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Analysis of Individual Investors' Preference and Portfolio Risk-Return for Gold as an Asset Class

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Abstract

As per tradition, In India, gold was seen only as a symbol of security and a sign of prosperity. In the traditional Indian culture, gold was an integral part of daily life where purchases of gold jewellary were only considered as a form of a liquid asset.

Since last few years, the Indian retail investment market was one of the strongest in the world. Demand increased substantially by 264% to 93 tonnes in this period and accounted for 25% of total domestic gold demand.

India's gold ETF market has also enjoyed further growth in recent quarters. Total holding amounted to 11 tonnes by the end of August 2013, up 77% from the same period last year. There are basically three ways to invest in gold, first the most popular way is to buy physical gold, second to do trading in gold futures contracts, third to invest into Gold ETF mutual funds.

In this paper, researcher has tried to compare all the forms of gold investment with each other and *also tried to construct portfolio that will consist of all the forms of gold avenues and analyzed portfolio risk and return.*

Researchers have also carried out primary survey to know investor's preference for Gold as an investment avenue and the form in which they would like to invest in gold.

The findings reveal detailed analysis of all the forms of gold investment along with pros and cons, risk-return perspective of holding gold in the portfolio, and feasibility of gold as a hedging tool.

Keywords: Gold ETF, Gold Futures, Risk-Return Analysis, Perception.

A precious metal is a rare, naturally occurring metallic chemical element of high economic value. Chemically, the precious metals are less reactive than most elements, have high lustre, are softer or more ductile, and have higher melting points than other metals. Historically, precious metals were important as currency but are now regarded mainly as investment and industrial commodities. Gold, silver, platinum, and palladium each have an ISO 4217 currency code.

GOLD MARKETS

Gold is traded in many markets around the globe. London and New York are supposed to be large markets for gold and they function through the day. It is worth mentioning that Kong Kong and Zurich market are also open to trading for 24 hours. The gold market functions like a stock exchange in l aspects of buying selling and determination of prices though the fact remains that different factors influence the price.

WORLD GOLD COUNCIL

World gold council is a forum of gold producers around the globe. The basic objective of this body is to disseminate information regarding investing in gold and also to create an awareness among the masses. They also lay down lot of guidelines for small scale producer's traders, consumers and other stakeholders.

Gold is a popular metal and attracts most of the press, but it isn't the only metal out there to invest in. The three other major investment metals are platinum, palladium and silver. All have risen in price over the past several years as demand has increased around the globe.

SURGING IN GOLD PRICES

Source: World Gold Council.

While many people associate precious metals with jewellery and coins, these metals are also used in industry. The emergence of China and India as significant players in world commerce has contributed to the higher demand for industrial purposes. India is one of the largest consumers of gold. Nearly 800 tone of gold is imported every year. Indians account for 23% of the world's total annual demand for gold.

An historical perspective is useful in understanding why India has been for so long, and still is, a great market for gold – and also for silver. India, the saying goes, has always been 'a sink for precious metals'.

Until 1990, the Gold Control Act forbade the private holding of gold bars in India. Since 1990, investment in small bars, both imported ten tolas and locally-made small bars, which have proliferated from local refineries, has increased substantially. GFMS estimate that investment has exceeded 100 tones (3.2 million oz) in some years, although it is hard to segregate true

Investment from stocks held by the 16,000 or more gold dealers spread across India. Certainly gold has been used to conceal wealth, especially during the mid-1990s, when the local rupee price increased steadily.

The government announced a new initiative in its 1999/2000 budget to tap the board of private gold in India by permitting commercial banks to take gold deposits of bars, coins or jewellery against payment of interest.

The fact is that though India's market share of the world gold market is meager, but it stands number one in terms of demand. The demand is basically in the form of Jewellery, bar, coins, industrial demand for use in medicines and other purposes. Out of which, the demand for jewellery is the highest as Indian investors look upon Physical gold as a 'stri-dhan' for long term perspectives.

Another option is gold-related exchange traded fund (ETF). ETFs are pools of investments that trade on exchange like stocks. Typically, gold ETFs are intended to track a percentage of an ounce of gold, so in that sense, that are a way to trade physical gold.

CONSUMPTION OF GOLD IN INDIA

According to a study report released by the multinational professional services firm-PricewaterhouseCoopers, India emerged the top fabricator and consumer of gold jewellery. The country's total consumption of gold for jewellery stood at 552 tonnes. It accounted for nearly one-third of the global fabrication and consumer demand of gold jewellery.

According to the PwC report, India consumed 864 tonnes of gold used for jewellery, bars and coins in 2012, China consumed 784 tonnes, the United States 162 tonnes, Turkey 110 tonnes, and Thailand 81 tonnes. India and China accounted for more than half of global jewellery fabrication and final consumption at retail level.

The global gold supply reached 4,477 tonnes in 2012, up 48 per cent from 3,017 tonnes in 2007. Forty-three per cent of gold was used in jewellery, 35 per cent in investments (bars, coins and gold-backed exchange traded funds), 12 per cent in central bank gold purchases, and 10 per cent in technology and manufacturing.

The 13 largest gold-consuming countries in 2012 accounted for 75 per cent of gold used for fabrication and 81 per cent of that used for (final) consumption, either in the form of jewellery or investment products such as small bars and coins. India consumed 864 tonnes of gold used for jewellery, bars and coins in 2012.

LITERATURE REVIEW

Gary O'Callaghan (December 1991) has carried out research on the topic, the structure of the world gold market, its sources of supply and demand, and how it functions. The market has three principal functions in three major locations: the New York futures market speculates on spot prices, which are largely determined in London, whereas physical gold is in large part shipped through Zurich. The market is dominated by large suppliers and gold holders,

Including monetary authorities. Some unique characteristics of the gold market ensure confidentiality, and as a result, there are gaps in existing knowledge and data. The paper identifies and attempts to fill these gaps.

James Ross McCown (July 24, 2006) research on, "Is Gold a Zero-Beta Asset? Analysis of the Investment Potential of Precious Metals Gold shows the characteristics of a zero-beta asset. It has approximately the same mean return as a Treasury bill and bears no market risk. Silver also bears no market risk but has returns inferior to Treasury Bills. Both gold and silver show evidence of inflation-hedging ability, with the case being much stronger for gold. The prices of both metals are co-integrated with consumer prices, showing additional evidence of hedging ability.

Jung Ha Jun (May 2, 2009) research on the topic "Global financial Crisis and Gold Market". While most researches on the gold market have been focusing on empirical studies, few researches existed about how each macroeconomic phenomenon can affect gold market. Gold is rarely dealt with macroeconomic perspective, because of lack of analyzing tools. However in this research, by including gold in a portfolio of risky assets and analyzing the portfolio indirectly, we can perform macroeconomic research on gold market.

RATIONALE OF THE STUDY

Gold and silver are considered as an hedging instrument. In india since many decades Gold is considered as an precious jewellery and not an investment. Majority of the buyers don't sell or don't wish to sell gold. But with the changing times and surging prices of Gold, now there is a need for an hour for investors to keep Gold as asset class in their investment and evaluate the various forms of gold from the investment perspective. In the present study attempt has beed mad to analyse investors preference for Gold and analysis of various forms of gold.

RESEARCH METHODOLOGY

Objectives of the Study

1. To Analyze Investors preference for Gold as an Investment Avenue.
2. To evaluate Impact of Demographics of investors on Preference towards Gold.
3. To Analyze Risk and Return matrix from investing in to different gold investment forms.
4. To design Correlation matrix and finding Portfolio risk and Returns.

Hypothesis Developed for the Study

For all hypotheses, Precision level is 0.05, Confidence Level is 95% and Significance level is 5%.

1. Analyzing the significance of relationship between the Income of an Investor and Savings of an Investor.

   H0 = The significance of Income of an investor is not correlated with the Savings of an investor

   H1 = The significance of Income of an investor is correlated with the Savings of an investor

2. Analyzing the significant relationship between preference of investors for Purchasing Gold and their Education.

   H0 = The significance of preference of Purchasing Gold by an Investor is not dependent on the Education of an Investor

   H1 = The significance of preference of Purchasing Gold by an Investor is dependent on the Education of an Investor

3. Analyzing the significant relationship between Reasons for not investing in Gold and income of an Investor.

   H0 = The significance of Reasons for not investing in Gold by an investor is not dependent on the Income of an Investor.

   H1 = The significance of Reasons for not investing in Gold by an investor is dependent on the Income of an Investor.

4 Analyzing the significant relationship between Future Preference for investing in Gold and and Income of an Investor.

   H0 = The significance of Future Preference for investing in Gold by Investor is not dependent on the Income of an Investor.

   H1 = The significance of Future Preference for investing in Gold by an Investor is dependent on the Income of an Investor.

5. Analyzing the significant relationship between the Savings of an Investor and Returns from investment in Gold by an Investor.

   H0 = The significance of the Savings of an Investor is not correlated with the Returns from Investment in Gold by an Investor.

H1 = The significance of the Savings of an Investor is correlated with The Returns from investment in Gold by an Investor.

Primary Research for Understanding Investor's Preference for Gold

- *Type of research:* Descriptive
- *Scope of research:* Investors' preference for Gold in Ahmedabad
- *Data collection method:* Questionnaire
- *Sample size:* 115 investors of Ahmedabad city
- *Sampling technique:* Convenience sampling

Secondary Research for Creating Portfolio of Gold and Evaluating Portfolio Risk and Return

- *Target population:* Commodity exchanges
- *Sampling unit:* Gold commodity traded on MCX
- *Sample size:* Prices of gold listed on exchanges from Years 2011 to 2013 (3 years)

DATA ANALYSIS, FINDINGS AND INTERPRETATION

Total 115 investors were surveyed and out of that 66 investors are investing in gold while 49 investors are not investing in Gold.

Hypothesis 1

H0: The significance of Income of an investor is not correlated with the Savings of an investor

		Savings (Lacs)				*Total*
		0.5-1	*1-2*	*2-2.5*	*>2.5*	
Income (Lacs)	<5	68	10	2	1	81
	5-10	6	18	3	3	30
	10-20	0	0	0	2	2
	>20	2	0	0	0	2
Total		76	28	5	6	115

The above table shows the investors' income and savings ratio. Out of 115 investors, the bifurcation made is of investors who belong to different income group as well as the different saving groups.

Correlation among the Variables Income and Savings

Variables	*Pearson Correlation*	*Extent*
Income and Savings	0.455	Moderate

Correlation of Coefficient shows the relationship between the two variables and it gives result from –1 to +1. If the correlation coefficient R falls in the range of 0 to +1, then it is said that there is a perfect positive correlation between the two variables. If the correlation coefficient R falls in the range of –1 to 0, then it is said that there is a negative correlation between the two variables. Here it is 0.455, so there is moderate correlation between income and savings.

Hypothesis 2

H0: The significance of preference of Purchasing Gold by an Investor is not dependent on the Education of an Investor

		Preference of Purchasing Gold		Total
		Hall Marked	Gold Smith	
Education	Under-graduate	15	0	15
	Graduate	26	7	33
	Post-graduate	6	1	7
	Professional	10	1	11
Total		57	9	66

From the above table it can be interpreted that, out of all the 66 investors who invest in Gold, 57 investors prefer Hall marked Jewellery so the awareness of Hall Mark is good amongst the investors. Chi Square cal is 4.172097 and Chi Square tab is 7.815. So, cal < tab at 0.05 L.S with 3 D.F. hence, we will accept the Null Hypothesis (H0) and reject the Alternative Hypothesis (H1). So, it can be interpreted that the significance of Preference of Purchasing Gold is not depended on the Education of the Investors.

Hypothesis 3

H0: The significance of Reasons for not investing in Gold by an investor is not dependent on the Income of an Investor.

The table shows the income of the investors and the investors' preference for not investing in Gold and the reasons why investors are not investing in Gold and choose other options for investment purpose. For most of the investors the reason for not investing is Fluctuation in Gold prices and High prices of gold.

*Income (A) (lacs) * Reasons for not Investing in Gold*					
Rs. in Lacs		*Reasons for not Investing in Gold*			*Total*
		Fluctua-tions in Gold Prices	*High Price*	*Others*	
Income	<5	27	7	3	37
	5-10	3	6	1	10
	10-20	0	0	1	1
	>20	1	0	0	1
Total		31	13	5	49

It can be inferred that the Chi Square Cal: is 16.80791 which is more than the Tab value (12.592) with 6 D.F. (degrees of freedom) at 0.05 L.S. so, we will reject the Null Hypothesis (H0) and accept the Alternative Hypothesis (H1) which states that investors' reasons for not investing in Gold is dependent on their Income.

Hypothesis 4

H0: The significance of Future Preference for investing in Gold by Investor is not dependent on the Income of an Investor.

Rs. in Lacs		*Future Preference for Gold of Investors*		*Total*
		Yes	*No*	
Income	<5	8	29	37
	5-10	3	7	10
	10-20	0	1	1
	>20	1	0	1
Total		12	37	49

It can be inferred that those who are not investing in Gold, their future preference for investment in Gold is also not there. And if we analyzer their preference with their income then also majority of the investors who are currently not investing in Gold, in future also not willing irrespective of their income.

Chi Square Cal is 3.73644 and Chi Square Tab is 7.815 at 0.05 L.S. with 3 D.F. Here, Cal is less than Tab value. So, we will accept the Null Hypothesis (H0) and reject the Alternative Hypothesis (H1). So investors' future Preference for investment in Gold is not dependent on their income.

Hypothesis 5

H0: The significance of the Savings of an Investor is not correlated with the Returns from Investment in Gold by an Investor.

		Returns from investment in Gold (Rs.)			*Total*
		500-2000	*2000-5000*	*5000-10000*	
% of savings in investment ('000)	5-20	23	15	2	40
	20-50	3	10	3	16
	50-80	0	1	5	6
	80-100	0	2	1	3
	>100	0	1	0	1
Total		26	29	11	66

The above table represents the investors' return from their investment in Gold which they have invested from their savings. So it can be said that most of investors have got good returns from their investment in gold.

Returns from investment in Gold by an Investor on Savings of an Investor

Variables	*Pearson Correlation*	*Extent*
% of savings and % of returns	0.508	Moderate

The correlation between the two variables is also more than 0.5, so it can be said that if more savings will be put into Gold, returns will also be high.

The investors' Modes of Investment in Gold

Modes of Investment

Investment in Jewellery	*Trading in Coins*	*Gold ETF*	*Gold Certificate*	*Gold Mining*	*Total*
29	28	6	3	0	66

It can be seen that from the sample taken, 29 investors prefer to have the investment in gold in form of jewellery. 28 prefers to trade in gold coins, 6 prefers to gold mutual fund/exchange-traded-fund and 3 invests in gold in form of having gold certificates and investment in gold mining company's share is not at all preferred.

The Investors' Prediction of the Prices Gold in Future 5 Years

Prices (Rs.'000)	25-35	35-45	45-55	>55	Total
No. of investors	7	35	19	5	66

It can be seen that 7 out of 66 investors of sample size predict that gold prices will remain between Rs. 25,000 to Rs. 35,000. 35 predict that it will be Rs. 35,000 to Rs.45,000. 19 predict that it will increase to Rs. 45,000 to

Rs. 55,000 and 5 investors predict that it will be more than 55,000.

DATA ANALYSIS AND INTERPRETATION OF SECONDARY RESEARCH

For research purpose, previous one year data is taken for analysis purpose and secondary research is undertaken with the following assumptions:

1. Secondary Data is taken for three years from the period of Jan 2011 to December 2011, Jan 2012 to December 2012 and Jan 2013 to December 2013. Gold Spot and Gold Futures prices are taken from NCDEX.
2. Three forms of Gold is taken Gold futures, Gold Spots and Gold ETF.
3. For Gold ETF top 2 performing Gold ETF schemes are taken in past one year.
4. Equal weights are given to all forms for calculation of co-variance matrix and Portfolio risk-return.

Findings Related to Average Returns and Annualized Returns

Annual Returns

Forms of Gold	*Year 2011*	*Year 2012*	*Year 2013*
UTI Gold ETF	0.111%	0.048%	–0.058%
IDBI Gold ETF	–0.203%	0.046%	–0.016%
SPOT Gold prices	0.119%	0.063%	–0.019%
FUTURE Gold Prices	0.085%	0.070%	–0.025%

Annualized Returns

Forms of Gold	*Year 2011*	*Year 2012*	*Year 2013*
UTI Gold ETF	49.9%	19.2%	–18.9%
IDBI Gold ETF	52.3%	18.3%	–5.6%
SPOT Gold prices	54.3%	25.7%	–6.6%
FUTURE Gold Prices	36.5%	29.2%	–8.6%

Annualized Returns is calculated as (1 + Average return) ^ 365 – 1.

Findings Related to Standard Deviation

Standard Deviation

Forms of Gold	*Year 2011*	*Year 2012*	*Year 2013*
UTI Gold ETF	1.1952%	0.9501%	1.0620%
IDBI Gold ETF	1.0207%	0.9758%	1.2203%
SPOT Gold prices	1.2160%	0.7777%	1.4604%
FUTURE Gold Prices	1.0563%	0.6820%	2.0114%

Annualized Standard Deviation

Forms of Gold	*Year 2011*	*Year 2012*	*Year 2013*
UTI Gold ETF	15%	12%	14%
IDBI Gold ETF	13%	12%	16%
SPOT Gold prices	16%	10%	19%
FUTURE Gold Prices	13%	8%	27%

Correlation between Gold Futures Prices, Gold Spot Prices and Gold ETF year 2011

Company stock	*UTI*	*IDBI*	*SPOT*	*FUTURE*
UTI	1	–0.301657014	0.014439315	–0.0486961
IDBI	–0.301657014	1	0.150607934	0.35399178
SPOT	0.014439315	0.150607934	1	–0.02682422
FUTURE	–0.048696101	0.35399178	–0.02682422	1

Correlation between Gold Futures Prices, Gold Spot Prices and Gold ETF year 2012

Form of Gold	*UTI Gold ETF*	*IDBI Gold ETF*	*SPOT Gold prices*	*FUTURE Gold Prices*
UTI Gold ETF	1	0.059744025	0.024127583	0.037945823
IDBI Gold ETF	0.059744025	1	–0.0524613	–0.08794959
SPOT Gold prices	0.024127583	–0.052461297	1	0.00315033
FUTURE Gold Prices	0.037945823	–0.087949594	0.00315033	1

Correlation between Gold Futures Prices, Gold Spot Prices and Gold ETF year 2013

Company stock	*UTI*	*IDBI*	*SPOT*	*FUTURE*
UTI	1	0.71940296	0.097177281	–0.03736474
IDBI	0.71940296	1	0.025591343	–0.03557805
SPOT	0.097177281	0.025591343	1	0.070338152
FUTURE	–0.037364743	–0.035578051	0.070338152	1

Co-variance Matrix Gold Futures Prices, Gold Spot Prices and Gold ETF
Jan 2011 to Dec 2011

Weights		*0.25*	*0.25*	*0.25*	*0.25*
	Company Stock	*UTI*	*IDBI*	*SPOT*	*FUTURE*
0.25	UTI	0.023481095	–0.005990872	0.000345371	–0.00100279
0.25	IDBI	–0.005990872	0.016797123	0.003046808	0.006165475
0.25	SPOT	0.000345371	0.003046808	0.024364618	–0.00056268
0.25	FUTURE	–0.001002788	0.006165475	–0.00056268	0.018059757

Co-variance Matrix Gold Futures Prices, Gold Spot Prices and Gold ETF
Jan 2012 to Dec 2012

Weights		*0.25*	*0.25*	*0.25*	*0.25*
	Form of Gold	*UTI Gold ETF*	*IDBI Gold ETF*	*SPOT Gold Prices*	*FUTURE Gold Prices*
0.25	UTI Gold ETF	0.014440344	0.000887258	0.000282446	0.000387503
0.25	IDBI Gold ETF	0.000887258	0.015273313	–0.00063159	–0.00092368
0.25	SPOT Gold prices	0.000282446	–0.000631594	0.009489978	2.60802E–05
0.25	FUTURE Gold Prices	0.000387503	–0.000923683	2.60802E–05	0.007221791

Co-variance Matrix Gold Futures Prices, Gold Spot Prices and Gold ETF
Jan 2013 to Dec 2013

Weights		*0.25*	*0.25*	*0.25*	*0.25*
	Company Stock	*UTI*	*IDBI*	*SPOT*	*FUTURE*
0.25	UTI	0.023481095	–0.005990872	0.000345371	–0.00100279
0.25	IDBI	–0.005990872	0.016797123	0.003046808	0.006165475
0.25	SPOT	0.000345371	0.003046808	0.024364618	–0.00056268
0.25	FUTURE	–0.001002788	0.006165475	–0.00056268	0.018059757

Particulars	*Year 2011*	*Year 2012*	*Year 2013*
Portfolio Risk	8.852%	6.878%	11.185%
Portfolio Return	22.09%	23.13%	-9.94%

Interpretation

From the above calculation, it can be interpreted that in past three years, any form of Gold Investment has given good returns to the investors. If we compare the Annualized risk and Returns, then return is quite higher than risk in all forms of Gold. If we look at the results of Portfolio Risk and returns based on Variance-Covariance matrix, then also return is quite higher then risk except the year 2013. This is due to the higher CAD deficit and due to that gold prices remain very much fluctuative. So it can be concluded that rather than in one form, if investment is diversified in to various forms, Portfolio risk would be lower and returns would be higher. Gold is really wealth-wisher investment avenues for the investors and for short term as well as long term investment perspective Investor can always take into consideration Gold and Silver as an Asset class.

SUGGESTIONS

- Out of 115 investors, only 66, i.e. 57% investors are investing in Gold. So the awareness amongst them is lower. All financial planners should make Gold as an Asset class of investors portfolio. And atleast 10% of the savings should be part of the Gold as Gold has proved to be the best instrument for hedging for long term
- Reasons for not investing in Gold are fluctuation in prices and High prices. As Gold is an international commodity prices will fluctuate due to many reasons and As per world Gold council report prices of Gold are going to surge in future as well, so Advisors, brokers need to educate investors to invest in gold for long term and it will also be helpful for their children marriage planning.
- Gold ETF is a good form and convenient

form to invest in Gold. So AMC should launch more Gold ETF funds. And investors should be educated about the Gold ETF funds.

- Investors should also do diversification in their Gold portfolio, as it is proved by this research that diversification reduces risk and maximize the returns.

CONCLUSION

Of all the precious metals, gold is the most popular as an investment. Investors generally buy gold as a hedge or harbor against economic, political or social fiat currency crises (including investment market declines, burgeoning national debt, currency failure, inflation, war and social unrest). The gold market is subject to speculation as are other markets, especially through the use of futures contracts and derivatives. The history of the gold standard, the role of gold reserves in central banking, gold's low correlation with other commodity prices, and its pricing in relation to fiat currencies during the Late-2000s financial crisis, suggest that gold behaves more like a currency than a commodity.

Gold has been selected as an investment options in form of coins, bars, Exchange-traded Fund, gold certificates, derivatives and Mining companies.

In the past 20 years, gold and land have given high returns to investors as compared to other investment avenues like shares or bank deposits. With the high risks associated with investments in share markets, large numbers of small investors have checked out from the share market and equity mutual funds into safer low risk high return assets like gold and land.

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