Gold price and effect on stock exchange

Literature, Russian Literature

Recently one such variable, that is, gold price volatility has attracted the attention of many researchers, academicians and analysts. Thus, this paper is an attempt to analyse the causality relation that may run between domestic gold prices and stock market returns in India. The study by taking into consideration the domestic gold prices and stock market returns based on the BSE 100 index, investigates the Granger causality in the Vector Error Correction Model for the period January 1991 to December 2009. The analysis provides evidence of feedback causality between the variables. It infers that the Gold prices Granger-causes stock market returns and stock market returns also Granger-causes the gold prices in India during the sample period. Thus, both the variables contain some significant information for the prediction of one in terms of another. Keywords: Gold Price, Stock Market Return, BSE 100 Index, India, Volatility, Causality JEL Classification Codes: C22, C32, E44 1. Introduction The study of the capital market of a country in terms of a wide range of macro-economic and financial variables have been the subject matter of many types of research since last few decades.

Empirical studies reveal that once financial deregulation takes place, the stock markets of a country become more sensitive to both domestic and external factors. And, one such factor is the price of gold. From 1900 to 1971, with the global systems of gold standard and USD standard, gold price was regulated. But, since 1972, gold has been disconnected from the USD. Particularly in 1976 when the International Monetary Fund (IMF) passed Jamaica Agreement, did gold begin to evolve from currency to ordinary merchandise and since then the gold price has been determined by market

supply and demand. And, in India, the government started the process ofglobalizationand liberalization since 1991 which allowed prices to be determined by the market forces. Gold Price Volatility and Stock Market Returns in India 48 Since then, the government has been taking a number of steps to reform the gold sector and ensure that India benefits from the demand-influence that it has on the gold business internationally. The liberalisation of the gold sector has been made in stages; first allowing a number of banks to import gold – breaking the monopoly of the State Trading Corporations; then consider reducing the import duty – destroying a lucrative parallel smuggling channel and now, allowing traders, manufacturers as well as investors to trade in gold futures in India itself. Figure 1: Annual Price Movement of Gold in Indian Market Prior to the introduction of liberalization and globalization policies, gold prices in India showed an increasing trend (Fig. 1).

In the post-liberalization period, the average annual prices of gold also showed an increasing trend from the year 1991 to 1996. But, it showed a decreasing trend in 1997 and 1998 and again showed an increasing trend in the year 2000. From 2000 to 2009, gold prices are continuously increasing. The domestic gold price in India is continuously increasing due to its heavy demand in the country. There are several reasons gold has high demand in India. The first reason is security; gold offers full security as long as it is retained by central banks. There is no credit risk attached to gold. Secondly, gold is able to maintain its liquidity even at times of crisis situations like high global inflation or political turbulence. The third reason for holding gold is to build a diversified portfolio. Gold also has taken the role of an asset of last

resort. World Economic History shows that countries have repeatedly used gold as security against loans when they have had difficulties with their Balance of Payments and have felt the need to borrow on the international capital markets. The domestic gold prices in

India is associated strongly with the import parity prices which are determined by the global spot prices, Dollar-Rupee rate and local taxes and levies. Any change in the global prices gets transmitted very quickly and gets reflected in domestic prices, particularly for countries like India who are price takers in gold with a major part of the demand met by imports. The twin factors, namely, (i) increase in global spot gold prices (as the commodity becomes dearer to those looking for a safe haven during times of economic crisis, and (ii) appreciation of USD against INR, led to a sharp rise in gold prices in India in the recent past. Moreover, the total annual supply of gold across the globe has also decreased from 4037 tons in 2002 to 3380 tons in 2008. India is a large buyer of gold at about 700-800 tons per annum. It also recycles about 200 tons of gold out of old jewellery. A large chunk of Indian imports is used for jewellery exports. Since the gold prices in India are influenced by international factors, its volatility is very important. Volatility involves short term - monthly, weekly or even hourly fluctuations in gold prices as measured by their absolute percentage changes during a particular period. If we look at the rolling 49

PK Mishra, J R Das and S K Mishra standard deviation of monthly gold prices since 2000, the prices are more volatile after July 2007 which is almost the same time when the slow down started in the USA as a result of the sub-

prime crisis (Fig. 2). Figure 2: Standard Deviation of Gold Price in India A look at the historic data brings out that when the stock market crashes or when the dollar weakens, gold continues to be a safe haven investment because gold prices rise in such circumstances (Gaur and Bansal, 2010). It is no surprise that many investors, big and small have chosen to hedge their investments through gold at the time of crises.

GOLD PRICE

Gold prices have been on an uptick since 2000, while the stock market declined from 2000 to 2003 and then again in 2008 (Fig. 3). In 2008 when the market was suffering from bearish phase worldwide, gold prices spiked as panic spread across global markets. So far since March 2009 in India signs of recovery in the stock markets have emerged. At the same time gold continues to forge ahead, Gold Price Volatility and Stock Market Returns in India 50 albeit at a slower pace. In 2008, the two assets prices – equity and gold, were moving in opposite directions, displaying the ability of the yellow metal to protect one's portfolios at the time of a dip. In fact, during each of the two prolonged bear phases (lasting at least a year) over the past decade, gold has provided an effective hedge. However, in India stocks do not seem to be perceived as an alternative to gold. The reason for holding gold is, to a large extent, guided by individual sentiments. The gold investing habits of Indians are strongly ingrained in the Indian Social Psyche.

In India gold has been held by individuals for years and have passed hands of many generations. In addition, the equitycustomein India is not as developed as in some other parts of the world. Gold has not yet lost its prime importance as a hedge against the loss of wealth in times of crises. It is with

this backdrop, this paper proceeds to investigate the direction of causality between domestic gold prices and stock market returns in India. The rest of the paper is organized as follows: Section II explains the data and methodology, Section III makes the analysis, and Section IV concludes. Data and Methodology This paper aims at investigating the dynamic relationship between gold prices and stock market returns in India for the period 1991 to 2009. This study is mainly based on secondary data that have been collected from the database on Indian economy maintained by Reserve Bank of India. The study analyses the monthly data on domestic gold prices and stock market returns in India for the aforesaid period. Wherever data were missing, the averages of the data of the previous month and next month have been taken.

The monthly stock market returns (Rt) based on the BSE 100 Index have been calculated by the? I? Rt = log ? where I and I are the logarithmic difference change in the BSE 100 Index, i. e. , t t ? 1 closing value of monthly BSE 100 Index at a time ' t' and-1' respectively. At the outset, Karl Pearson's correlation coefficient between the aforesaid time series has been calculated and its significance has been tested by the t-test. The correlation coefficient has been calculated by using the formula:

N? XY - (? X)(? Y) r= N? X 2 - (? X)2 N? Y 2 - (? Y)2

And, the significance of this correlation coefficient has been tested by the t-test using the tr n? 2 under the null hypothesis

H 0:? = 0 against the alternative hypothesis of statistic t n ? 2 = 1? r2 H1: ?? 0 with n-2 degrees of freedom.

If the calculated value of t exceeds the critical value of t, then the null hypothesis will be rejected; otherwise accepted. Then the Granger causality between the variables has been investigated in the Vector Error Correction framework. And, as the essential steps of the Granger Causality Test, the stationarity and cointegration between variables have been found out.

In the end, the Granger Causality test has been used to determine whether one-time series is useful in forecasting another thereby finding out the direction of the relationship between the variables of the study. In the Granger Causality Test, the vector of endogenous variables is divided into two sub-vectors, Y1t and, Y2t with dimensions K1 and, K 2 respectively, so that K = K1 + K 2. The sub-vector Y1t is said to be Granger-causal for Y2t if it contains useful information for predicting the latter set of variables. For testing, this property, the levels VAR the following form without exogenous variables of the model is considered. A Wald test statistic, divided by the number of restrictions pK1K 2, is used in conjunction with an F(pK1K 2, KT ? n) distribution for testing the restrictions. Here n * is the total number of parameters in the system (Lutkepohl, 1991), including the parameters of the deterministic term. Of course, the role of Y1t and Y2t can be reversed to test Granger-causality from Y2t to Y1t. Empirical Analysis It is clear from Fig. 3 that the direction of movements of gold prices and BSE 100 Indices in India is the same. The value of Pearson's correlation coefficient (r) between these two time series over the period 1991 to 2009 is 0. 873.

To test whether this value of ' r' shows a significant relationship between two-time series, student's t-test has been used. The null hypothesis of the test is r = 0 against the alternative of r? 0. Since the t-statistic at 226 degrees of freedom is 26. 9 and the critical value of t at 5% level of significance is less than it, the null hypothesis is rejected. So, it can be said that the correlation between gold prices and BSE 100 indices is statistically significant. Gold Price Volatility and Stock Market Returns in India 52 Thus, it seems that gold prices and stock market return based on the BSE 100 Index are significantly correlated. And, computation reveals that the value of ' r' is 0. 0143 between them which is not statistically significant for the t-statistic of 0. 217 at 226 degrees of freedom. So it can be said that although gold prices and BSE 100 Indices are significantly correlated, the correlation between gold prices and stock market returns based on the BSE 100 Index is not significant. But many interesting results have been obtained from the Granger Causality test. The Granger causality test presumes that the given time series is stationary. The Augmented Dickey-Fuller unit root test has been used for this purpose. Thus, both the variables contain some significant information such that they cause each other. But it is very interesting to note that these two variables are insignificantly correlated, i. e. , a very low degree of correlation holds between them. During the period of the global financial crisis, stock markets crashed but the gold price continues to increase in the country. This could be explained as follows. The extent of holding of gold in India is widespread but stocks are not held by all, though retail participation in the Stock Markets might have gone up in the last few years.

Indians consider gold the safe-haven investment as a financial asset and as jewellery. World Gold Council Report says that India stands today as the world's largest single market for gold consumption. Traditionally, gold has been more attractive than bank deposits, stocks and bonds. In developing countries, people have often trusted gold as a better investment. In many countries including India, gold remains an integral part of social and religious customs, besides being the basic form of savings. But recently many innovative financial products have been launched relating to gold. The overall AUM in Gold ETFs at the end of December 2009 was Rs 1, 352 crore, up from Rs 717 crore on April 09. It shows that Indian investors are gradually moving into gold ETFs for investment instead of physical form. Recently derivatives such as gold forwards, futures and options have become very popular and have been traded on various exchanges around the world and over-the-counter directly in the private market. In the USA, gold futures are primarily traded on the New York Commodities Exchange. In India, the National Commodity and Derivatives Exchange introduced 100-gram gold futures in November 2006. The volume of Gold futures traded in this exchange from January to August 2007 was 4, 479, 114 which have been increased to 9, 038, 795 in January to August 2008. It is thus inferred that Indians have started considering gold more than jewellery and as good as investments on bonds and equities. Perhaps, this explains the co-movement of gold prices and stock prices in the aftermath of the global financial crisis. Gold Price Volatility and Stock Market Returns in India 54 4. Conclusion This paper examines the gold price volatility and the causality between domestic gold prices and stock market returns in India for the period 1991 to 2009.

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