

## Investment in Gold and Stock Market: An Analytical Comparison

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### **Abstract**

Gold is respected throughout the world for its value and rich history; people have continued to hold gold considering it as a good avenue for investment. Stock market investment is considered as one of the best long-term investment. This paper provides empirical evidence on the relationship between the prices of gold and stock market index of India and also makes an attempt to compare investment in Gold and Stock market. The data consists of gold prices and SENSEX index from 1979 to 2013. Over the period examined, high degree of positive correlation is found between both the variables and Granger causality test find evidence of unidirectional causality from SENSEX to Gold Prices. Investment comparison results indicate that investment in gold is inferior to buy and hold strategy in the stock market over long run.

### **Keywords:**

Gold, SENSEX, Investment, Granger Causality

**JEL:** G1, G11

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### **Introduction**

Gold is the most popular as an investment. Investors generally buy gold as a way of diversifying risk. Many investors call gold a hedge against inflation. An up-climb of gold in 2006-2012 was tremendous, average return during this time period in gold was better than any other investment option. However in the last few years, gold has failed to outperform its own benchmarks. On gold investment long term average return is less than 10% per annum. And when we talk technically or paradoxically, history always repeats itself. Therefore, we may once again observe the similar less than 10% appreciation pattern in gold prices in the near time to come. According to many researchers' shares (or equities) is one of the best long-term investments in the financial market place. They usually outperform gold, real estate, bonds and other types of asset. There is very high amount of volatility in the share market and it is associated with high risk but over the long term, they can generate good returns. It is considered a way to create wealth and earn high returns. So this paper makes an attempt to find out the relationship between gold price and

Stock market index-SENSEX and evaluate short term and long term returns from both the investment avenues.

**Research Methodology**

**Objectives**

1. To find out the relationship between Gold Price and Stock Market Index-SENSEX.
2. To examine that if investor invested in 1 Re in gold or in Stock market in 1979 than what may be its present net worth.
3. To compare investment returns from Gold and Stock market.

**Hypothesis**

- H<sub>01</sub>: Gold price does not granger causes SENSEX.
- H<sub>02</sub>: SENSEX does not granger cause Gold prices.
- H<sub>03</sub>: There is no significant difference between return from gold and equities in the long term.
- H<sub>04</sub>: Gold is more valuable than equity in long term.

**Data**

The sample consists of yearly data of Indian rupee - denominated gold prices/ 10 grams and BSE index SENSEX from the time ranging from 1979–2013 .Gold data was been collected from financial data section of Yahoofinance and SENSEX data is taken from historical data section of BSE website.

**Statistical Tools Applied**

In this study Granger Causality test and Correlation Method has been used to find out relationship between Gold and Stock market index. According to the results obtained if significance level is greater than 0.05 than null hypothesis is not rejected else alternative hypothesis is accepted. E-Views 7 software will be used for the analysis purpose.

**Granger Causality**

Granger causality is tested in the context of linear regression models. For illustration, consider a bivariate linear autoregressive model of two variables X1 and X2.

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

$$X_2(t) = \sum_{j=1}^p A_{21,j} X_1(t-j) + \sum_{j=1}^p A_{22,j} X_2(t-j) + E_2(t)$$

**Correlation Method**

Correlation is computed into what is known as the

correlation coefficient, which ranges between -1 and +1. Perfect positive correlation (a correlation coefficient of +1) implies that as one security moves, either up or down, the other security will move in lockstep, in the same direction. Alternatively, perfect negative correlation means that if one security moves in either direction the security that is perfectly negatively correlated will move in the opposite direction. If the correlation is 0, the movements of the securities are said to have no correlation; they are completely random.

The formula for the correlation is:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Growth Rate Analysis Using Percent (Straight-Line) Growth Rates

The percent change from one period to another is calculated from the formula:

$$PR = \frac{(V_{Present} - V_{Past})}{V_{Past}} \times 100$$

Where:

- PR = Percent Rate
- V<sub>Present</sub> = Present or Future Value
- V<sub>Past</sub> = Past or Present Value

**Results and Analysis**

Pairwise Granger Causality Tests Date: 11/03/14 Time: 00:44 Sample: 135 Lags: 2

**Table 1: Granger Causality Test**

| Null Hypothesis:                   | Obs | F-Statistic | Probability |
|------------------------------------|-----|-------------|-------------|
| GOLD does not Granger Cause SENSEX | 33  | 0.05479     | 0.94678     |
| SENSEX does not Granger Cause GOLD |     | 7.41767     | 0.00260     |

Table 1 represents the result of Granger causality test between SENSEX and Gold Price. In this Null Hypothesis 01 is not rejected stating that there Gold Price does not affect SENSEX. While Null Hypothesis 02 SENSEX does not granger cause Gold is rejected. So it appears that Granger Causality runs one-way from SENSEX to Gold.

**Table 2: Correlation Result**

|        | SENSEX   | GOLD     |
|--------|----------|----------|
| SENSEX | 1.000000 | 0.920938 |
| GOLD   | 0.920938 | 1.000000 |

Table 2 depicts correlation between SENSEX and Gold. degree of positive relationship between both. Correlation between Gold and SENSEX is .92 stating a high

**Table 3: Growth Rate Analysis**

| YEAR | GOLD PRICE 937 | GROWTH RATE GOLD | FIVE YEARLY RETURN | GOLD ANNUAL RETURN | SENSEX   | GROWTH RATE SENSEX | SENSEX ANNUAL RETURN | FIVE YEARLY RETURN |
|------|----------------|------------------|--------------------|--------------------|----------|--------------------|----------------------|--------------------|
| 1979 |                | 1                |                    |                    | 100.00   | 1.00               |                      |                    |
| 1980 | 1330           | 42               |                    | 42                 | 129.00   | 29.00              | 29                   |                    |
| 1981 | 1800           | 92               |                    | 35                 | 173.00   | 73.00              | 34                   |                    |
| 1982 | 1645           | 76               |                    | -9                 | 218.00   | 118.00             | 26                   |                    |
| 1983 | 1800           | 92               | 92                 | 9                  | 212.00   | 112.00             | -3                   | 112                |
| 1984 | 1970           | 110              |                    | 9                  | 245.00   | 145.00             | 16                   |                    |
| 1985 | 2130           | 127              |                    | 8                  | 354.00   | 254.00             | 44                   |                    |
| 1986 | 2140           | 128              |                    | 0                  | 574.00   | 474.00             | 62                   |                    |
| 1987 | 2570           | 174              |                    | 20                 | 510.00   | 410.00             | -11                  |                    |
| 1988 | 3130           | 234              | 59                 | 22                 | 398.00   | 298.00             | -22                  | 62                 |
| 1989 | 3140           | 235              |                    | 0                  | 714.00   | 614.00             | 79                   |                    |
| 1990 | 3200           | 242              |                    | 2                  | 781.00   | 681.00             | 9                    |                    |
| 1991 | 3466           | 270              |                    | 8                  | 1168.00  | 1068.00            | 50                   |                    |
| 1992 | 4334           | 363              |                    | 25                 | 4285.00  | 4185.00            | 267                  |                    |
| 1993 | 4140           | 342              | 32                 | -4                 | 2281.00  | 2181.00            | -47                  | 219                |
| 1994 | 4598           | 391              |                    | 11                 | 3779.00  | 3679.00            | 66                   |                    |
| 1995 | 4680           | 399              |                    | 2                  | 3261.00  | 3161.00            | -14                  |                    |
| 1996 | 5160           | 451              |                    | 10                 | 3367.00  | 3267.00            | 3                    |                    |
| 1997 | 4725           | 404              |                    | -8                 | 3361.00  | 3261.00            | 0                    |                    |
| 1998 | 4045           | 332              | -12                | -14                | 3893.00  | 3793.00            | 16                   | 3                  |
| 1999 | 4234           | 352              |                    | 5                  | 3740.00  | 3640.00            | -4                   |                    |
| 2000 | 4400           | 370              |                    | 4                  | 5001.00  | 4901.00            | 34                   |                    |
| 2001 | 4300           | 359              |                    | -2                 | 3604.00  | 3504.00            | -28                  |                    |
| 2002 | 4990           | 433              |                    | 16                 | 3469.00  | 3369.00            | -4                   |                    |
| 2003 | 5600           | 498              | 32                 | 12                 | 3049.00  | 2949.00            | -12                  | -18                |
| 2004 | 5850           | 524              |                    | 4                  | 5591.00  | 5491.00            | 83                   |                    |
| 2005 | 7000           | 647              |                    | 20                 | 6493.00  | 6393.00            | 16                   |                    |
| 2006 | 8400           | 796              |                    | 20                 | 11280.00 | 11180.00           | 74                   |                    |
| 2007 | 10800          | 1053             |                    | 29                 | 13073.00 | 12973.00           | 16                   |                    |
| 2008 | 12500          | 1234             | 114                | 16                 | 15644.00 | 15544.00           | 20                   | 179                |
| 2009 | 14500          | 1447             |                    | 16                 | 9709.00  | 9609.00            | -38                  |                    |
| 2010 | 18500          | 1874             |                    | 28                 | 17528.00 | 17428.00           | 81                   |                    |
| 2011 | 26400          | 2718             |                    | 43                 | 19445.00 | 19345.00           | 11                   |                    |
| 2012 | 31799          | 3294             |                    | 20                 | 17404.00 | 17304.00           | -10                  |                    |
| 2013 | 29000          | 2995             | 100                | -9                 | 18100.00 | 18000.00           | 4                    | 86                 |

### 5 Yearly Return Analysis

1979-1983-

Return on Gold: 92% and Return on Equity: 112%

During this phase return on both the investment avenues i.e. gold and equities was fairly high but investor who would have invested in equities gained more return.

1984-1988-

Return on Gold: 59% and Return on Equity: 62%

In this time period there was slight difference between the return yielded by gold and equities. Stock market holds an edge over gold.

1989-1993-

Return on Gold: 32% and Return on Equity: 219%

This period represented a boom phase for the stock market

because of implementation of LPG policy in 1991. Investment in stock market during this phase yielded a very high rate of return to the investors.

1994-1998-

Return on Gold: -12% and Return on Equity: 3%

During this period gold and stock market showed a downward trend. Return on gold was negative and return on equities was low though positive.

1999-2003-

Return on Gold: 32% and Return on Equity: -12%

In this phase gold investment proven to be profitable and equities delivered negative return.

2004-2008-

Return on Gold: 114% and Return on Equity: 179%

Again 2004-2008 was a boom period. Gold and stock market was on peak and yielded a very high rate of return.

2009-2013-

Return on Gold: 100% and Return on Equity: 86%

In 2008 because of recessionary conditions there was a slowdown in the market but soon Indian market recovered and that is the reason return on gold and stock able to be maintained at 100% and 86% return respectively.

### **Rupee Analysis: A Long-term Investment**

It can be analyzed from the table 1 that if an investor would have invested Re 1 in 1979 in Gold than its value would have increased to Rs 2995 stating 2995% return by 2013 and if same Re 1 would have been invested in equities than its value would have been appreciated to 18000 i.e. return of 18000%. Therefore the results indicate that gold is inferior investment option as in comparison to equities as far as long-term investment is concerned.

### **Conclusion**

Gold contains an enormous shine to invest in and considered a safe haven for investment and stock market appears to be risky and volatile in nature. Empirical relationship is investigated of Gold and Stock Market Index-SENSEX. A granger causality test result indicates a unidirectional relationship from SENSEX to Gold prices indicating SENSEX effects Gold prices. Correlation results indicate a high degree of positive correlation between both SENSEX and Gold Prices.

According to the short run and long run return analysis it has been observed that returns yielded by stock market were comparatively higher than gold investment returns. Stock market returns for the period 1979-1983, 1984-1988, 1989-

1993, 1994-1998 and 2004-2008 were better than gold returns. However for the period 1994-1998 and 2008-2013 gold returns were bit higher than stock market returns. Long term 1 rupee analysis also concluded that returns from equities would have resulted in 6 times more return than gold investment returns.

Our findings strongly suggest that one can use the information of SENSEX to predict Gold prices in the long run. The findings of this study have important implication for Indian Capital market efficiency and useful for investors to take investment decision and managing their portfolio.

important implication for international investor to diversify their portfolio and manage risk. Also, the long-run information role of open interest is a good indicator for the usefulness of a technical analysis in future markets.

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