



# Bad Money Drives Out Good Money: Understanding the Economic Science of Cryptocurrency

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## Abstract

Cryptocurrencies manifested by Gresham Law work in a free market mechanism driving out the controlled money supply regime with the trademark of transit value, medium of currency exchange and little bit payment standard. In lieu of increasing adaptability and massive returns on cryptocurrency, the author is intended to study select macroeconomic variables that affect cryptocurrency in India as well as in the world. Its current scenario & future prospects, opportunities & challenges of cryptocurrencies with special reference to Bitcoin. To study these objectives the author has employed techniques of correlation, ordinary least squares (OLS) and analytical research methods. In 76% countries cryptocurrency is legal to use, trade and hold. Bitcoin is the industry leader and more mature than others. One bitcoin was equal to INR 47, 87,818 on November 12, 2021 by then it accounted for 22, 067. 51 percent returns since November 2015. It is noticeable that a return on bitcoin is magnificent during economic disruptions. There is a negative correlation between World GDP and Bitcoin. In addition, there is a significant relationship between bitcoin and nifty 50 during the lockdown when GDP was in negative territory. One percent change in nifty fifty led to 1.37 percent change in bitcoin. Historical returns on bitcoin are derived by the global liquidity with increasing World Broad Money that has positive correlation with bitcoin, cheaper monetary policy across the major economies, and expanding technological leveragesmartphones, PCs, computers, application based trading and internet uses within the country and across the globe. Notwithstanding volatility and speculation due to legislative uncertainty and nose diving risk due to an asymmetric information & unregulated mechanism, cryptocurrency is like a water-diamond paradox celebrated by retail investors.

**Key Word: Cryptocurrency, Cryptonomics, Bitonomics, Nifty 50, Liquidity, World GDP, technological leverage.**

## Introduction

Gresham' Law stated that "Bad money drives out good money". However, Initially, this principle was based on the 'composition of minted coins and the value of precious metals used in them. Later on this is applied to currency markets to determine the relative stability of different currencies' value in global markets'. Next level development of the Gresham Law is led by cryptocurrency revolution operated in the environment of laissez-faire. Cryptocurrency is the paradise of non-interventionist ruled out government controlled money supply systems. It is an accelerant of neoliberalism to promote deregulation and globalisation at a new horizon. However, tax policy & jurisdiction, illicit uses of cryptocurrency in terms of black money, fund criminal activities and cross border terrorism etc. are burning issues needed to adress within the country and across the globe through the domestic legislation as well as global consensus. It should come in the purview of the regulatory and supervisory role of the WTO, the IMF and the World Bank for greater coordination and better use of global digital currency.

Cryptocurrency is a trendsetter-secured-technology encrypted with complicated cryptography that is built on a decentralised peer-to-peer (P2P) computer network system operated on the blockchain. “Crypto-tech is essentially a technology secured by cryptography, which enables exchange of data and facilitates transactions which are duplicated and distributed across the entire network of computer systems on the blockchain (2021, NASSCOM). Supply of cryptocurrencies is initiated by the process of “mining” that requires a sophisticated computer enabled ‘to solve an extremely complex computational maths problem’ that includes proof-of-Work (PoW) and Proof of Stake (PoS). New crypto comes into circulation through mining added on blockchain for the transaction. Bitcoin is the leader of the crypto tech wave evolved as a *de facto* standard. Big corporations including Tesla, Paypal, Visa have already shown their interest in cryptocurrencies especially bitcoin and BNY Mellon, Black Rock, Mastercard have also embraced some other digital coins. El Salvador became the first country that granted legal tender status to bitcoin.

During the global lockdown due to covid-19 surge the prices of cryptocurrency. Now cryptocurrency is in the limelight enshrined with triple digit returns. As per the report of NASSCOM, “Bitcoin, DeFi (Decentralised Financial), crypto capital and CBDCs (Central Bank Digital Currencies) are driving the growth of crypto market: over the last one year, decentralised finance market has registered a jump of 100x, and lending on DeFi platforms has increased by over 650%. Bitcoin has emerged as the fastest asset to reach a market cap of USD 1 trillion surpassing gold and US Dollar.” We can observe Cryptomania across the world specially among the youths who are advanced and keen interested in a new era of technology. They have ambitions on one hand and technology on the other hand. However, cryptocurrency is one of the volatile and highly speculative investments due to legislative uncertainty and nose diving risk due to an asymmetric information & unregulated mechanism. In lieu of increasing adaptability and massive returns on cryptocurrency, the author is curious about studying the current scenario & future prospects, opportunities and challenges of cryptocurrencies. More specifically to study the growth of cryptocurrency with special reference to Bitcoin. The author is also interested in studying the factors that affect cryptocurrency with reference to India. In short, the author tried to understand the economic science of cryptocurrency-Cryptonomics. To study these objectives the author has employed techniques of ordinary least squares and analytical research methods. The researcher analysed cryptonomics in section I & II in terms of global and Indian scenarios respectively. Section III presented the analysis of bitonomics-economics of bitcoin. Following section IV and V included future prospects, opportunities and challenges of cryptocurrency.

## Review of Literature

**Moore and Christin (2013)** were of the view that Bitcoin has enjoyed wider adoption than any other crypto currency. They empirically investigated the risk prevalent in Bitcoin exchanges,

They conducted a survival analysis on 40 Bitcoin exchanges and found that out of 40 exchanges, 18 have since closed over the past three years, with customer account balances often wiped out. They also found that average transaction volume of an exchange is negatively correlated with the probability it will close prematurely but positively correlated with experiencing a breach. Further, logistic regression results showed that popular exchanges are more likely to suffer a security breach.

**Baek and Elbeck (2015)** have used Bitcoin and S&P 500 Index daily return data to examine relative volatility using detrended ratios. They also investigated the effect of select macro economic variables on Bitcoin market returns. Their results reported that volatility in the Bitcoin market is internally driven which means that this market is highly speculative at present and at the introductory life cycle stage. All external economic factors do not have any significant bearing on Bitcoin market returns.

**Polasik et al. (2015)** have discovered that Bitcoin returns are driven primarily by its popularity. They also examined how country, customer and company specific characteristics interact with the proportion of sales

attributed to Bitcoin. They found that company structures, use of payment methods, customers' knowledge about Bitcoin, and size of economy had a significant bearing on Bitcoin returns.

**Raskin and Yermack (2016)** stated that the blockchain technology behind digital currencies has the potential to improve central banks' payment and clearing operations, and possibly to serve as a platform from which central banks of different countries might launch their own regulated digital currencies. Launching digital currency could have insightful implications for the banking system, narrowing the relationship between citizens and banking system as it removes the need for the public to keep deposits in commercial banks.

**Wonglimpiyarat, (2016)** argued that the main obstacle of Bitcoin (cryptocurrency) is lawless tender. Bitcoin requires the government's legislation to boost the permissibility of this new currency. Further, he anticipated that Bitcoin currency may transform the future of banking in developing countries but it is hard to substitute a cash-based society.

**Jani, (2018)** has studied the growth of cryptocurrency and its challenges & potential impacts of legislation in India. He observed that cryptocurrency, especially bitcoin, offers a new, effective and attractive model of payment methods that could boost corporate operation and their earnings. It could bring more positive changes in the e-business & e-payment sector by easy, tradeable, exchangeable and secure availability of bitcoins. But trust, risk and uncertainty about the cryptocurrency due their uncontrolled, unregulated and high level of speculation. He indicated that cryptocurrency would be the next currency platform due to the large volume of cryptocurrency that is flowing in different systems. He also noticed a high level of trust and confidence to use cryptocurrency. The future of cryptocurrency is promising, revealing more opportunities to bring positive changes and progress to e-Business and e-Payment Sectors but he also ushered in extra precautions of using such virtual money. **Shukla & Akshay (2019)** have observed awareness and perception about the cryptocurrency in Bangalore on the basis of primary survey. They concluded that people in general are aware of cryptocurrency and they would like it as an investment asset in their portfolio for good returns. However, they have shown unwillingness to invest due to regulatory uncertainty.

**Thukral, et. al (2019)** has analysed the impact of macroeconomic factors on Bitcoin returns. They used panel data from 2013 to 2016 for the growth of Bitcoins in various countries. They also used OLS and Cusum Test for relationship analysis. They have found that there is a significant growth rate in the Bitcoin industry in sample countries. They also underlined the high volatile nature of Bitcoin. Subsequently, they investigated that economic development & financial condition of a country has an inverse relationship with bitcoin returns. When turmoil in economies increased the attraction for virtual currencies.

**Mubarak & Manjunath, (2021)** have discussed the concept, functioning and trading of Bitcoin (Cryptocurrency). They also compared investment risk between bitcoin and gold. They concluded that the value of gold was consistent (less volatile) while the value of bitcoin was inconsistent (more volatile) between 2018 to 2021.

## Rationale of the Study

Cryptocurrency is one of the emerging global phenomena traded, exchanged, held & invested across the globe without any supervision of specialised national or international agencies or institutions due to its nature. Its technological design is creating a multi-billion dollar prospect. However, there is a dearth of literature that focused only on characteristics of cryptocurrency and its popularity, mainly bitcoin, though some discussed growth of bitcoins empirically. This paper attempts to discuss some unexplored macroeconomic factors that drive the growth of cryptocurrency. This paper is different from others in terms of coverage, dimensions and time period with updated data set.

## Objectives of Study

1. To study the current scenario & future prospects of cryptocurrencies.

2. To study the growth of cryptocurrency with special reference to Bitcoin.

## Hypothesis

1. H0: There is no significant relationship between Nifty 50 and Bitcoin.

## Methodology and Data Sources

This paper has analysed the Economics of Bitcoins. The author has decoded the trends & growth of the cryptocurrency in the world and as well as in India. So, the author has collected data on various macroeconomic variables from different sources. The author has collected the data on cryptocurrency viz. Bitcoin price and their returns and market cap data of popular cryptocurrencies from <https://in.investing.com>. Similarly, World GDP, World

Broad Money from World Bank, Repo Rate & Fed Rate from the central bank of India (RBI) & the US (Federal Reserve), respectively. In addition, the author has also extracted some relevant data on the Crypto Industry published on different financial websites. The author has used secondary data for this study.

This paper has employed empirical methods such as trend analysis, correlation and ADF-Test, Ordinary Least Squares (OLS) method. Moreover, explorative methods are also used to draw some useful inferences from various literatures and articles. The time period for the study has been chosen from 2013 to 2021. The rationale to choosing this time period is to track the growth in cryptocurrency since its inception.

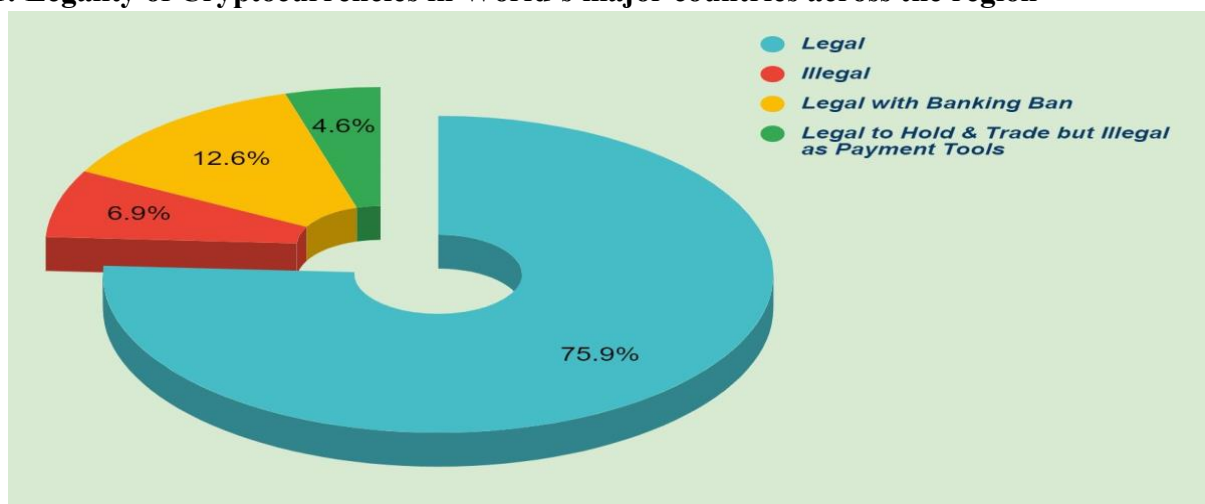
## Analysis

### I. Cryptonomics: Global Scenarios

Currently, there are 9,633 known cryptocurrencies in the world. Its aggregate market cap is \$ 2.17 trillion. The 24-hour volume of cryptocurrencies is about \$88.08 billion across the world. Quantity, volume and value growth of cryptocurrency is tremendous over the years due to dissemination of information technology and its own feature of internet based decentralised finance (DeFi) system. Due to its reach and value-buying makes cryptocurrency very popular and it emerges as one of valuable global assets without any assured legal guarantees.

The blockchain data firm the Chainalysis has released its 2nd Global Crypto Adoption Index in October, 2021. It revealed that global crypto adoption has increased to 881 percent in 2021. Vietnam, India and Pakistan are in the lead role ranked as 1st, 2nd and 3rd. Adoption in emerging markets has been growing continuously due to P2P platforms.

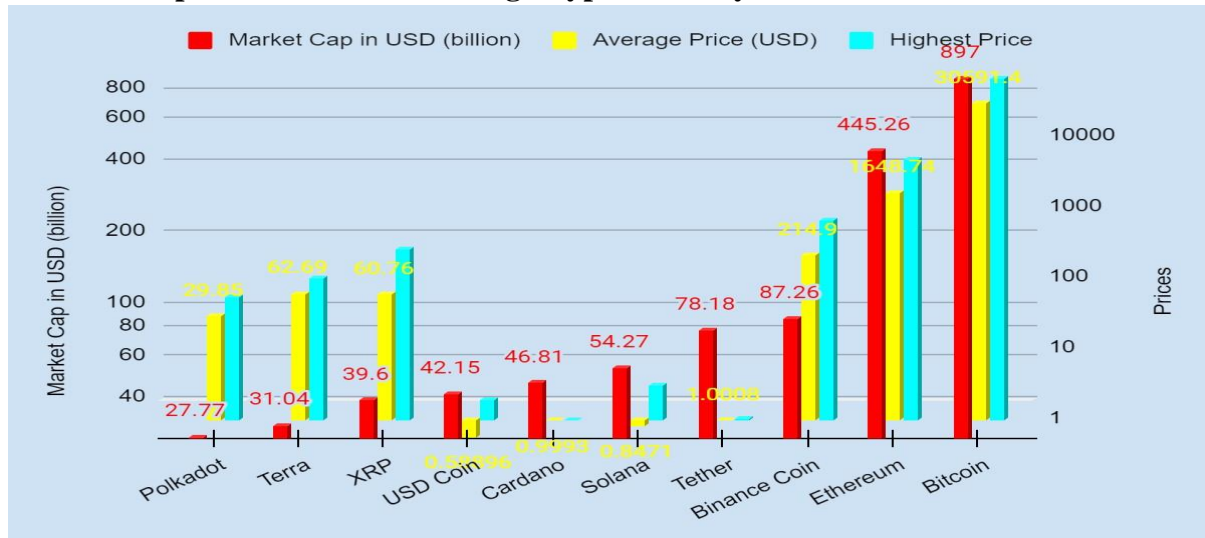
**Figure-1: Legality of Cryptocurrencies in World's major countries across the region**



**Source: Data is compiled for 87 major countries of the world from wikipedia**

There is no broad consensus on cryptocurrency, yet, among the countries. Whether it is an asset or whether it is a currency or equity instrument but even though cryptocurrency is a legal affair in 76 percent countries (66 out of 87 including India, the EU and the G-7). Where it is permissive without legal tender and can be purchased, held, traded, and invested. However, its use is contentious in some countries, among which few put legal restrictions on its use including Indonesia & Turkey and few allowed it indirectly including Canada & Russia. It is also fully prohibited in 7 countries including China.

**Figure-2: Market Capitalisation of 10 Leading Cryptocurrency**



**Source: Investing.com**

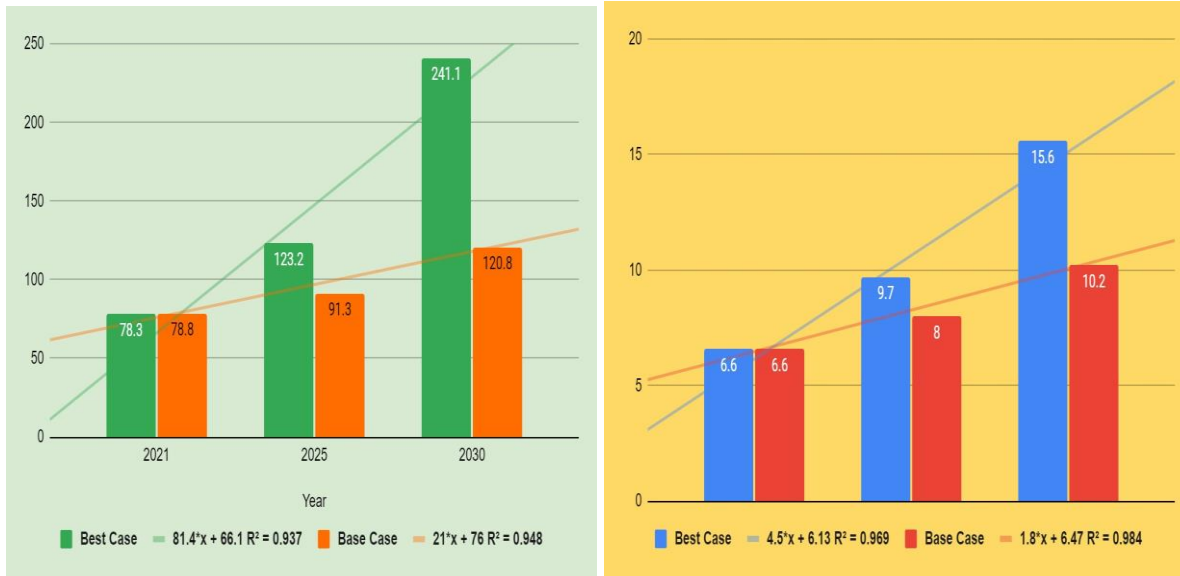
*(Note- Average Price is compiled for last 23 months since February 2020 inception of covid-19 while market cap data is taken till 30th December 2021)*

There are a large number of cryptocurrencies. Bitcoin is the most popular cryptocurrencies with a market cap of 897 US billion dollars (USBD). Its average price was \$30,591 during last 23 months since start of covid-19. Its current weakly price was ~\$47000 on last of week of december. However, it made a lifetime high to \$68,990. It has given nearabout 70 million returns aggregately and near about 6 million returns per annum. Ethereum is the second most popular cryptocurrency with a market cap of 445.26 USBD. It made a lifetime high to \$4864.06 and has traded at an average price of \$ 1648.74 since the last two year. Ethereum has given 32,692 percent returns since its inception in 2016. Cryptocurrencies rather than bitcoin are known as altcoin. Binance Coin (market cap 87.26 USBD), Tether (market cap 78.18 USBD), Solana (market cap 54.27 USBD), Cardano (market cap 46.81 USBD), USD Coin (market cap 42.15 USBD), XRP (market cap 39.6 USBD), Terra (market cap 31.04 USBD) and Polkadot (market cap 29.85 USBD) are other altcoin whose market cap is less than 100 USBD. See figure-2.

## II. Cryptonomics: Indian Scenarios

Cryptocurrency set a craze for returns in every corner of the world across the age group specially in youth. India is no more an exception with huge demographic dividend. The Crypto Tech Market in India has started to pick up between the risk and uncertainty. Its market size was 53.1 million USD in 2016. Currently, it stood at 74.2 million USD, registering 39 percent growth. The Indian crypto tech industry provides nearly 50,000 job opportunities in 230 plus crypto tech startups with 1.5 crore retail investment (NASSCOM). Flowering during covid-19 make a special appearance during the Indian Premier League (IPL). Application based trading facilities and easy account opening encouraged tremendous growth opportunities in trading either in equity or cryptos.

**Figure-3: Crypto Market Size (USD million) and Investment (USD billion) in India**



**Source: NASSCOM**

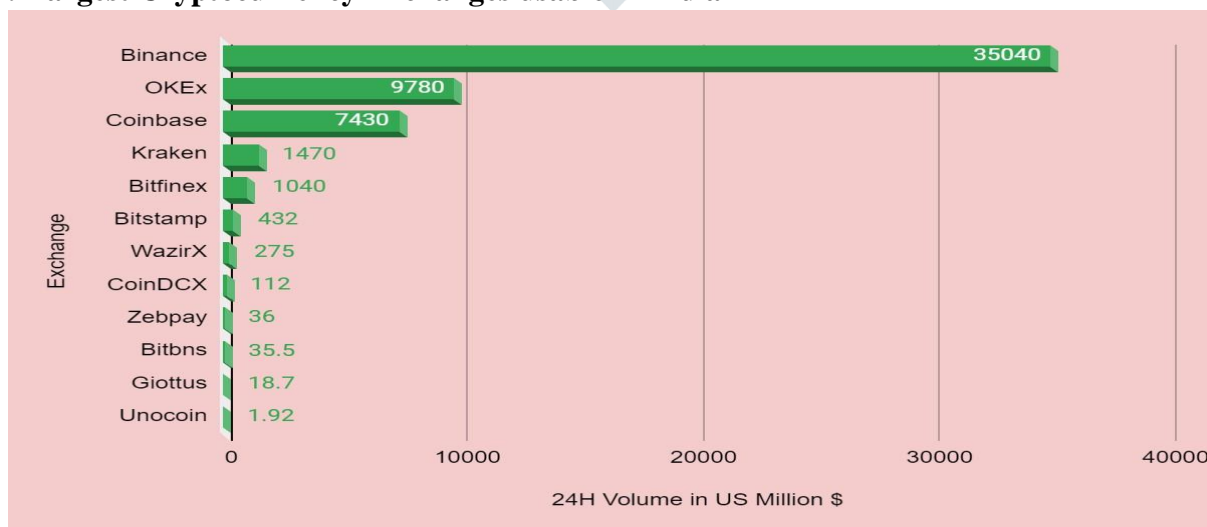
*Base Case - Growth and adoption of CryptoTech in India continue at the current rate based on specified factors.*

*Best Case - Growth and adoption of CryptoTech in India accelerates rapidly with two-sided growth – higher demand-pull and investments in development and maturity of CryptoTech*

We can observe above figure-3, there are two scenarios namely best case and base case. The crypto tech market would grow nearly three times to USD 241.1 million in best case scenario in 2030 from current USD 78.3 million while in base case scenario it will grow 64 percent to USD 120.8 million from current USD 73.08 million. Best case scenario will register 57.34 percent growth by 2025, however, the base case scenario will register 23.71 percent growth. In both scenarios it would make a decent growth. The crypto market investment is 6.6 USDB, it would increase by 54.54 percent & 136.36 percent in base case and best case scenario, respectively, in 2030. The crypto market investment would be 8 USBD in 2025 and 10.2 USBD in 2030 in base case scenario while it would rise to 9.7 USBD and 15.6 USBD in best case scenario in 2025 and 2030 respectively. Best case trends lines have more slope than base case trends lines reflecting greater changes in Indian crypto industry in the best case when clouds of uncertainty will remove with accelerated demand and maturity of the industry.

There are a number of crypto exchanges, among which, some are quite popular as per their market cap in terms of 24 hour volume in USD. Binance with the market cap of 35.04 USBD, OKEx with 9.78 USBD, Coinbase with 7.43 USBD and Kraken with the market cap of 1.47 USBD, Bitfinex with 1.04 USBD are leading crypto exchanges usable in India. See figure-4.

**Figure-4: Largest Cryptocurrency Exchanges usable in India**



## Source: CoinMarketCap

Note: The volume of trade is variable, this list is ordered as per 24 hour trading volume in US\$, as of close of 1st Nov 2021.

Bitstamp, WazirX, CoinDCX, Zebpay, Bitbns, Giottus, Unocoin are other popular exchanges which market cap is 432 USD million, 275 USD million, 112 USD million, 36 USD million, 35.5 USD million, 18.7 USD million and 192,000 USD respectively. CoinSwitchKuber, Vault, BuyUCoin, CoinMama are also made attention but its data is not available. The value of India's digital currency market has grown from USD 923 million in April to USD 6.6 billion in May 2021 (Chainalysis).

According to an estimate about 10 crore Indians currently hold cryptocurrency across the age group. Young population would have shown higher interest in cryptocurrencies to not only to maximise their returns but also portfolio diversification. One of India's largest crypto exchanges wazirX reported that it has the largest user base under the age 30. However, ZebPay and CoinSwitchKuber saw an increase in the age group above 45. Unocoin observed senior citizens' deep interest in cryptocurrency who are generally risk avoidance saving class but concentrated in metropolitan mainly Bangalore, Mumbai and Delhi. According to WazirX, 62.1 percent of its users are below 34 years and 17.7 percent are between the age of 35-44 years. It also saw a 337 percent rise in users over 45 years from January to March 2021 (Economic times, April 29, 2021). It reflected growing interest in cryptocurrency across the age group.

### III. Bitonomics- the Economics of Bitcoin 1. Growth and Trends

Bitcoin is the leader of the crypto tech industry all over the world that crossed USD 1 trillion market cap in 2021(subject to volatility). It has given multibagger returns to its investors. The price of one bitcoin was Rs. 21,598.35 on November 20, 2015. Since then it made a lifetime high price to INR 47,87,818 = 1BTC on 12 november 2021. Now it settled down to INR30,56, 165.68 = 1BTC (On 7 January 2021) with 14, 082.65 percent returns. It means a bitcoin investor made 140 lakh on 1 lakh investment in 2015. However, bitcoin is a highly volatile asset even though it is quite popular among the Z class investors. This is the mesmerising tale of investment that attracted the young growing force of India. What are the factors that drive growth of bitcoins? Of course, crazy returns are one of the factors. See figure-6.

Figure-6: Change in Price of Bitcoin (Annual Returns)



Source: Investing.com

Note- Return is calculated in US\$ value.

Price of bitcoin is highly volatile. It has given more than 8x returns to 101 percent negative returns in a single year. Bitcoin had given 2.5x returns in 2010, 6.3xs by the next year in 2011. Bitcoin had given the biggest annual returns 8.4x in the year of 2013 before the reduction in 2014 by 64.64 percent. It had given 101.04 percent negative returns in 2018 due to forbidden legal tender status by the major sovereign governments. Prices of bitcoin consolidate from 2014 to 2019. However, since global lockdown it gained momentum again in 2020 given 174.22 percent returns and 78.7 percent returns in 2021 that showed a positive significant relationship with the stock market concluded by the author on the basis of ordinary least squares (OLS) analysis presented following.

**Table- 1: ADF Test of Changes in Bitcoin and Nifty 50 for Stationarity**

Variables	Trend & Intercept	Coefficient	t-statistics	p-value	Null Results
Changes in Bitcoin	Both	-0.849	-3.875	0.0313	Rejected
Changes in Nifty 50	Only Intercept	-1.133	-4.964	0.0007	Rejected

\*MacKinnon (1996) one-sided p-values. Variables are stationary at level.

#### Source: Author's Estimation using EViews

Both variables are stationary at Level and have no problem of predictivity. The researcher has applied a p-value approach in which p-value is obtained by using the calculated test statistic. For a left-tailed test,  $p\text{-value} = P(Z < Z_c)$ , where  $Z_c$  is a calculated statistic.

#### Regression Result

Dependent Variable: CHANGE\_IN\_BITCOIN

Method: Least Squares (Gauss-Newton / Marquardt steps)

Sample: 1 23

Included observations: 23

$\text{CHANGE\_IN\_BITCOIN} = C(1) + \text{CHANGE\_IN\_NIFTY}$

**Table-2: Regression Result**

Variable	Coefficient	t-statistics	p-value	Null Results
C	8.5036	1.9673	0.0625	Rejected
Changes in Nifty 50	1.3792	2.4214	0.0246	Rejected

R-Square=0.21

F-statistics= 5.8631

Prob(F-statistic)= 0.0246

P<0.05



**Source: Author's Estimation using EViews**

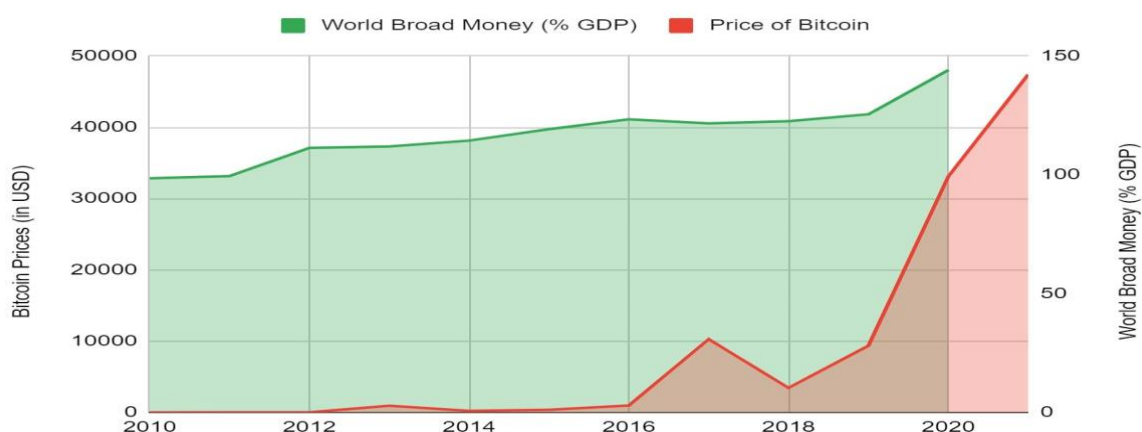
The author was interested to regress change in bitcoin due to change in nifty 50 i.e. independent variable. The null hypothesis rejected as calculated p-value equal to 0.0246 is less than tabulated value. Henceforth, there is a significant relationship between percentage change in nifty 50 and percentage change in bitcoin during the period January 2020 to December 2021. The bull rally in the Indian stock market affects bitcoin prices. One percent change in nifty fifty led to 1.37 percent change in bitcoin. It means nifty growth would lead to growth in bitcoin at other things remaining constant. It could also be concluded that factors that moved the nifty 50 also lead the prices of bitcoin.

We have seen the biggest stock market rally after immediate nose diving when the news of lockdown broke out across the world. The stock market led by many factors primarily enhanced liquidity and increased market participants by young India. Bitcoin emerged as an instrument of investment over the years, therefore, it was also included in investors' portfolios at the same time as an element of diversification and greater returns. Its rally also included almost the same factors that operated in stock markets. The prices of cryptocurrencies, especially bitcoin, depend on a number of variables like GDP, market liquidity, returns, education, technological leverage and speculation etc. so let us discuss some of these factors in the following section.

## 2. Liquidity

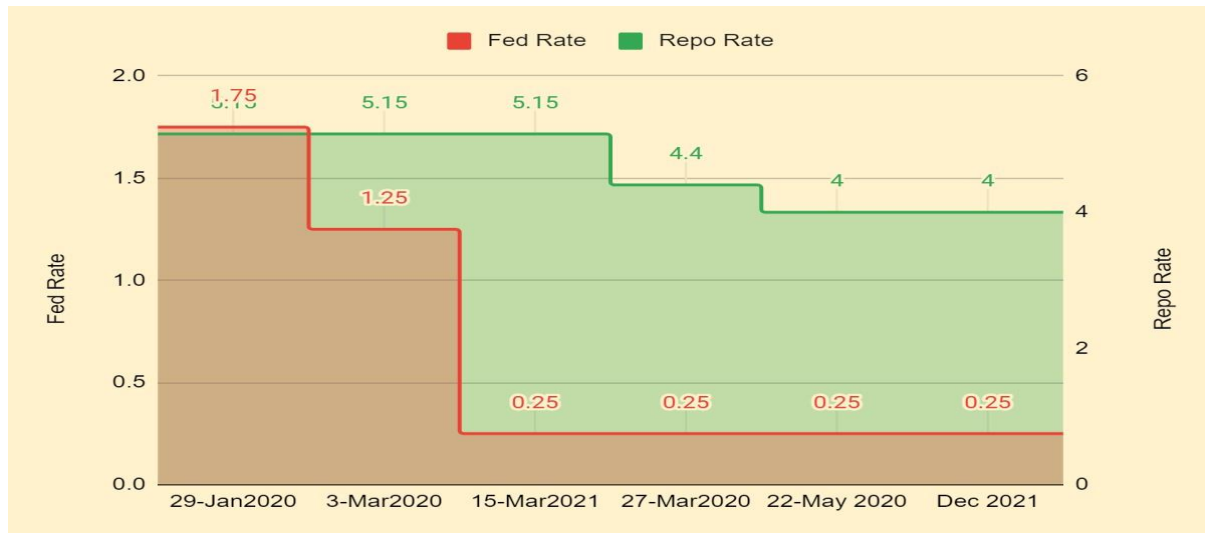
This is the era of Quantitative Easing (QE) led by the Fed across the globe. "Since 2008, major central banks have pumped over \$25 trillion into the global economy with over \$9 trillion in response to COVID-19 alone. To address the economic shock triggered by COVID-19, the world's four major central banks- the Federal Reserve, the Bank of Japan, the European Central Bank, the Bank of England have expanded their QE programs by a total of \$9.1 trillion to support their economies and the functioning of global financial markets. The four banks' new asset purchases have increased the size of their cumulative balance sheet by roughly 60 percent since the beginning of 2020" (<https://www.atlanticcouncil.org/global-qe-tracker/>). Some fraction of it is going towards laissez-faire crypto tech market especially bitcoin

**Figure-7: Trends in World Broad Money and USD-Bitcoin Prices**



**Source: World Bank & Investing.com**

World Aggregate Monetary Resources (AMR) has been increasing continuously that we can observe from the figure-7. World broad money as a percentage of GDP was 98.52 percent in 2010. It stood at the level of 144.13 percent of GDP in 2020. It registered 14.87 percent growth from the previous year 2019. Average Prices of bitcoin also increased more than 2x per annum in the same period between 2010 to 2020.

**Figure-8: Post-Covid Trends in Monetary Policy of India and the US**

**Source: RBI & Federal Reserve**

The Fed Rate is a benchmark monetary rate that affects global markets. FIIs inflows and outflows depend on fed rates that in turn increase and decrease the flow of liquidity in various markets including India. The story of bitcoin is not far away from it. The Fed rate was 1.75 percent in Jan 2020 that was reduced by 50 basis point to 1.25 percent on 3rd March

2020. It further reduced by 100 basis points to 0.25 percent on 15th March 2020. Since March 2020 it has remained at 0.25 percent. There was an 85.71 percent reduction in the fed rate. Cheaper benchmark lending rate increases liquidity all over the world. Same is done by all major central banks of the world including India. India's benchmark liquidity Repo rate also reduced by 115 basis points to 4.4 on 27th March to 4 percent on 22nd May from 5.15 percent in January 2020. However, there was 22.33 percent reduction in repo rate due to covid-19. Currently, status quo maintained by the RBI on repo since May 2020. There is no doubt enhanced liquidity era not only extended stock market rally but also led cryptomarket rally. However, there is a disconnect between these rallies and real GDP. It is confirmed by correlation results presented in the following table-3.

**Table-3: Correlation**

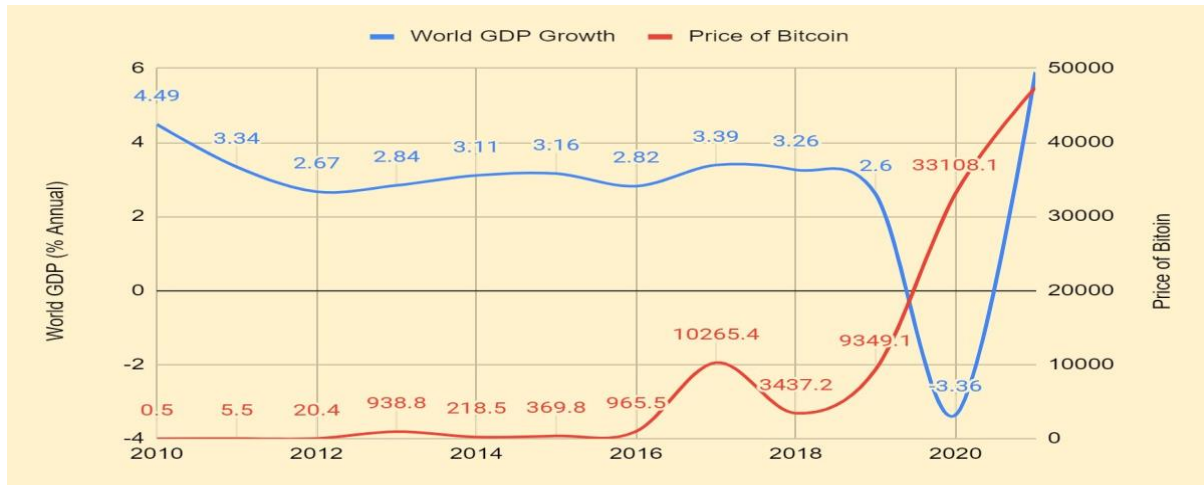
Variables	Annual World GDP	World Broad Money Supply	Bitcoin Price
Annual World GDP	1	-0.782631	-0.912637
World Broad Money Supply	-0.782631	1	0.805314
Bitcoin Price	-0.912637	0.805314	1

**Source: Author's Calculation using EViews**

### 3. World GDP

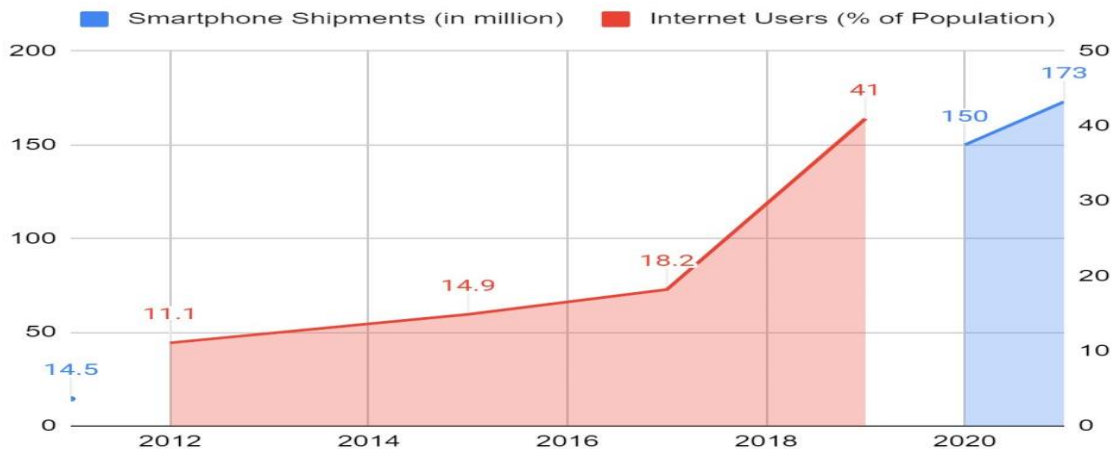
The correlation between World GDP growth and USD-Bitcoin price is quite interesting. The correlation between World Broad Money Supply and Bitcoin is positive but correlation between World GDP and Bitcoin is negative. When World Broad Money Supply as a percentage of GDP increases by 1 percent, the price of bitcoin increases by 0.86 percent.

However, the price of bitcoin is reduced by 0.91 percent when World GDP increases by 1 percent.

**Figure-9: Trends in World GDP and USD-Bitcoin Price**

**Source: World Bank & Investing.com**

Global economic upheaval and periodic ups and downs in the global economy lead the evolution of bitcoin. It is one of the interesting investment instruments during the disruption in the world economy. It can be observed from the figure-9. Where we have seen three major economic disruptions namely US subprime Crisis, the euro crisis and global pandemic covid-19 in the world economy in the recent past, bitcoin became one of the popular investment assets that gave unexpected returns in such a negative environment. Bitcoin has proven a multibagger investment asset since its inception in 2009. It rises continuously with higher fluctuations. However, World GDP was stagnant with declining trends during the same period. One thing is very important, the drivers of world economic growth are emerging and developing economies where the adoptability of cryptocurrencies is mushrooming.

**Figure-10: Internet Users and Smartphone Shipment in India**

**Source: World Bank & DoT (GOI)**

Today, India has the largest mobile phone connections of about 1.2 billion, 700 million internet users and 600 million smartphones increasing 25 million per quarter (GoI, 2021). According to the World Bank India's Internet user as a percentage of population has been increasing continuously. Internet users were 11 percent in 2012 that rises to 41 percent in 2019. According to the TRAI, the total number of internet users is 825.30 million in India. There are 26 million is wired internet users remaining 799.31 million in wireless subscribers. Trends in internet users and smartphone users increase secularly across the globe. Hence the investment and trading in cryptocurrencies reaches the larger masses especially the youths.

#### IV. Future Prospects

As per the estimate of NASSCOM, "the crypto Tech Industry is a fast growing industry globally. Crypto Tech application in trading accounts for 70 percent, followed by P2P payments, and remittances. The market is expected to reach a size of USD 2.3 billion by 2026 globally, up from an estimated size of USD 1.6 billion in

2021". Further, the report anticipated that "the crypto tech market is poised to grow 2x faster and create a value of USD 184 billion by 2030. The crypto market is likely to account for USD 15.6 billion in investment by 2030, and holds promise to solve some of the emerging challenges such as health & safety, digital identity, trade finance, and remittances. India's crypto-tech market is expected to grow to \$241 million by 2030 (CAGR 14%), potentially creating 877,000 jobs by then." See figure-3.

## V. Opportunities and Challenges

As the author earlier discussed the cryptocurrencies is one of the secure systems encrypted by cryptography and run on a P2P network that is able to check corruption. It is time effective and cost effective that endorsed proof of work integrated by the blockchain technology. The blockchain technology is transparent, secure and efficient technology. Since cryptocurrencies operated is decentralised financial (DeFi) system probably encourage black economy, may lead illegitimate use and cross border terrorist financing. It also involved the element of high risk and high volatility due to absence regulatory consensus within the country and across the globe fuelled by speculation. Hence crypto currency requires stability.

India is bringing the Cryptocurrency and Regulation of Official Digital Currency Bill, 2021. The cryptocurrency is a decentralised system, it can be neither a control nor a ban. Therefore, the solution lies in regulation that requires a "Calibrated Approach". The RBI may launch its own digital currency or regulate these cryptocurrency as an asset with a crystal clear legal framework.

## Conclusion

There are a large number of countries (76%) where cryptocurrency is legal to use, trade and hold. Only 6.9 percent of major countries of the world make it illegal. However, 12.6 percent countries allowed it with banking ban and 4.6 percent countries allowed it to hold & trade but illegalized for payment. Cryptocurrency especially evolved as a store of value, an investment asset rather than standard for deferred payment and a unit of account. It is debatable whether cryptocurrency is an investment item or a currency?

The blockchain technology provides developers an opportunity to create different cryptocurrency for different functionality. Among the large number of cryptocurrency, Bitcoin, Ethereum, Binance coin, Tether, Solana, Cadano are more popular. Bitcoin is the industry leader and more developed than others. Massive returns on cryptocurrency makes it more popular. The Crypto Tech Industry is quite popular in India. The Crypto Tech Industry registered 39 percent growth in India since 2016. At present, the Indian crypto tech industry provides nearly 50,000 job opportunities in 230 plus crypto tech startups with 1.5 crore retail investment. Further, it is estimated that the industry would grow by 200 percent by 2030. (NASSCOM). According to an estimate about 10 crore Indians currently hold cryptocurrency worth \$10 million across the age group. Young population would have shown higher interest in cryptocurrencies to not only to maximise their returns but also portfolio diversification. Binance, OKEx, Coinbase, Kraken, Bitfinex are leading crypto exchanges of India facing stiff competition from Bitstamp, WazirX, CoinDCX, Zebpay, Bitbns, CoinSwitchKuber and Unocoin.

Massive returns on cryptocurrency attracts people from different age groups, especially youths. One bitcoin was equal to INR 47, 87,818 on November 12, 2021 by then it accounted for 22, 067. 51 percent returns in terms of India Rupee since November 2015 when one bitcoin was equal to INR 21, 598.35. However, cryptocurrencies are very volatile in nature. It is noticeable that a return on bitcoin is magnificent during economic disruptions. There is a negative correlation between World GDP and Bitcoin. In addition, there is a significant relationship between bitcoin and nifty 50 during the lockdown when GDP was in negative territory. Historical returns on bitcoin are derived by the global liquidity with increasing World Broad Money that has positive correlation with bitcoin, cheaper monetary policy across the major economies, and expanding technological leverage- smartphones, PCs, computers, application based trading and internet uses within the country and across the globe. Notwithstanding various issues related to risk and uncertainty, cryptocurrency is like a water-diamond paradox celebrated by retail investors.

## Limitations

Cryptonomics is one of the emerging sectors that has a number of dimensions such as parallel economy, money laundering, cross border terrorism financing, fruds, legistive aspects, taxation, regulations and superviosin etc. However, there is a small number of studies. The author has tried to explore only a few unexplored dimensions. Data availability on various cryptocurrency is one of the important limitations.

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