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Market Potential & Price Behaviour of Bitcoin Post Demonetization & its Impact on Investment Portfolio

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ABSTRACT

The objective of the research paper is to
1) Study the market potential of Bitcoin in India
2) Price behaviour of Bitcoin post demonetization
3) The significance level of Bitcoin as part of a portfolio investment. The research work focuses on studying and analysing price behaviour and returns of the various assets in the portfolio with and without the Bitcoin. The objectives are :-
a) To determine whether there is a significant change in return before and after the introduction of Bitcoin in the portfolio.
b) To study the effect of the standard deviation of the portfolio before and after the addition of Bitcoin.
c) To identify the change in the Sharpe Ratio before and after the addition of Bitcoin.

***Keywords*--** Bitcoin, Risk, Return, Sharpe Ratio, Price behaviour, demonetization

I. INTRODUCTION

According to the Forbes, post Demonetization, the volume of Bitcoin being traded in India has substantially increased to nearly two times its prior levels. Bitcoin is the first decentralized digital currency. Following the announcement of Demonetization in India on 8th November, the currency hits its highest level, surpassing the USD 1000 (INR 68,000) mark. With this level of growing popularity of Bitcoin, taking up a research project to gauge the market potential and expectation was apt as most of the traders exchanged their black money into Bitcoin. It was used as a substitute of gold. Through voracious reading of data available on Bitcoin, we have found that Bitcoin is black marketed in the following ways:-

a) Bought via hard cash
b) Touts organise transfers
c) Confidential transactions
d) Offline resale in cash

As far as scope in India is concerned the exchanges believe that the legal status of Bitcoin which was denied might change with te government pushing for digital transactions. Sandeep Goenka, CEO of Zebpay, one of the largest Bitcoin exchanges in the country said, “Indians are enquiring about Bitcoin as an alternate and safe investment option. Free lancers and small business firms get an opportunity to get noticed as it does not cost anything to start accepting them. Apart from this they get additional business from Bitcoin economy.”

Change – The price of Bitcoin on Zebpay, which claims to have over 1.3 lakh users, surged from INR 51,600 to INR 69,500 (per BItcoin) in mere 18 days after the demonetization speech of November 8.

Reason – Some part of the price buoyancy in Bitcoins could be attributed to market-making initiatives of Indian exchanges. In order to maintain a light order book, exchanges increase the Bitcoin price when there is high demand. Post-demonetization, exchange platforms like Zebpay have raised the prices marginally to quieten demand (from prospective buyers) and also to lure coin owners to sell their holdings. This strategy seems to have paid off as 350-600 coins are traded on Indian exchanges everyday. Average transaction size (per user) has also moved up to INR 1.3 lakh on exchanges like Zebpay. “Demonetisation may not have impacted directly, but it has definitely triggered interest in all things cashless including Bitcoins”, says Sandeep Goenka, cofounder of Zebpay. “People are looking at options to transact without using cash. In the case of Bitcoins, they are also trying to speculate and pocket some gains. Many of our users are also using Bitcoins as investment vehicle.”

II. REASONS TO INVEST IN BITCOIN

Investment in BITCOIN presents one of the most controversial investment opportunities that exist today. Over the last 5 years the value of BITCOIN has skyrocketed. To an average person BITCOIN investment is all too unfamiliar, too intimidating and too risky. The crypto-currency has been around for almost a decade now. BITCOIN’s bid as a serious investment has only matured in recent years. 5 compelling reasons for investing in BITCOIN are

1) More & more people are using BITCOIN everyday

In its early days, BITCOIN was little more than a speculative bet for day traders hoping to turn a quick profit. That's because as a currency BITCOIN still has very little utility aside from on the black market. After years of gradual adoption, more and more people are using BITCOIN for real world transactions everyday. In January 2010, BITCOIN was averaging less than 200 transactions a day exponentially rising to more than 300 thousand transactions a day in January 2016. BITCOIN has become a form of money in practise. For long term investors this is great news because that's where BITCOIN's value exists. As long as adoption of BITCOIN as a currency continues to increase, its value should move in tandem.

2) More vendors are accepting BITCOIN

There are two main reasons why BITCOIN transactions have and will likely to continue to increase. First is growing acceptance from legitimate vendors. Since 2013 there have already been a number of major retailers that have taken the initiative to treat BITCOIN as a legitimate method of payment. Notable companies like Expedia accepts BITCOIN for all hotel bookings, Overstock.com started accepting BITCOIN for its products in January 2014 and Microsoft which recently added BITCOIN as a payment option for its digital content. Other major vendors include Dell, Subway, NewEgg.com, Tigerdirect.com, Tesla and PayPal to name some of the many.

3) Volatility is trending down

On top of an increasing number of vendors accepting BITCOIN, price volatility is trending downward – and for long-term investors, that's certainly a good thing. In 2011, the 30 day volatility of BITCOIN was nearly 16%, which today happens to be just about 2%. This means that day to day fluctuations in the price of BITCOIN are decreasing and that the value of BITCOIN is becoming more stable. For a form of currency, this is incredibly important, because it means that the consumer's money is becoming more reliable. BITCOIN will continue to have bouts of volatility, and is still years away from being completely stable.

4) BITCOIN is a hedge against economic uncertainty

For decades, gold has been the go-to safe haven, in times of economic uncertainty, when stocks go up, down or economies collapse, people buy gold. Investors have increasingly turned elsewhere in recent years in the face of economic turmoil. When Cyprus' economy tanked in 2013, BITCOIN soared, when China's Yuan collapsed in 2015, it happened again, and when Brexit sent tremors through the market in 2016, BITCOIN investors had a field day as the currency's value exploded US$ 100 in a day. BITCOIN works as a hedge this way because it's disconnected from the traditional financial system. It offers an easy way for people to exit economies that revolve around government money and bad monetary policy.

5) Buying and selling BITCOIN is easier than people think

Contrary to popular belief, buying and selling the crypto-currency is actually pretty simple: all one needs is a credit card, bank account or PayPal to get started. There are number of easy-to-use platforms for trading and storing BITCOINs. Some of the most reputable include Coinbase, Kraken, Bitquick and Blockchain wallet. Buying and selling BITCOIN today is as easy as trading stocks. BITCOIN still carries plenty of risks and should only account for a small portion of your portfolio. The best investors are well diversified, and BITCOIN is just one place to potentially grow one's wealth.

Over the years the Bitcoin economy has experienced a declining instability in its price. The instability begins when a wave of attention due to any remarkable economic phenomena (Demonetization in our case), draws in new "Bitcoin" examiners and pushes Bitcoin costs to remarkable highs which makes an unsustainable value bubble. The air pocket pops, prompting plunging costs and high instability. Then the value continuously settles, settling on "another typical" cost. Due to demonetization, a wave of media consideration pulled on a swarm of new clients, raising the price of Bitcoin by almost 30%

As can be seen from the graph, post demonetization the Bitcoin volume and price increased constantly up to June 2017.

III. PORTFOLIO CONSTRUCTION

Assumptions

1) Every asset will give a Positive return (Shorted the asset if it gives negative return).
2) Every asset can be shorted.
3) No limitation of supply and Demand.
4) There are no transaction costs.
5) No change in the returns..

Methodology

- Monthly returns are annualized.
- Monthly Std. Deviation is annualized.
- Every portfolio is equally weighted Portfolio.
- A Data of 27 Months have been taken.

The Sharpe Ratio is a risk adjusted ratio, which measures the return in excess of risk free rate.

It is calculated by

$$= \frac{\bar{r}_p - r_f}{\sigma_p}$$

Where:

$\bar{r}_p$ = Expected porfolio return

r_f = Risk free rate

σ_p = Portfolio standard deviation

Portfolio #1:

This portfolio consists of U.S (Inflation Indexed Bonds), Gold, Apple and Novatris Stock.

The below Portfolio shows the Annualised Monthly return of various assets, on one hand it be can seen that Bond and Gold has given negative return of -0.53% and -0.13 % on the other hand Apple and Novatris has given positive returns of 2.85% and 4.50%.

	Bond	Gold	Apple	Novatris	Portfolio
Return	**-0.53%**	**-0.13%**	**2.85%**	**4.50%**	**2.41%**
Std. deviation	**17.98%**	**5.41%**	**10.57%**	**18%**	**10.58%**
Sharpe Ratio	**-0.1630**	**-0.4677**	**0.0426**	**0.1167**	**0.0341**

An equally weighted portfolio has been created, the column highlighted by red shows the results. Bond and Gold have been shorted as they have negative results and we are long on Apple and Novatris.

After taking a risk of 10/58 %, the portfolio is expected to earn a return of 2.41% and has a Sharpe Ratio of .034.

Now "BITCOIN" will be added to the portfolio and results will be assessed:

	Bond	Gold	Apple	Novatris	"BITCOIN"	Portfolio
Correlation with "BITCOIN"	-0.694267	-0.7385	2%	0.1666136	1	
Return	-0.53%	0.13%	2.85%	4.50%	55%	14.80%
Std. deviation	17.09%	5.41%	10.57%	7.11%	101%	37.00%
Sharpe Ratio	-1.4093	-4.4354	-2.2421	-3.3291	0.3124	0.3438

Though "BITCOIN" carries a risk of 101.% but it has also given an annualised return of 55%. Stand alone "BITCOIN" seems to be a very risky but in portfolio the risk can be neutralised. This portfolio adds a return of 14.80% and has a risk of 37%.

If one compares this to the earlier portfolio, it had a risk of 10.58 % and the expected return was 2.41% against this portfolio due to addition of "BITCOIN" Std. Deviation has only tippled at 37 % but the return has been increased by almost five times.

Also the Sharpe ratio of .0341 has increased 10 times to .3438. So this strategy proves to be very beneficial, "BITCOIN" might seem very risky but it has negative correlation to inflation and Gold, so it can be used as inflation hedge.

CPI Bond which targets inflation has an alarming -.69 correlation with "BITCOIN", so if we short "BITCOIN", this can be used as a Inflation hedge.

Portfolio #2:

This is an equity portfolio consists of Apple, Bank of America, Shell, Toyota, Novatris and Walmart. The portfolio has a return of 2.84% for a risk of 13.42% and Sharpe Ratio of .00470.

	Apple	Bank of America	Walmart	Toyota	Novatris	Shell	Portfolio
Return	2.85%	2.97%	0.81%	4.37%	4.50%	1.63%	2.84%
Std. Deviation	10.57%	8.59%	4.97%	4.59%	18.00%	10.23%	13.24%
Sharpe Ratio	0.2469	0.3178	0.1147	0.4300	0.1167	-0.0753	0.047%

Now "BITCOIN" will be added to the portfolio and results will be assessed:

	Apple	Bank of America	Walmart	Toyota	Novatris	BItcoin	Portfolio
Correlation with Bitcoin	0.079466	0.4095023	0.32	0.70	0.166613	1	
Return	2.85%	2.97%	0.81%	1.92%	4.50%	55%	9.62%
Std. Deviation	10.57%	8.59%	4.97%	4.59%	18.00%	101.00%	22.45%
Sharpe Ratio	0.0426	0.0664	-0.3199	0.1167	-0.0753	0.5208	0.3217

When "BITCOIN" is added to the portfolio the return is increased almost four and half times 9.62 % and whereas the risk has been increased to 22.45%. What is good to see here is Sharpe Ratio which tells us whether a portfolio's returns are due to smart investment decisions or a result of excess risk, has increased from .00470 to .3217. The greater a portfolio's Sharpe ratio, the better its risk-adjusted performance has been. So this portfolio with "BITCOIN" has a better risk adjusted performance. What is noteworthy here is almost all the stock has positive correlation with "BITCOIN".

Portfolio #3:

This is a Metal portfolio consists of GOLD per ounce, Copper per Pound, Silver Per KG.

	Gold per ounce	Copper per pound	Silver per Kg	Portfolio
Return	-1.20%	-0.96%	-1.99%	2.59%

Std. deviation	**0.050313634**	**0.048002554**	**0.081163456**	**13.16%**
Sharpe Ratio	**-0.7147**	**-0.7000**	**-0.5409**	**0.0086**

With the results above we can see that stand alone every metal has given negative results for past 27 months for a very high Std. Deviation. The portfolio on whole has given a return of 2.59% and carries an annual risk of 13.16%. The Sharpe ratio is also very low, it has barely been able to earn more than Risk free rate.

	Gold per ounce	**Copper per pound**	**Silver per Kg**	**Bitcoin**	**Portfolio**
Correlation with Bitcoin	**-0.7385**	**-0.07**	**-0.16**	**0.01**	
Return	**-1.20%**	**-0.96%**	**-1.99%**	**55.00%**	**17.06%**
Std. Deviation	**0.050313634**	**0.048002554**	**0.081163456**	**101.00%**	**42.53%**
Sharpe Ratio	**-0.7147**	**-0.7000**	**-0.5409**	**0.5208**	**0.3554**

Above, after adding “BITCOIN” to the Portfolio, the return has shot up to 17.60% but the risk has also increased substantially. “BITCOIN” having negative correlation with these assets makes a point that we can use the Hedging strategy. So, ”BITCOIN” investment standalone may feel like a risky investment but with other asset in the portfolio, the risk can be hedged and good return can be expected.

IV. CONCLUSION

For Bitcoin start-ups in India, the festival season began in November with Prime Minister Narendra Modi and U.S President Donald Trump being early Christmas gifts. Demonetization has drawn in attention towards Bitcoin as more and more people are using it and growing number of vendors are accepting it. People are using Bitcoin as a hedge against economic uncertainty. Buying and selling of Bitcoin is easier than what people think. According to Forbes, post demonetization the volume of Bitcoin being traded in India has substantially increased to nearly two times the prior level.

As far as price behaviour of Bitcoin is considered, the Bitcoin economy has experienced a declining instability in its price. The instability begins when a wave of attention due to any remarkable economic phenomena, in our case demonetization, draws in new Bitcoin examiners and pushes Bitcoin costs to remarkable highs, which makes an unsustainable value bubble. Essentially, the air pocket pops prompting plunging costs and high instability. Also through the inclusion of Bitcoin in portfolio, we understood that – Standalone Bitcoin seems to be risky but in portfolio the risk can be neutralized.

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