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   OBJECTIVES

   HYPOTHESES

   RESEARCH METHODOLOGY

   RESULTS & DISCUSSION

   FINDINGS

   RECOMMENDATIONS/SUGGESTIONS

   CONCLUSIONS

   SCOPE FOR FURTHER RESEARCH

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MACRO ECONOMIC FACTORS INFLUENCING THE COMMODITY MARKET WITH SPECIAL REFERENCE TO GOLD AND SILVER

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ABSTRACT

In this paper, we have made an attempt to predict precious metals market, how it is influenced by the macro economic factors. In order to perform our analysis we extract the necessary information from the secondary source. The data for the study consist of 3 months futures prices and spot prices: Gold - 10th January, 2007 to 31st March, 2009 comprising 581 observations and Silver – 14th July, 2008 to 24th March, 2010 comprising 229 observations. We have identified few macro economic factors and tested its influence on the gold and silver prices. We found that the interest rate is important factors to determine the prices of both gold and silver price.

KEYWORDS
Commodity market, and macroeconomic factor influences

INTRODUCTION

Movements in commodity prices are important for the welfare of both developing and developed countries. Perfect market models presume that all investors are equally endowed with knowledge and ability to analyze the available information. Generally investors interested on acquiring particular information and they are not interest rest of it. Another relevant feature of commodity prices is their tendency to co-movements. Understanding such co-movement is important, because of the welfare implications for both commodity importers and exporters. Considering the information exchange and price discovery roles of the futures market, many theoretical as well as empirical attempts have been made and the regulatory bodies, market makers, academicians and practitioners unanimously have agreed upon the common notion that organized futures markets contain significant information for the prospective cash market price.

REVIEW OF LITERATURE

Earlier research focused on the historical movements of primary commodity prices relative to the price of manufactured goods in the examination of the Prebisch (1950) and Singer (1950) hypothesis, as recently re-examined by Harvey et al. (2010). Attention has also focused on commodity prices on time series properties Cuddington (1992), Deaton(1999), and Cashin, et al.,(2000) changes. Beck (1993), based upon Muths (1961) model of commodity prices with rational expectations, suggests that commodity prices may exhibit conditional heteroskedasticity. Later the researchers made attempt on economic factors determinants of commodity prices. Frankel (2008) and Calvo (2008) have discussed the role of the real interest rate; Wolf (2008) and Svensson (2008) have mentioned the importance of shifts in global supply and demand. Further, Krugman (2008) has argued that the increase in oil prices, providing an incentive to produce biofuels, is responsible for the increase in commodity prices. Akram (2009), for example, uses structural VAR models of quarterly data from 1990 to 2007 to separately look at the impact of real interest rates changes on the real price of crude oil, industrial raw materials, food and metals. Vansteenkiste (2009) has found a dynamic principal component from a large set of monthly commodity prices for the recent period and tests its potential determinants using regressions. She found that co-movement was highest in the 1970s and 1980s, declined in the 1990s and has recovered somewhat during the early years of this century.

DATA AND METHODOLOGY

This study attempt is a descriptive research one. Data were collected in secondary sources.The data for the study consist of 3 months futures prices and spot prices: Gold - 10th January, 2007 to 31st March, 2009 comprising 581 observations and Silver – 14th July, 2008 to 24th March, 2010 comprising 229 observations. All the times series are obtained from NCDEX (National Commodities and Derivatives Exchange) database. Most of the investors prefer to invest in Bullion market not only because it is a safe investment but also it hedges against inflation and political uncertainties and it is easy to liquidate. The macro economic factors data were obtained from Reserve Bank of India (RBI) official bulletin and official website. Series of data, the regression which was used as a tool to estimate in measuring the influence of various sets of macroeconomic factors that affect the price of gold and silver market. There is one standard model followed by other models, checking for robustness of the results. The table captures the regression estimates for inflation rate, United States (US) dollar exchange, and crude oil price, and Interest rate.

Before constructing the model, important to check if there is any multi-collinerity and for this the Variance Inflation Factor is found.

The Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. The Variance Inflation Factor (VIF) is 1 Tolerance, it is always greater than or equal to 1. There is no formal VIF value for determining presence of multi- collinearity. Values of VIF that exceed 10 are often regarded as indicating multi collinearity, but in weaker models values above 2.5 may be a cause for concern. In many statistics programs, the results are shown both as an individual R^2 value (distinct from the overall R^2 of the model) and a Variance Inflation Factor (VIF). When those R^2 and VIF values are high for any of the variables in your model, multicollinearity is probably an issue. When VIF is high there is high multicollinearity

RESEARCH QUESTIONS AND CONTRIBUTION

- Whether identify macroeconomic factors influence on the price of precious metals?

Many studies first examine this relationship on the basis of price or return. This Study focuses on the model setting for commodity market. This will implicate to make better understanding commodity market in long term aspect.

RESULTS AND DISCUSSION

Gold Market (Ref. Table no.01 and 02)

Comparing the R-squared values, in Model 1 is found that when all the four factors, namely Inflation Rate, Dollar Exchange, Crude Oil and Interest Rate are included the value is high; this shows the model is fit. Also, In Model 2, when Interest rate was excluded in building the model, the R- squared values is getting down. Interest rate is the predominantly affect in commodity price determinants gold market. When the inflation rate and US Dollar exchange rate were excluded in the model (Model 4 and Model 5 respectively), does not have much impact. The variables which was selected falls between values 1 to 3 in Variance Inflation Factor (VIF), generally accepted levels in VIF is maximum value of 5. Therefore the model is not having any multicollinearity problem.

Silver Market (Ref. Table. No. 03 and 04)

Comparing to all other models, Model 1 has the high amount of R Squared values (0.84), this shows the model is fit. Also, when Interest rate was excluded in building the model, it is found that the value of R-square (0.48) is low. And hence we conclude that Interest rate is the major factor. Remaining factors does not have much impact towards price determinants in silver market

CONCLUSION

Few macroeconomic factors were identified and tested its influence on the gold and silver prices. Interest rate is important factors to determine the prices of both gold and silver. Further research on other commodities will bring the best model, and it will give the better direction both investors and policy makers.

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TABLES

TABLE NO. 1: MACRO ECONOMIC FACTORS INFLUENCING THE COMMODITY MARKET (GOLD)

VARIABLE	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
Constant	4638.99 (3540.31)	-9719.57 (4464.86)	13722.9 (4237.42)	14097.6 (1589.98)	2965.42 (3793.98)
Inflation Rate	262.907 (99.6000)	555.677 (140.677)	480.123 (124.067)	417.825 (93.6981)	-
Dollar Exchange	204.836 (70.1316)	341.458 (105.101)	4.58482 (80.8895)	-	303.421 (64.6583)
Crude Oil	38.8951 (7.27678)	29.1039 (11.1519)	-	27.5413 (6.83709)	46.7322 (7.23652)
Interest Rate	-1282.66 (186.781)	-	-1087.04 (249.903)	-1437.42 (199.071)	-1493.70 (183.872)
R-squared	0.909051	0.770696	0.825230	0.884023	0.888608
Adjusted R-squared	0.897315	0.749199	0.808846	0.873150	0.878166
Prob (F-statistic)	1.10e-15	2.39e-10	3.20e-12	4.67e-15	2.46e-15

TABLE NO.2::VARIANCE INFLATION FACTOR (GOLD)

VARIABLE	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
Inflation Rate	2.975	2.430	2.480	2.131	-
Dollar Exchange	3.774	3.470	2.697	-	2.704
Crude Oil	1.794	1.725	-	1.282	1.495
Interest Rate	2.755	-	2.649	2.533	2.250

TABLE NO. 3: MACRO ECONOMIC FACTORS INFLUENCING THE COMMODITY MARKET (SILVER)

VARIABLE	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
Constant	30972.5 (35971.8)	38003.7 (64803.2)	49259.6 (33609.0)	21536.5 (3555.67)	61654.1 (27498.1)
Inflation Rate	517.761 (405.921)	442.842 (731.324)	611.326 (408.519)	585.529 (300.648)	-
Dollar Exchange	-174.606 (662.069)	-540.247 (1186.51)	-490.749 (625.883)	-	-709.197 (526.925)
Crude Oil	59.6991 (48.1144)	93.4729 (85.9085)	-	64.5824 (42.4890)	71.1001 (48.6055)
Interest Rate	-2431.90 (479.222)	-	-2514.15 (486.115)	-2445.65 (455.783)	-2409.67 (492.364)
R-squared	0.844700	0.444765	0.820791	0.843620	0.819433
Adjusted R-squared	0.782580	0.293338	0.771916	0.800971	0.770188
Prob (F-statistic)	0.000472	0.008061	0.000203	0.000097	0.000212

TABLE NO. 4: VARIANCE INFLATION FACTOR (SILVER)

VARIABLE	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
Inflation Rate	2.726	2.723	2.632	1.634	-
Dollar Exchange	3.190	3.152	2.717	-	1.911
Crude Oil	1.991	1.953	-	1.696	1.922
Interest Rate	1.099	-	1.078	1.086	1.097

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