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A Study on Price Behavior of Crude Oil, Gold, Nifty and India VIX" Multivariate Analysis

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ABSTRACT

Gold and Crude oil are very vital global Variables and they are ruling the market. An increase in the worldwide oil prices and gold prices hurts the Indian economy. To know whether there is any dependency of gold and crude oil price fluctuations with respect to Indian market. The interdependence between financial markets and financial products are the most difficult problems for investors. The volatility of one market can influence the value index of another marketplace. The purpose of this article is to examine whether the price of gold, the price of oil, the volatility of the price of gold (GVZ), and the volatility of the price of oil (OVX) have a major collision on the stock index (GSPC). The goal is to find coexistence between characters, determinants, and price levels. The survey has taken into explanation of the prices of gold and oil business on the Commodity Exchange (MCX) between 1 January 2014 and 31 December 2018. This relationship is analyzed using tendency line assessment. The gold-oil ratio is calculated as the ratio of gold price to crude oil price related to time. Correlation tests are also performed to discover the strong point of the relationship between the prices of the two products. In the commodity market, in most cases, gold and crude oil price groups are moving in the same direction. Therefore, it is recommended to buy and sell gold and crude oil at the same time. So the risk can be minimized. Sometimes gold and crude oil prices will go in the opposite direction. Gold prices can be very tight and crude oil can go down. At that point, it is advisable to invest in the declining products. It is likely that the prices of falling items will soar automatically.

Keywords-- Gold, Crude Oil, MCX, India VIX, Nifty

I. INTRODUCTION

Exchange Gold is the world's most seasoned worldwide cash. It is an essential component of worldwide financial hold. India is the world's biggest marketplace for bullion adornments and a input driver of worldwide gold bars interest. Indian family units hold biggest supply of gold on the planet. Almost 66% of India's interest for gold originates from country zones where adornments are the customary store of riches for millions who don't approach for formal financial framework. The bureau on ninth September 2015 had affirmed the presentation of Sovereign Gold Bonds Scheme (SGBS) and Gold Monetization Scheme (GMS) in the association spending plan of 2015-16. Gold valuation is troublesome contrasted with other money related resources. Gold is like monetary forms like the US dollar and the Euro since it is tough, convenient, brought together all through the world, and generally acknowledged. Be that as it may, in contrast to these monetary standards, gold isn't upheld by any organization or foundation. It is like different items like corn and oil since it originates from the dirt and has exceptional highlights. Be that as it may, in contrast to different items, the cost of gold changes paying little heed to free market activity. Truth be told, just about 10% of the world's gold is utilized in industry, mostly in hardware, in light of its conductivity and erosion obstruction. Gold from different pieces of the world transforms into jewels or is held for speculation purposes. There are numerous kinds of raw petroleum delivered on the planet. They contrast in their attributes and quality. The two most ordinarily exchanged crudes are West Texas Intermediate (WTI) and Brent. The Volatility Index (VIX) is a proportion of market desires for transient instability. In the event that we see well, unpredictability implies the capacity to change. Therefore, when the market is exceptionally unpredictable, they will in general climb and down quickly, and the unpredictability list will in general ascent all through this period. As market instability diminishes, the unpredictability list decreases.VIX is here and there alluded to as the Panic Index, as the market can move quickly every which way as Volatility Index (VIX) rises. Generally, VIX has turned into a pointer of how advertise specialists envision capriciousness. Financial specialists utilize this to gauge advertise unpredictability and settle on venture choices. Recognize that the Volatility Index is not quite the same as value lists, for example, NIFTY and SENSEX. The value list figures the bearing of the market

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and is determined utilizing the hidden stock gathering. The unpredictability list estimates the change or vacillation.

II. OBJECTIVES

To understand an outline of gold and crude oil trade.

To examine the relationship between Gold and Crude oil prices as well as its impact on the Indian stock market with special reference to Nifty.

To analyse the relationship between India VIX and Stock market volatility in India.

III. RESEARCH METHODOLOGY

Type of research	Causal research
Data collection	Secondary data
Sample period	5 years
Sample Scope	Gold, Crude Oil, India VIX, Nifty
Sample size	4
Sampling technique	Non-probability , Purposive technique
Statistical tools	Descriptive Statistics, Correlation and Regression Analysis

IV. LITERATURE REVIEW

Shefrin (2007) offered the reliance hypothesis; this hypothesis affirms that diverse market elements and changing situations do play an amusement in the brains of the financial specialist sufficiently only to persuade him about the greed fear system, along these lines floating away from the justification.

Bagchi (2012) functioned excellently in the Indian setting to build esteem biased portfo1ios dependent on market to volume esteem, beta and advertise capitalisation pointers. This investigation along these lines finds a optimistic & outstanding connection among the India VIX & the profits of the characterized portfolio.

Barberis & Thaler (2003) further exhibited that regulating approaches are probably going to fall flat, since individuals as a rule settle on decision that don't pursue regularizing or institutionalized example in unique situations.

Zunino et al (2010) thought about long haul memory of business sectors against entropy estimation. In the ebb and flow work, the analysts have utilized the introduction of entropy as denude in data hypothesis, since value disclosure of a stock or a record forms are observed to be principally data creating forms. Stock value development has been an irregular or stochastic process for every single stock in a securities exchange. Certain exchanging days, the opening and shutting costs are observed to be unique in relation to past shutting and on specific events they are observed to be same also. Be that as it may, this discovering same esteem or diverse estimation of the stocks, or the list once a day is arbitrary itself. This suggestion could fall flat, if data ends up static and dreary each exchanging day.

Ravichandra in addition to Ma1oain (2010) studied the influence of international monetary catastrophe on 6 Gulf countries. They set up that all these countries faced turmoil during the crisis period.

Sensoy (2013) tried to perceive the fragile movements of the benefits of gold, silver, platinum and palladium from 1999 to 2013. The results suggest that gold has a significant impact. This can be clarified by gold components as a store of outstanding value and an instrument of exchange. Previous reviews have deepened the flood of whims between important metals and products to accumulate support systems containing important metals.

Baur and Lucey, 2010; Reboredo, 2013. The ongoing worldwide budgetary emergency alongside the developing enthusiasm towards valuable metals have likewise energized further observational research around there, and invigorated the development of concentrates that concentrated on the extended recall of valuable metals.

Arouri et al (2012) broke down lengthy remembrance property & essential break in proceeds and precariousness of the 4 profitable metals inc1uding gold, si1ver, p1atinum and palladium, which have business on the COMEX. They discovered well-built verification of long memory in the prohibitive return and eccentrics of profitable metals, even after potential helper breaks are controlled for.

Thai-Ha Le and Youngho Chang (2011) make an investigation on active dealings among the worth of Oil, bullion and monetary Variab1es in Japan. They affirm that just gold value impacts the loan cost in Japan in the short run. The outcome finds long-run connection between costs of oil and Gold. The oil cost be capable of utilized to anticipate the gold cost.

Kaliyamoorthy and Parithi (2012) reported that Indian securities exchange isn't related with gold market and gold costs have not been expanded persistently because of Indian stock exchange crash. The investigation finds there is rejection connection exists by the Stock market as well as Gold cost.

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Zhang along with Wei (2010) clarified the affiliation among gold and unrefined petroleum costs. They have discovered solid connection between's them. The fundamental connection of progress in unrefined petroleum had the effect on gold cost yet a similar relationship of circumstances and logical results isn't valid in the switch course.

Tuysuz (2013) have clarified that unrefined petroleum costs have negative relationship with the share trading system return. The job of gold concerning securities exchange has been accounted for as not steady. In a few cases like amid website emergency and sub-prime home loan emergency the reactions have been discovered extraordinary.

Chen, Rogoff as well as RoSSi (2008) talked about the trade charges be capable of utilized to figure product costs all the more precisely when contrasted with the other route round. Means the item costs can't foresee the swapping scale developments yet trade rates can anticipate the ware costs.

Edwards and Yeyati (2005) have additionally talked about that adaptable conversion scale frameworks be improved at retaining stuns in the financial system. Other than the capacity of retaining the stuns it be additionally examined the nations have adaptable trade charge become quicker than those nations which are definitely not.

2014

Regression Statistics

Multiple R	**0.571389**
R Square	**0.326486**
Adjusted R Square	**0.073918**
Standard Error	**0.035082**
Observations	**12**

ANOVA

	df	SS	MS	F	Significance F
Regression	3	0.004773	0.001591	1.292664	0.341638
Residual	8	0.009846	0.001231		
Total	11	0.014619			

	Coefficients	Standard Error	t Stat	P Value
Intercept	0.037432	0.012704	2.946572	0.018523
X Variable 1	-0.27987	0.283806	-0.98612	0.352954
X Variable 2	0.258168	0.151834	1.700338	0.127488
X Variable 3	-0.02598	0.040054	-0.64854	0.534807

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2015

Regression Statistics

Multiple R	**0.602426**
R Square	**0.362917**
Adjusted R Square	**0.124011**
Standard Error	**0.033056**
Observations	**12**

ANOVA

	Df	SS	MS	F	Significance F
Regression	3	0.00498	0.00166	1.519078	0.282394
Residual	8	0.008742	0.001093		
Total	11	0.013722			

	Coefficients	Standard Error	t Stat	P-Value
Intercept	0.002899	0.010495	0.276219	0.789382
X Variable 1	0.567769	0.310198	1.830345	0.104582
X Variable 2	-0.02347	0.084435	-0.27794	0.788104
X Variable 3	-0.09283	0.051927	-1.78761	0.111646

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2016

Regression Statistics

Multiple R	**0.753567**
R Square	**0.567863**
Adjusted R Square	**0.405812**
Standard Error	**0.037627**
Observations	**12**

ANOVA

	df	SS	MS	F	Significance F
Regression	3	0.014884	0.004961	3.504217	0.069322
Residual	8	0.011327	0.001416		
Total	11	0.026211			

	Coefficients	Standard Error	t Stat	
Intercept	0.00856	0.012224	0.700292	0.503598
X Variable 1	0.023343	0.215731	0.108207	0.916497
X Variable 2	-0.01307	0.123431	-0.10586	0.918302
X Variable 3	-0.24922	0.081639	-3.05267	0.015757

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2017

Regression Statistics

Multiple R	**0.399134**
R Square	**0.159308**
Adjusted R Square	**-0.15595**
Standard Error	**0.029753**
Observations	**12**

ANOVA

	df	SS	MS	F	Significance F
Regression	**3**	**0.001342**	**0.000447**	**0.505324**	**0.689324**
Residual	**8**	**0.007082**	**0.000885**		
Total	**11**	**0.008424**			

	Coefficients	Standard Error	t Stat	P-Vale
Intercept	**0.015269**	**0.010049**	**1.519485**	**0.167126**
X Variable 1	**0.355559**	**0.365317**	**0.973288**	**0.358916**
X Variable 2	**0.114163**	**0.173193**	**0.65917**	**0.5283**
X Variable 3	**-0.05411**	**0.105238**	**-0.51418**	**0.621025**

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2018

Regression Statistics

Multiple R	**0.41001**
R Square	**0.168108**
Adjusted R Square	**-0.14385**
Standard Error	**0.048692**
Observations	**12**

ANOVA

	df	SS	MS	F	Significance F
Regression	**3**	**0.003833**	**0.001278**	**0.538878**	**0.668826**
Residual	**8**	**0.018967**	**0.002371**		
Total	**11**	**0.0228**			

	Coefficients	Standard Error	t Stat	P-Value
Intercept	**0.006588**	**0.01486**	**0.443323**	**0.669276**
X Variable 1	**-0.03654**	**0.683961**	**-0.05343**	**0.958703**
X Variable 2	**-0.02185**	**0.182288**	**-0.11987**	**0.90754**
X Variable 3	**-0.10459**	**0.092453**	**-1.13123**	**0.290727**

V. FINDINGS

In the year 2014, we can observe that R Sqaure value is which has poor correlation between Nifty and India VIX. From F-Test Significance, we can find that overall fit of the model among Nifty, Gold prices, Crude oil prices and India VIX found that independent variable Nifty has much influence over other variables. Beta of gold has negative sensitivity towards the stock, beta of crude oil has positive sensitivity towards the stock and the beta of India vix has negative sensitivity towards the stock.

In the Year 2015, we can observe that R Square value which has poor correlation between Nifty and Gold Prices, Crude Oil prices and India VIX. F-test significance has lesser than the standard value which means that the independent variable has influenced the dependent variable. Beta of gold is … sensitivity towards the stock, crude oil is ….sensitivity towards the stock and the India Vix is ………Sensitivity towards the stock.

In the year 2016, we can observe that R Square value has very poor correlation between Nifty and other variables. From F- test significant the value is lesser than

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the table value, so independent variable Nifty have much influence on Gold prices, Crude oil prices and India Vix. Beta of gold has positive Sensitivity towards the stock, crude oil prices are negative Sensitivity towards the stock and India vix has negative sensitivity towards the stock.

In the year 2017, we observe that R Square poor correlation between nifty and gold prices, crude oil prices and India Vix, from f- test we can see that the value is greater than the 0.1 so the independent variable has less influence on the other variables. Beta of gold has positive sensitivity towards the stock, crude oil prices have positive sensitivity towards the stock and India VIX has the negative sensitivity towards the stock.

In the year 2018, we can find that R Square has poor correlation between nifty and other variables, in F-test significant we can find that the value is greater than the standard value so we can say that the independent variable nifty does not influence much to the dependent variables. Beta of gold has negative sensitivity towards the stock, beta of crude oil has negative sensitivity towards the stock and the beta of India VIX has negative towards the stock.

VI. SUGGESTIONS

2014: Gold has a negative correlation with rest of the other variables where as crude oil has positive and India Vix has a least correlation with nifty. So we can suggest that crude oil has a positive correlation with nifty index and there is no relationship between India Vix and nifty.

2015: Gold has a positive correlation with other variables where as crude oil and India Vix has a negative correlation with nifty. We can suggest that gold has good relationship with nifty.

2016: Gold has a positive correlation with rest of the variables and other variables like crude oil and India Vix had a negative correlation with nifty. We can suggest that there is no relationship between crude oil and nifty.

2017: Gold and crude oil has a constructive relationship with nifty and India Vix has a negative correlation. We can suggest that gold has a good relationship with nifty.

2018: Gold, crude oil and India Vix has negative correlation with nifty. We can suggest that gold, crude and India Vix has no relationship with nifty.

VII. CONCLUSION

In the commodity market, in most cases, gold and crude oil price groups are moving in the same direction. Therefore, it is recommended to buy and sell gold and crude oil at the same time. Thus, in serious situations, the risk can be minimized. Sometimes gold and crude oil prices will go in the opposite direction. Gold prices can be very tight and crude oil can go down. At that point, it is advisable to invest in the declining products. It is likely that the prices of falling items will soar automatically.

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