

Gold as an Investment Option in India : Myth and Reality

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Abstract

The trend of gold demand in India has been growing continuously. Global physical demand of gold increased by 34% for the time period from 2004-2013 ; whereas, physical demand of gold in India increased by more than 40% for the same period. Though India did not count for even 1% of gold production, more than 21% of the global gold consumption was attributed to India in 2013, which was mainly supplied through imports. During the same period, in addition to jewellery, demand for bars and coins also increased substantially, indicating probably that gold is being chosen as a secure investment alternative by Indians. But is gold a good investment option? Is it more reliable than other financial investments? India's fascination for the yellow metal - is a reality or is it a myth? Gold as an investment option for an Indian investor was analyzed in this paper. Four popular Indian beliefs about gold were examined - (a) gold as an inflation hedge, (b) gold investment as an attractive alternative to fixed income investment, (c) gold investment as a less riskier investment than stock investment, and (d) rupee-dollar exchange rates and its bearing on the returns on gold investment. With a simple statistical analysis of data spanning from a period from 1971-72 to 2012-13, we found evidence for rejection/acceptance of the four beliefs.

Key words: financial markets, foreign exchange, gold, investment decisions, inflation, stocks, bonds

JEL Classification : G100, G110, G15, E310, E44

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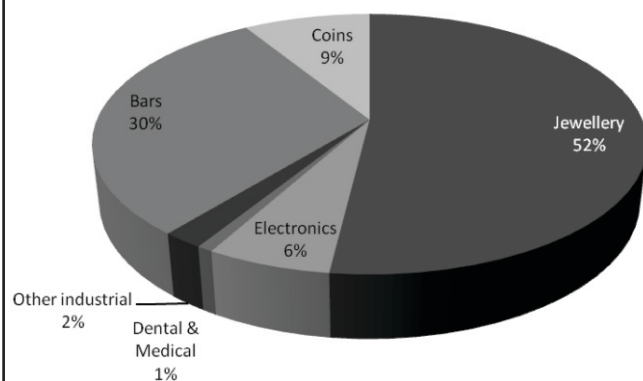
The significance of gold for Indians has its roots in the ancient Indian culture. Hindu mythology believes that one of the holy Gods, Lord Brahma, also known as the creator of the universe, emerged from gold. Indian Vedic literature also has fascinating references to gold. Gold was the currency of various kingdoms and was, therefore, used as a medium of exchange in ancient India. Kings used to maintain large reserves of gold to hedge their risks. The common man in those times used to prefer his savings in the form of gold.

India being a country with different cultures and traditions, gold purchase found prominence in the belief system of the Indian society. The beliefs surrounding the significance of gold got rooted in the society and took the form of rituals and customs. These rituals and customs surrounding gold became an integral part of festivals such as '*Dhanteras*' and '*Akshay Tritiya*'. Gold is known to be the symbol of purity, prosperity, and good fortune. Indians, till today, celebrate these festivals with rigor and flock to jewellers on these days, thus creating exorbitant demand for gold. They buy gold for any and every special occasion be it weddings, birthdays, and so forth, or as an offering to God.

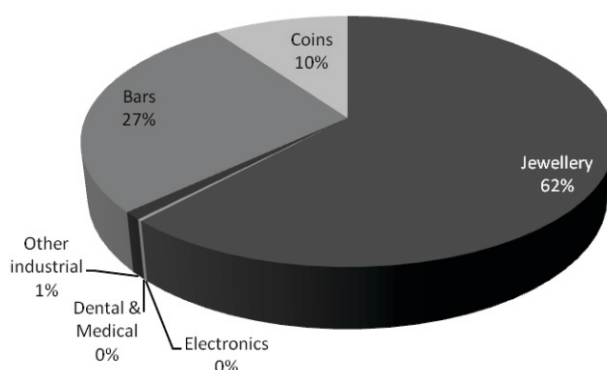
Gold jewellery forms an integral part of investments for people in rural India due to limited access to banking. A big majority of Indian families, more from rural areas, borrow against gold as collateral, mostly from the unorganized financial sector. In India, therefore, gold is an integral part of society and family life and investments

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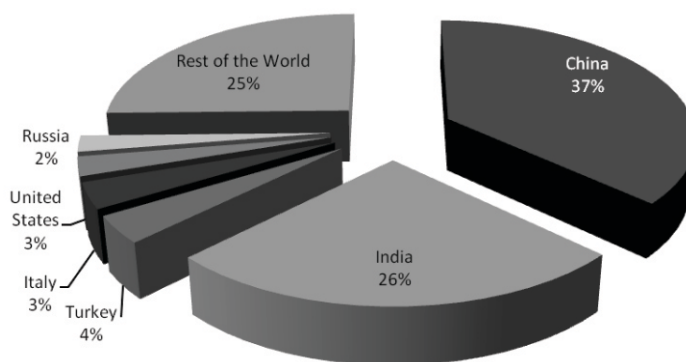
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Figure 1 (a). World Gold Demand 2013

Source: Thomson Reuters GFMS Gold Survey 2014

Figure 1(b). India Gold Demand 2013

Source: Thomson Reuters GFMS Gold Survey 2014

Figure 2. Country-wise Jewellery Demand as % of World Jewellery Demand 2013

Source: Thomson Reuters GFMS Gold Survey 2014

in gold and jewellery are indistinguishable. The role that gold plays in India is vastly different from the role it plays in the West. In the West, gold is more of a state asset, while in India, it is a private possession.

Gold demand in India has been growing continuously. According to the Thomson Reuters GFMS Gold Survey 2014, global physical demand of gold increased by 34% in the time period from 2004-2013 ; whereas, Indian physical demand of gold increased by more than 40% in the same period. During the same period, in addition to jewellery, demand for bars and coins also increased substantially, indicating probably that gold is being chosen as a secure investment alternative by Indians. In the year 2013, jewellery was responsible for 52% of global gold demand, retail investment accounted for 39%, and industrial use accounted for the rest 9% (Table 1). In India, jewellery contributed to 62% of the total demand, retail investment accounted for 37%, and industrial use accounted for a paltry 1% (Figures 1a and 1b). Though India did not count for even 1% of the gold production, more than 21% of the global gold consumption was attributed to India in 2013, which was mainly supplied through imports.

The jewellery market was driven by the demand from developing countries like China, India, Russia, and so forth. China and India together drove more than 63% of the global jewellery demand. The United States, though represented 25% of the global GDP, was responsible for only 3% of the global jewellery demand (Figure 2).

But is gold a good investment option? Is it more reliable than other financial investments? India's fascination for the yellow metal - is a reality or is it a myth? In this paper, we analyze gold as an investment option for an Indian investor. We examine four popular beliefs about gold in the Indian scenario:

Table 1. Gold Demand and Supply 2004-2013

(a) WORLD GOLD SUPPLY AND DEMAND										
{tonnes)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Supply										
Mine production	2,504	2,561	2,496	2,499	2,430	2,613	2,741	2,839	2,861	3,022
Scrap	881	902	1,132	1,005	1,350	1,726	1,711	1,659	1,634	1,280
Total Supply	3,385	3,463	3,628	3,504	3,780	4,339	4,452	4,498	4,495	4,302
Demand										
Jewellery	2,619	2,721	2,302	2,425	2,306	1,817	2,034	2,029	1,998	2,361
Industrial Fabrication	418	440	471	477	464	414	469	458	415	409
Electronic	266	286	316	322	311	275	326	320	284	279
Dental & Medical	68	62	61	58	56	53	48	43	39	36
Other industrial	85	92	95	98	97	87	95	95	92	93
Retail Investment	361	412	427	442	915	825	1,229	1,569	1,357	1,778
Bars	215	263	238	238	654	536	935	1,242	1,036	1,377
Coins	146	148	189	204	261	289	295	327	321	401
Physical Demand (excluding net official sector and ETF inventory build)	3,398	3,573	3,200	3,344	3,685	3,056	3,732	4,056	3,770	4,548
(b) INDIA GOLD SUPPLY AND DEMAND										
{tonnes)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Supply										
Mine production	3.5	3	2.5	2.9	2.6	2.1	2.8	2.3	1.7	2
Scrap	107	94	80	73	89.5	115.5	81	58.5	113	100.8
Total Domestic Supply	110.5	97	82.5	75.9	92.1	117.6	83.8	60.8	114.7	102.8
Imports	592	748	753	862	760	779	1,123	1,208	1,071	962
Demand										
Jewellery	572	634	551	595	623	503	685	667	618	607
Industrial Fabrication	24.6	28.4	27.1	25	21.4	14.1	15.8	14	11.5	12.1
Electronic	2.00	2.20	2.60	2.50	2.10	1.90	2.60	2.50	2.40	2.40
Dental & Medical										
Other industrial	22.60	26.20	24.50	22.50	19.30	12.20	13.20	11.50	9.10	9.70
Retail Investment	101	136	196	213	223	171	349	368	312	362
Bars	76.2	102.8	139.8	148.6	159.9	117.5	266.3	288	205.9	265.8
Coins	24.3	32.8	55.8	64.7	63.5	53.5	82.6	80	106.3	96.3
Physical Demand (excluding net official sector and ETF inventory build)	697.3	798	773.6	833	868	688.5	1049.7	1049	941.9	981.6

Source: Thomson Reuters GFMS Gold Survey 2014

- (1) Gold is an inflation hedge.
- (2) Gold investment is an attractive alternative to fixed income investment.
- (3) Gold investment is less risky to stock investment.
- (4) Rupee-Dollar exchange rates have a bearing on the returns on gold investments.

There have been different arguments about gold as an investment option and different researchers have provided different evidences for and against these arguments. There have been studies on gold exchange traded funds (ETFs), but these are out of the scope of this study. The next section discusses the review of literature .

Review of Literature

Past studies have provided a lot of interesting findings about gold. Different perspectives about gold have come forward. For example, gold is considered as one of the most lucrative assets because it provides good returns on investment, acts as a hedge against inflation, as a safe haven asset because it performs well during turbulent market conditions, and gives relief against stocks and bonds, which get a major blow during a downturn. Many researchers have considered gold as a desirable asset in portfolio diversification. This review provides a summary of findings of past studies on gold. It is divided into three sections - studies on gold as an inflation hedge, studies comparing gold with other financial assets, and studies linking gold to foreign exchange.

(1) Studies on Gold as an Inflation Hedge : One of the most popular beliefs is that gold is an inflation hedge. Jastram (1977) investigated the gold-inflation relationship for the period from 1560 to 1976 and found that gold did not effectively hedge yearly commodity price increases because gold did not match commodity prices in their cyclical swings. However, over the long run, Jastram argued that gold maintains its purchasing power remarkably well. Several researchers like Beckmann and Czudaj (2012) ; Erb and Harvey (2013) ; Capie, Mills, and Wood (2005) ; Harmston (1998) ; Ghosh, Levin, Macmillan, and Wright (2004); Wang, Lee, and Thi (2013); Worthington and Pahlavani (2007) studied gold as an inflation hedge and provided evidence for different time periods and for different countries.

(2) Studies Comparing Gold with Other Financial Assets : It is believed that the gold has a negative correlation with the traditional assets like stocks and other financial instruments. When the prices of other assets fall, gold prices tend to increase, which brings a considerable diversification benefit for an investor's portfolio and can help in reducing both volatility and risk (Baur & Lucey, 2010). Sherman (1986) ; Jaffe (1989) ; Chua, Stick, and Woodward (1990) ; Ciner (2001) ; Michaud, Michaud, and Pulvermacher (2006) ; Draper, Faff, and Hillier (2006); Baur and McDermott (2010) ; and Ciner, Gurdgiev, and Lucey (2013) studied the relation between gold and different financial assets. They found the correlation either very low or negative. Beckmann, Berger, and Czudaj (2014) used a smooth transition approach and also found gold to be a hedge and a safe haven. However, for the Thai market, Pasutasarayut and Chintrakarn (2012) showed that gold did not display any safe haven or hedging capability.

(3) Studies Linking Gold with Foreign Exchange : Apart from some of the studies mentioned above, there have been studies related to gold with foreign exchange rates. Pukthuanthong and Roll (2011) found that the price of gold could be related with currency depreciation in a country. Empirically, they showed that the dollar price of gold was related to dollar depreciation, and the euro (pound, yen) price of gold was related to euro (pound, yen) depreciation. Gaur and Bansal (2010) provided a comparative study of gold price movements in Indian and global markets. Joshi (2011) studied the impact of currency fluctuations on gold and crude oil prices and found that there was a negative relationship between ₹/\$ exchange rate and gold and crude oil.

After reviewing the literature, it can be understood that gold can have varying characteristics depending on the country of study. This paper tried to examine these arguments for India and understand whether they hold true for an emerging economy like India. The data and methodology for achieving this objective have been explained in the next section.

Table 2. Gold Returns and Inflation for Different Time Periods

	Inflation %	Gold ₹ Returns %	Gold ₹ Returns % adjusted for inflation
5 years Mean (2007-08 to 2012-13)	9.88	24.85	14.98
10 years Mean (2002-03 to 2012-13)	7.34	19.33	12.00
15 years Mean (1997-98 to 2012-13)	6.89	14.34	7.45
20 years Mean (1992-93 to 2012-13)	7.32	11.14	3.82
25 years Mean (1987-88 to 2012-13)	7.74	10.17	2.43
30 years Mean(1982-83 to 2012-13)	7.90	10.60	2.71

Data Source: UNCTAD Stat Database and Reserve Bank of India (2014b)

Data and Methodology

We collected data from different sources for the purpose of our study. For fixed income securities, we collected data from Database on Indian Economy, RBI's Data Warehouse (Reserve Bank of India, 2014a) for two instruments namely commercial bank deposits and central government securities. Commercial bank deposit (above 5 years) rates were collected for a period of 42 years from 1971-72 to 2012-2013 and weighted average yearly central government interest rates were collected for a period from 1980-81 to 2012-2013 (as per the availability on RBI website). CNX Nifty was chosen as the benchmark stock market index for the study. The Nifty year on year returns were calculated for the period starting from the year of inception of the index, that is, 1992 to 2013 using nifty annual average prices. Yearly gold price data was collected for the period from 1970-71 to 2012-13 and then gold returns were calculated using this data. Inflation data for India was collected from UNCTAD database and this was available from 1980 to 2013. Gold prices, annual averages of share price indices, and forex rates were collected from Database of Indian economy and RBI's Data Warehouse (Reserve Bank of India, 2014b, 2014c, 2014d). For analyzing the data, we used descriptive statistics such as mean and standard deviation. For time series analysis, we used moving averages. We also used compounded annual growth rate (CAGR) to understand the growth patterns of returns.

Analysis and Findings

We present the findings of our data analysis in this section. Each argument has been presented as a different subsection.

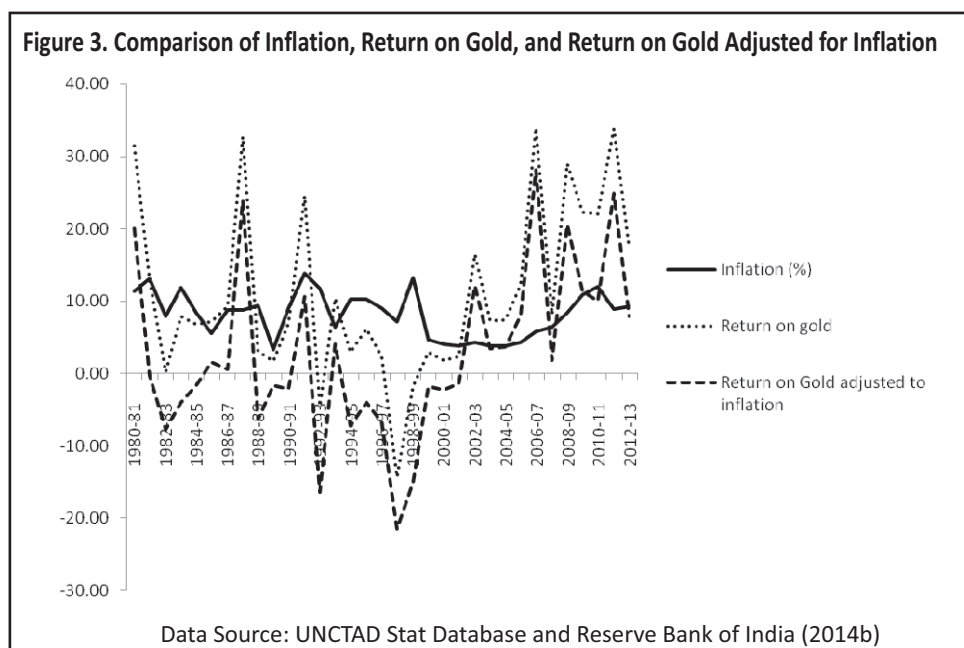
(1) Gold is an Inflation Hedge : If we look at the average gold returns for different number of years, we find that average gold returns for the period are more than the average inflation rate of that period. The Table 2 provides the comparison of gold returns and inflation averaged for different time periods. We find that on an average, gold has outperformed inflation if we consider averages for different time periods (5 years, 10 years, 15 years, 20 years, 25 years, 30 years). The 5-year inflation adjusted average gold return has been close to 15% and that of 30 years has been 2.71%. The Figure 3 presents the gold returns, inflation, and gold returns adjusted to inflation.

We compared inflation with returns on gold on an annual basis over the last 33 years (1980-2013) and found that there are 17 years, where gold returns are higher than the inflation, making it difficult to assume that gold is an inflation hedge. On doing a deeper analysis, we computed moving averages to find out if gold returns have beaten inflation for an investor who buys gold and holds it for 2 years, 3 years, 4 years, 5 years, and 10 years (Table 3). Our analysis shows that over a period of 33 years, if gold was held for 2 years, it gave returns more than the average rate of inflation only 17 times out of 32 instances, which is a meagre 53%. Over the same period, if gold was held for 3

Table 3. Number of Instances Comparing Gold Returns, Moving Averages, and Inflation

Gold vs. Inflation	1 year	2 years	3years	4 years	5 years	10 years
Instances where Gold returns> Inflation	17	17	17	17	16	14
Instances Gold returns < Inflation	16	15	14	13	13	10
Total	33	32	31	30	29	24
Percentage times when gold returns are greater than inflation	52%	53%	55%	57%	55%	58%

Data Source: UNCTAD Stat Database and Reserve Bank of India (2014b)



years, then only 17 times out of 31 instances, it gave higher returns compared to the average rate of inflation. For a 4 year horizon, gold returns beat inflation 17 times out of 30 instances, for a 5 year horizon, it was 16 times out of 29 instances, and for a 10 year horizon, it was 14 out of 24 instances.

(2) Gold Investment is an Attractive Alternative to Fixed Income Investments : We considered two fixed income investments for comparison with gold. One was the commercial bank deposits (above 5 years), and the other was central government securities. The comparison of gold returns with the commercial bank deposits was done for 42 years from 1971-72 to 2012-2013 (Figure 4a) and that with the government securities was done for 33 years from 1980-81 to 2012-2013 (Figure 4b). We find that gold returns were higher than commercial bank deposit rates in 22 instances out of 42 instances. In case of government securities, gold returns were higher in 15 instances out of 33 instances. This shows that returns on gold have been higher than commercial bank deposit rate of 52% of the times and higher than interest rates on government securities 45% of the times only.

The Table 4 provides the comparison of gold returns and the two fixed income securities for different time periods. We find that on an average, gold has outperformed commercial deposits and government securities when we consider averages for different time periods (5 years, 10 years, 15 years, 20 years, 25 years, 30 years). Over longer horizons (20 years, 25 years, 30 years), gold returns are very close to the interest rates of commercial deposit and the government securities. However, looking at the standard deviation, it can be inferred that volatility is very high in case of gold making as it a risky investment option.

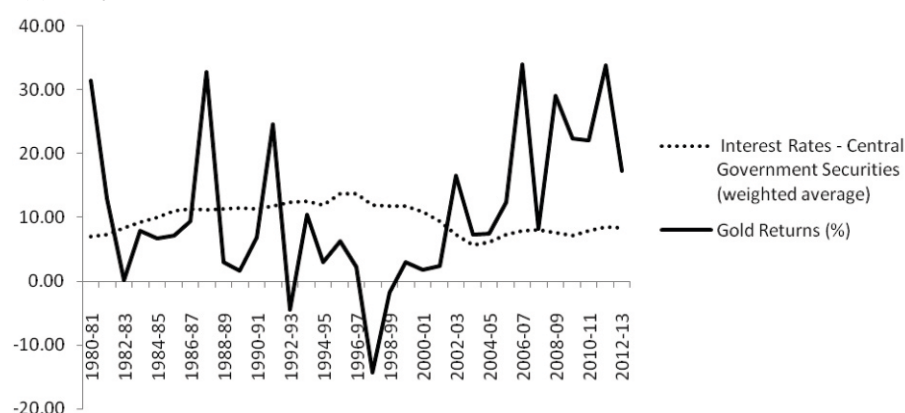
We did an analysis of how an investor would fare if he/she had invested in commercial deposits for 5 years vis a

Table 4. Gold Returns, Commercial Bank Deposit Rates, and Central Government Securities' Interest Rates for Different Time Periods

	Commercial Bank Deposit Rates %	Interest Rates - Central Government Securities %	Gold ₹ Returns %
5 years Mean (2007-08 to 2012-13)	8.65	7.94	24.85
Standard deviation	0.58	0.52	6.5
10 years Mean (2002-03 to 2012-13)	7.95	7.49	19.33
Standard deviation	1.29	0.93	10.51
15 years Mean (1997-98 to 2012-13)	8.42	8.42	14.34
Standard deviation	1.65	1.85	11.77
20 years Mean (1992-93 to 2012-13)	9.24	9.51	11.14
Standard deviation	2.11	2.55	12.37
25 years Mean (1987-88 to 2012-13)	9.59	9.95	10.17
Standard deviation	2.07	2.44	12.05
30 years Mean(1982-83 to 2012-13)	9.79	10.06	10.6
Standard deviation	1.95	2.26	11.76

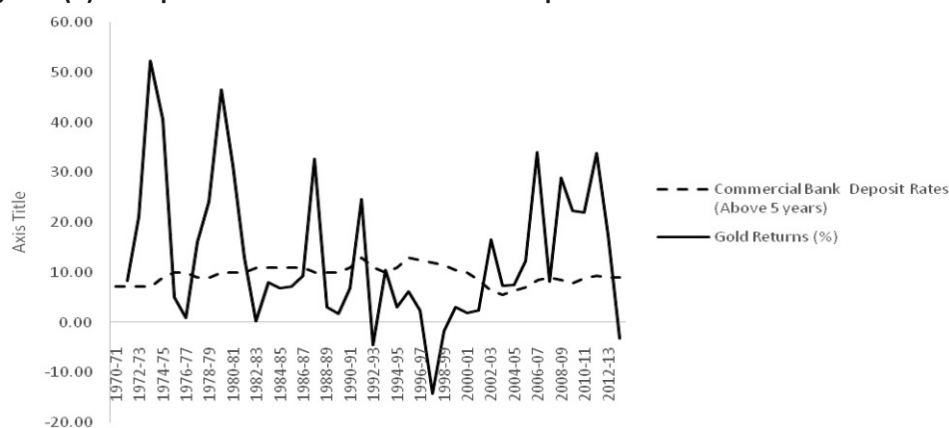
Data Source: Reserve Bank of India (2014a and 2014b)

Figure 4(a). Comparison of Annual Interest Rates on Central Government Securities and Annual Gold Returns



Data Source: Reserve Bank of India (2014a and 2014b)

Figure 4(b). Comparison of Annual Commercial Deposit Rates and Annual Gold Returns

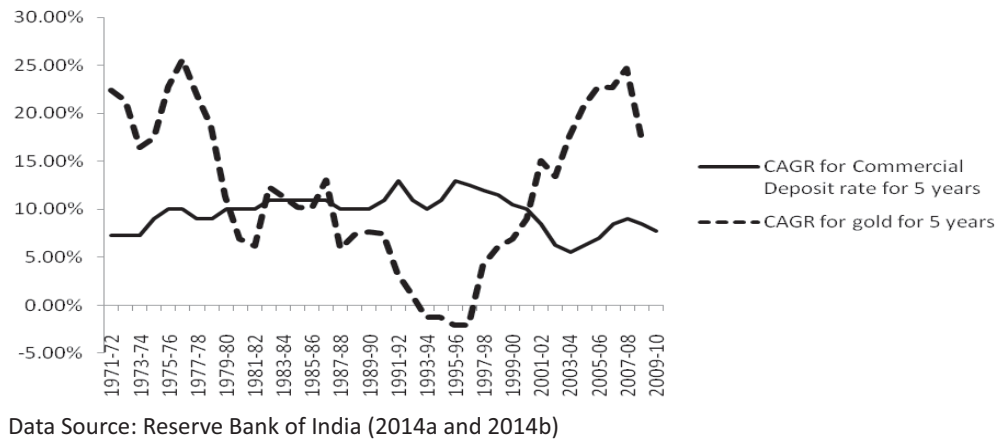


Data Source: Reserve Bank of India (2014a and 2014b)

**Table 5. Compound Annual Growth Rate (CAGR)
for Investments in Commercial Deposit and Gold**

Year of Investment	CAGR for Commercial Deposit rate for 5 years	CAGR for gold for 5 years
1971-72	7.25%	22.40%
1972-73	7.25%	21.34%
1973-74	7.25%	16.46%
1974-75	9.00%	17.42%
1975-76	10.00%	22.80%
1976-77	10.00%	25.61%
1977-78	9.00%	21.98%
1978-79	9.00%	18.62%
1979-80	10.00%	11.35%
1980-81	10.00%	6.90%
1981-82	10.00%	6.21%
1982-83	11.00%	12.34%
1983-84	11.00%	11.31%
1984-85	11.00%	10.23%
1985-86	11.00%	10.18%
1986-87	11.00%	13.09%
1987-88	10.00%	5.89%
1988-89	10.00%	7.37%
1989-90	10.00%	7.64%
1990-91	11.00%	7.51%
1991-92	13.00%	3.36%
1992-93	11.00%	1.16%
1993-94	10.00%	-1.19%
1994-95	11.00%	-1.20%
1995-96	13.00%	-2.03%
1996-97	12.50%	-2.02%
1997-98	12.00%	4.17%
1998-99	11.50%	6.03%
1999-00	10.50%	6.94%
2000-01	10.00%	9.05%
2001-02	8.50%	15.08%
2002-03	6.25%	13.39%
2003-04	5.50%	17.65%
2004-05	6.25%	20.72%
2005-06	7.00%	22.75%
2006-07	8.50%	22.72%
2007-08	9.00%	24.72%

Data Source: Reserve Bank of India (2014a and 2014b)

Figure 5. Comparison of CAGRs of Commercial Bank Deposit Rate and Gold Returns

vis in gold for the same duration over the period from 1971-72 to 2012-13. The Table 5 shows the compound annual growth rate (CAGR) for investments in commercial deposit and gold over an investment horizon of 5 years for the time period from 1971-72 to 2007-08 (Table 5). The analysis is based on the assumption that the investor stays invested for 5 years from the year of his/ her investment. We find that the investor who invested in

Table 6. Comparison of Nifty Returns and Gold Returns

Year	CNX Nifty YOY returns (%)	Gold ₹ Returns (%)
1992-93	-48.216	-4.513
1993-94	75.332	10.435
1994-95	-16.247	2.987
1995-96	-1.996	6.221
1996-97	-2.664	2.281
1997-98	15.127	-14.271
1998-99	-6.265	-1.815
1999-00	43.726	2.938
2000-01	-25.187	1.822
2001-02	-0.751	2.359
2002-03	-14.114	16.450
2003-04	80.016	7.250
2004-05	11.870	7.457
2005-06	64.561	12.289
2006-07	10.026	33.907
2007-08	30.298	8.174
2008-09	-36.261	28.954
2009-10	71.520	22.237
2010-11	10.268	22.030
2011-12	-9.106	33.782
2012-13	6.857	17.267

Data Source: Reserve Bank of India (2014b and 2014c)

Table 7. Gold Returns and Nifty Returns for Different Time Periods

	CNX Nifty YOY returns %	Gold ₹ Returns %
5 years Mean (2007-08 to 2012-13)	8.66	24.85
Standard deviation	39.66	6.50
10 years Mean (2002-03 to 2012-13)	24.01	19.33
Standard deviation	37.47	10.51
15 years Mean (1997-98 to 2012-13)	15.83	14.34
Standard deviation	35.28	11.77
20 years Mean (1992-93 to 2012-13)	15.35	11.14
Standard deviation	34.52	12.37

Data Source: Reserve Bank of India (2014b and 2014c)

commercial deposits in 1971-72 and held it for 5 years, saw his/her investment grow at a CAGR of 7.25% . If the investor had invested in gold during the same time and held it for 5 years, then his investment would have grown by a CAGR of 22.40%. The Figure 5 provides the comparison of CAGRs of commercial bank deposit rate and gold returns for the investment horizon of 5 years. We find that gold has given higher returns in 19 instances (51% times) out of 37 instances.

So, looking at the returns of gold and the volatility in short term and long term, it can be inferred that gold is not necessarily a more attractive investment than fixed income securities like commercial bank deposits and central government securities.

(3) Investors can Gain More by Investing in Gold Compared to Investing in Stocks : To compare stock returns with gold returns, we used CNX Nifty as the benchmark index. We compared the annual returns of Nifty with annual gold returns. The Table 6 provides the comparison from 1992-93 to 2012-2013. It can be seen that gold has outperformed Nifty 13 times out of 21 instances considering annual returns. However, when we look at average returns over different time horizons as provided in the Table 7, we find that over the 5 year horizon, gold returns are more than Nifty returns, but as the time horizon increases to 10, 15, and 20 years, Nifty returns are higher than gold returns. Volatility of Nifty returns, as measured by standard deviation, is also higher than that of gold returns, making Nifty riskier than gold.

The higher gold returns for the 5year horizon (Table 7) from 2007-08 to 2012-13 may be attributed to the sub-prime crisis in U.S. that led to Nifty going down and investors finding gold as a safe haven for investment, and this is the period where gold has yielded substantial returns, that is, 24.85%.

(4) Rupee-Dollar Exchange Rates Have a Bearing on the Returns on Gold Investment : The returns on gold depends upon the increase in price of gold year on year. Gold prices are determined in the international market considering the demand and supply situation. In India, gold prices increased from ₹ 184.96 in 1970-71 to ₹ 29,190 in 2013-14 ; while in dollar terms, gold prices increased from \$11.83 in 1970-71 to \$426.54 in 2013-2014 only. The Figure 6 shows clearly that price of gold in rupee terms has increased exponentially, while it is not the case with price of gold in dollar terms.

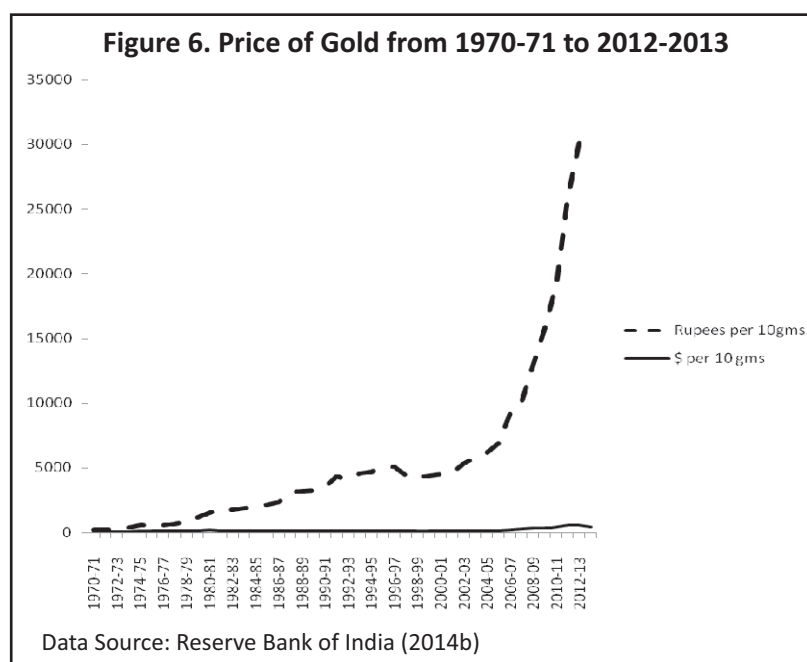
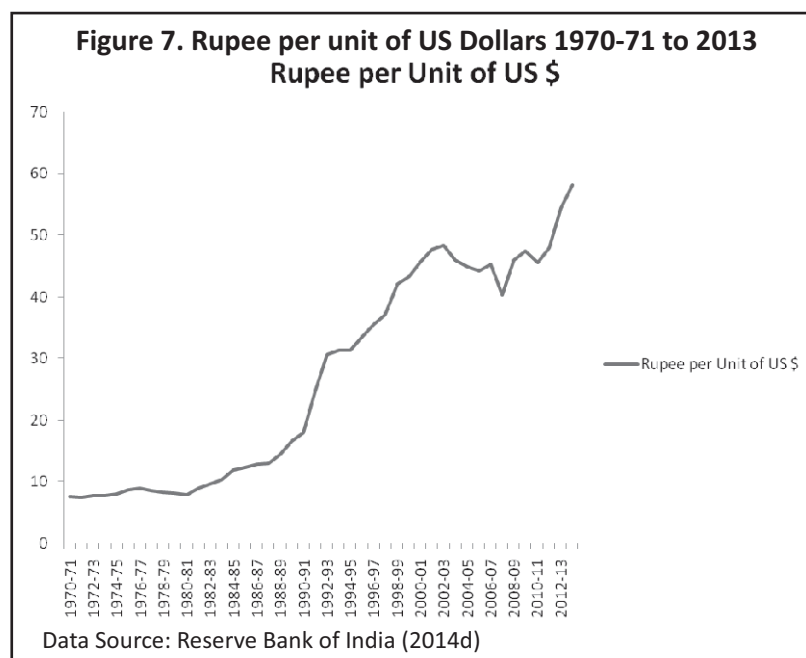


Table 8. Comparison of Gold ₹ Returns and Gold \$ Returns

	Gold ₹ Returns %	Gold \$ Returns %
Mean for 2007-08 to 2012-13 (5 years)	24.85	17.07
Standard deviation	6.50	10.94
Mean for 2002-03 to 2012-13 (10 years)	19.33	17.98
Standard deviation	10.51	9.27
Mean for 1997-1998 to 2012-13 (15 years)	14.34	12.29
Standard deviation	11.77	12.33
Mean for 1992-1993 to 2012-13 (20 years)	11.14	8.99
Standard deviation	12.37	12.88
Mean for 1987-1988 to 2012-13 (25 years)	10.17	6.01
Standard deviation	12.05	13.01
Mean for 1982-1983 to 2012-13 (30 years)	10.60	5.61
Standard deviation	11.76	13.08

Data Source: Reserve Bank of India (2014b)



Though return on gold in rupees for a 30 year horizon (1982-83 to 2012-13) is 10.60 %, it is only 5.61% if we consider the return in \$ terms. Gold returns have not been that lucrative in the international market as it has been in the Indian market (Table 8).

This motivates us to explore further and see if exchange rates have an impact on gold returns. The Figure 7 shows the depreciation of rupee vis-a-vis U.S. dollar. We can see that it is not the returns on gold which are increasing, but because of the rupee depreciating against dollar, one notices the high returns of gold in rupee terms and low returns in dollar terms. The value of gold is inflated in the Indian scenario. In the year 2013, when the rupee reached a record low vis-a-vis the dollar, it was a cause of concern for the finance minister because gold imports need to be paid in dollars.

Implications of the Study

The study analyzes the investment in gold and compares it with other asset classes for the Indian economy. The findings of the paper have several implications :

- (1)** The study has implications for an Indian investor. Many a times, Indian investors buy gold with the purpose of hedging against inflation. They believe they are able to create wealth when they choose gold as an investment. However, looking at the findings from the study, an investor can undertake an informed decision based on his/her preference of the investment horizon. Gold outperformed government securities in the long term, but displayed some volatility as well. Indian investors can look at this aspect of gold before investing. The risk associated with gold can be considered while comparing it with other financial assets.
- (2)** The study has implications for fund managers as well. While deciding the investment strategy for an investor, gold might be considered as a suitable choice for portfolio diversification. However, while designing the portfolio, fund managers might want to be cautious about the number of times gold has outperformed inflation or the government securities. The findings of the study would be helpful in providing these insights to fund managers.
- (3)** The study has implications for regulators and financial advisors as well. The findings bring together data from several markets over a long period of time and ,therefore, help in providing the basic characteristics of gold as an investment for Indian investors. It could help regulators in understanding the behavior of gold returns and how it can be incorporated innovatively in the country's financial system. Some steps in this direction have already been taken with the introduction of gold exchange traded funds (ETFs).

Conclusion

Gold has been considered as a lucrative investment in India. Investors have faith in the returns promised by the yellow metal and hence, there is a huge demand for gold compared to other investment options. In this study, we compare the different investment options available to Indian investors and empirically analyze the attractiveness of gold as an investment. We tested four premises on which investments in gold are made: (a) gold is an inflation hedge ; (b) gold investment is an attractive alternative to fixed income investments ; (c) investors can gain more by investing in gold compared to investing in stocks ; (d) rupee-dollar exchange rates have a bearing on the returns on gold investments.

It seems, over a longer horizon of investment, gold returns are higher than inflation. But if we consider an investment for 1/2/3/4/5 years for an investor, in not more than 56% of the occasions, gold has given higher returns than inflation. Hence, gold can't be assumed as an inflation hedge for an investment point of view. Similarly, over a long period of investment, gold seems to have outperformed commercial deposits and government securities. However, this does not justify gold as a better investment option because : (a) gold returns are more volatile, (b) if compared on an annual basis, gold has outperformed commercial bank deposit rates only 52% and government securities only 45% of the time. When compared with stock returns, Nifty has outperformed gold for 10/15/20 year horizon, though Nifty has more volatility than gold. However, for the period from 2007-08 to 2012-13, gold had outperformed Nifty.

As the price of gold is determined in the international market considering the demand and supply, it is worthwhile to look at the returns on gold in the international market. Over a 30- year horizon, the \$ returns on gold is 5.61%, while it is 10.60% in the international market. This is attributed to the depreciating rupee during the same period. So, the returns on gold in India do not reflect the actual appreciation in prices of gold ; rather, this is because of a depreciating currency during the same time.

Limitations of the Study

The study compared different investment options with gold and analyzed the attractiveness of gold as an investment avenue for Indian investors. It looked at four points of views with respect to gold, that is, gold is an inflation hedge, gold investment is an attractive alternative to fixed income investment, investors can gain more by investing in gold compared to investing in stocks, and rupee-dollar exchange rates have a bearing on the returns on gold investments. However, the study has certain limitations:

- ✦ The study took into account gold as an investment option, but ignored the financial products surrounding gold like gold ETFs.
- ✦ The data for the study was collected from secondary sources and ,therefore, availability of data for the full period of study, that is, from 1970 till 2013 was an issue for all the parameters. The study overcame this challenge by undertaking data analysis for all the parameters right from the earliest year where data was available.
- ✦ Investment options in the form of other commodities like silver or real estate or derivatives have not been included in the scope of this research.

To overcome these limitations, there is a need to further develop the scope of research and probably take it to the next level. Some suggestions for further research are mentioned in the next section.

Scope for Further Research

After analyzing the available data on the investment options and comparing them with gold, one can develop several ways to take the research further. There is a lot of scope with respect to understanding gold as an investment option. For future research studies, gold ETFs and derivatives can also be included in the analysis. Reserve Bank of India's gold deposit scheme would be an interesting addition in development of research in this area. It would be interesting to analyze investors' response to the scheme and assess returns accordingly. Other commodities such as silver could also be added to the analysis. More rigorous analysis can then be performed with respect to forecasting the risks and returns for the investment options available to the Indian investor. It would be interesting to add an event study surrounding the news about gold and its effect on Indian markets.

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