435.2059388	-85.16258608
2004	300.9026186	-380.5992205	-300.9026186	5.417730701
2005	212.9958804	-247.4702574	-212.9958804	-28.42229408
2006	90.96050399	-97.66573465	-90.96050399	0.086436341
2007	-94.15000943	106.751163	94.15000943	20.28865356
2008	51.08920215	100.59426	-51.08920215	-51.5931
2009	69.73675611	111.4663896	-69.73675611	73.24009
2010	20.89206542	151.3775727	-20.89206542	18.51509
2011	17.14129222	157.7692743	-17.14129222	-24.094
2012	19.96167091	96.14063142	-19.96167091	29.08738
2013	10.24712366	1969.32811	-10.24712366	7.241446015
2014	-4.147419978	518.481514	4.147419978	33.89430639

Interpretation: After the inception of MCX equity market index nifty performance is far better than the before equity markets inception. Out of twelve years of analysis period four times nifty had under performed. By this analysis after the inception of commodities market equity markets performance had improved.

2. To know the commodity market capital impact on equity benchmark returns and its market capital growth.

Series: COMDEX NIFTY
Log Likelihood by Rank (rows) and Model (columns)

-137.9552	-137.9552	-135.7027	-135.7027	-135.5888
-132.2574	-130.4005	-128.7891	-125.3523	-125.2544
-130.7335	-128.7676	-128.7676	-121.4657	-121.4657

Interpretation: Johensen's co integration test has been applied between comdex and nifty the result shows that the data is co integrated between the two variables. The log likelihood rank values were observed in decreasing trend in all models along with the alpha levels. Granger causality test of COMDEX and NIFTY

Pair wise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
NIFTY does not Granger Cause COMDEX	9	1.27778	0.3723
COMDEX does not Granger Cause NIFTY		2.98815	0.1608

 Interpretation: For this co integrated data we have applied Granger causality test. Since the probability is less than 0.5 it is observed that NIFTY has no influence on COMDEX, COMDEX has no

influence on NIFTY.

3. To find the future movement of equity benchmark based on mcx comdex

Regression Equation: Y=a+bx

	nifty avg14 a	slope b	intercept x
	9405.235481	10.4057856	-31932.87684
		-332286.6699	
y=a+bx	-322881.4344		

Interpretation: Regression equation has been applied between MCX comdex and equity index nifty. The equation had given the result the future movement of equity is expected to go downside because the calculated value is negative which is less than the base value of a.

4. To know the select economic factors effected on equity and commodities.

Series : NIFTY WPI Log Likelihood by Rank (rows) and Model (columns)

-111.2892	-111.2892	-109.3907	-109.3907	-105.6074
-102.7666	-102.3885	-101.3482	-85.45695	-81.98246
-100.6162	-97.39124	-97.39124	-81.49004	-81.49004

NOTE: In the above table the log likelihood values are in decreasing order both horizontally and vertically.

Interpretation: The above table depicts Johenson's co integration test of NIFTY and WPI for 11years.the rank Likely hood values were observed in decreasing trend in all trend models along with the 2 alpha levels.   **Pair wise Granger Causality Tests**

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Null Hypothesis:	Obs	F-Statistic	Prob.
NIFTY does not Granger Cause WPI	9	0.69190	0.5520
WPI does not Granger Cause NIFTY		7.01410	0.0492

For this co integrated data we have applied Granger causality test. Since the probability is less than 0.5 it is observed that NIFTY has influence on WPI, WPI has no influence on NIFTY.

Co integration of COMDEX and WPI:

Log Likelihood by Rank (rows) and Model (columns)

-104.5631	-104.5631	-100.7621	-100.7621	-98.16027
-99.58445	-96.10577	-96.10255	-93.12207	-92.98688
-97.65737	-93.85528	-93.85528	-89.34507	-89.34507

NOTE: In the above table the log likelihood values are in decreasing order both horizontally and vertically.

Interpretation: The above table depicts Johenson's co integration test of COMDEX and WPI for 11years. As the values are in decreasing order they are co integrated

Pair wise Granger Causality Tests

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Null Hypothesis:	Obs	F-Statistic	Prob.
COMDEX does not Granger Cause WPI	9	0.58857	0.5970
WPI does not Granger Cause COMDEX		1.66197	0.2983

For this co integrated data we have applied Granger causality test. Since the probability is less than 0.5 it is observed that COMDEX has influence on WPI, WPI has no influence on COMDEX.

Co integration of WPI and IIP

Log Likelihood by Rank (rows) and Model (columns)

-80.73762	-80.73762	-69.28836	-69.28836	-66.25122
-68.38483	-68.33200	-65.46018	-62.41263	-61.42637
-65.31020	-65.22399	-65.22399	-60.14660	-60.14660

NOTE: In the above table the log likelihood values are in decreasing order both horizontally and vertically.

Interpretation: The above table depicts Johenson's causality test of WPI and IIP for 11years. As the values are in decreasing order they are co integrated.

Pair wise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
IIP does not Granger Cause WPI	9	0.51912	0.6303
WPI does not Granger Cause IIP		0.99522	0.4459

For this co integrated data we have applied Granger causality test. Since the probability is less than 0.5 it is observed that WPI has influence on IIP, IIP has no influence on WPI.

Co integration of NIFTY and IIP

Log Likelihood by Rank (rows) and Model (columns)

-121.2366	-121.2366	-119.4903	-119.4903	-117.1586
-115.3566	-115.1429	-115.1079	-102.2451	-99.97418
-115.0358	-113.0774	-113.0774	-99.97124	-99.97124

NOTE: In the above table the log likelihood values are in decreasing order both horizontally and vertically.

Interpretation: The above table depicts Johenson's co integration test of NIFTY and IIP for 11years. As the values are in decreasing order they are co integrated.

Pair wise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
NIFTY does not Granger Cause IIP	9	0.26990	0.7763
IIP does not Granger Cause NIFTY		2.12814	0.2347

For this co integrated data we have applied Granger causality test. Since the probability is less than 0.5 it is observed that NIFTY has influence on IIP, IIP has no influence on NIFTY.

Co integration of COMDEX and IIP

Log Likelihood by Rank (rows) and Model (columns)

-113.7221	-113.7221	-111.2932	-111.2932	-110.4007
-110.9187	-109.8333	-109.3001	-107.3912	-106.5230
-110.2488	-108.7194	-108.7194	-105.4028	-105.4028

NOTE: In the above table the log likelihood values are in decreasing order both horizontally and vertically.

Interpretation: The above table depicts Johenson's causality test of IIP and COMDEX for 11years. As the values are in decreasing order they are co integrated.

Pair wise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
COMDEX does not Granger Cause WPI	9	0.58857	0.5970
WPI does not Granger Cause COMDEX		1.66197	0.2983

For this co integrated data we have applied Granger causality test. Since the probability is less than 0.5 it is observed that COMDEX has influence on IIP, IIP has no influence on COMDEX.

FINDINGS:

- The performance of equity market is found to be inferior before the inception of commodity markets in India; but whereas after the evolution of commodity markets equity markets performance is found to be superior.
- The study observed the commodity market where not cause the nifty returns.
- The future movement of equity indicators is expected to go downside based on the commodity index fluctuations.
- Metal index is having a strong co-relation with Agri and Energy indices; but whereas energy index is having moderate co-relation with Agri index.
- Inflation is not influencing the COMDEX and IIP.
- IIP is not having influence on NIFTY Movements.

CONCLUSION:

I conclude the analysis of commodity markets influence on equity market. This analysis has been analyzed from the period 1994-2014.Among the investors fraternity of equity market were having a notion that the commodities market were capturing capital from the equity investors. In this analysis, performances of equity were found to be stronger after the establishment of commodities stock exchange in India. The study shows there is no significance Impact by the commodities market on equities. The future movements of equity indices are expected to go downside by the commodities investment fluctuations. The selected economic factors namely Inflation and IIP were not causing the commodities and equity market in longer tenure. Hence there is the future scope to do research in this area where to measure the exact impact on commodities investment on equity returns.

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