Is Cryptocurrency a Bubble with special emphasis on India?

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Date: August 2021

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Summary:

2020 and 2021 have been unusual years, not only for medical sciences but also for the world economy. A financial instrument that gained a huge momentum recently is cryptocurrency. This research paper analyses the mass hysteria that has developed among the Indian population, especially during March and April of 2021. As we take lessons from previous financial crisis, like 2008 Housing Bubble and the 1637 Tulip Bubble, cryptocurrency bubble seems like a plausible event. Poignant factors contributing to this bubble speculation are misinformation, asymmetric information, herding behavior, and disposition effect. The Kindleberger-Minsky model has been the basis for observing this behaviour. This model talks about the common pattern in financial bubble formation and the paper explains how relevant it is today in the Indian cryptocurrency market. Primary data from the Indian population has been collected to show the existence of asymmetric and misinformation. The final part of the research paper talks about the regulation of cryptocurrency. A number of recommendations have been presented to curb this potential financial threat to the economy.

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By Ansh Gupta (2021)

Acknowledgements: Dr. Michael Michaelides, John Komlos (Visiting professor, Harvard University and Professor emeritus, University of Munich), Harvard Library (HOLLIS), and Allegheny College AggreGator.

Keywords: Cryptocurrency, Bubble, Misinformation, Asymmetric information, herding behaviour, regulation, Indian Cryptocurrency Market.

Introduction

“Aapne ab tak Bitcoin nahi khareeda kya!?” (Meaning- Haven’t you bought a Bitcoin yet). This Hindi statement encapsulates my whole research paper and the motivation behind it.

Cryptocurrency is a digital currency that is created using an encryption algorithm. These are virtual currencies secured by cryptography and blockchain. The government or a particular company does not issue these currencies. It is the people who solve problems to get rewarded with cryptocurrencies. They use computers and specific devices, such as ASIC and GPU, to carry out this process. This process of extracting cryptocurrencies is called ‘mining.’ After a ‘miner’ receives these cryptocurrencies, they come into mass circulation, where people trade them to earn profits.

Bitcoin was the first cryptocurrency invented in 2008 by Satoshi Nakamoto (unknown name of a person or group). In 2011, Bitcoin was worth $1 for the first time, while it has touched $63,000 at its peak in 2021. In 10 years, it has grown by 6,300,000%. Bitcoin constitutes a lot more than 50% of the cryptocurrency market, and most of the trends in this research paper are visible in it and some others, like Ethereum, Ripple, and Litecoin. Unlike the stock market,

there is no central ‘cryptocurrency exchange’ in any country. They are traded on digital platforms. Some of the most famous ones globally are Binance, Huobi Global, Coinbase, Upbit, and Bitcoin.com, while in India, Wazir X, DCX, and Coin Switch have the maximum volume. While only a few exchanges lead the volume, there are hundreds of them in the market (maybe over 1,000).

Cryptocurrencies have grown in size and popularity among all retail investors. All those who advocate for its mass application have two main arguments- it is decentralized (the government does not control its production and regulation), and it will promote a revolutionary technology- blockchain. Nevertheless, how many of us think that these might be its primary problems? As the government does not regulate these financial instruments, it would be impossible to tackle the mass havoc that the failure of cryptocurrency could potentially cause. Should a government let it be a free-market system or regulate it? If it must regulate, then to what extent should it regulate? These are some of the questions that must be answered. Via this research paper, I do not wish to promote that the blockchain is faulty and must not be adopted. Instead, I feel that it might be one of the greatest revolutions of the decade concerning finance and legal technology. However, problems begin to arise when blockchain is transformed into a financial instrument.

It is common knowledge that we can learn a lot from history, but humans have failed to learn from history, especially in the financial market. Economic historians, like Minsky and Kindleberger, have drawn a vast number of conclusions and common patterns. We would be discussing a model proposed by Hyman Minsky and Charles Kindleberger about the most widely observed trends of financial crises around the globe throughout history. Such crises date back to 1673, when the first bubble had burst, the Tulip Mania. This paper will draw various similarities between the current scenario and the Tulip Bubble. Not only that, but the cryptocurrency market’s growth is in line with the Minsky-Kindleberger Model.

There is always an important aspect to any bubble: time. Although many theorists, economists, and monetarists have proposed various time-based bubble formations and bursts, they have a cyclical approach to economics. This research paper does not consider time as a variable that the proposed bubble would burst at a specific time or after a few days, months, or years. On the lines of the book, Manias, Panics, and Crashes, the focus is on the reasons or development of bubbles, not their expected bursting time.

The underlying causes of the cryptocurrency bubble in development are asymmetric information and herd behavior. These factors are the defining difference between mainstream economics, based on theories and assumptions, and behavioral economics, which studies people’s behavior in the economy. Asymmetric information or misinformation refers to the lack

of knowledge that one has regarding particular concepts or financial instruments. This fuels the herding behavior of people because they rely on each other's incomplete knowledge. Whenever someone, who might be a learned investor, earns supernormal profits, everyone around him/her desires such extraordinary profits and dives into the market even with incomplete information. Seeing more people join in and make money out of it, everyone jumps into it because they cannot watch others profit while they sit. This is called 'Fear of Missing Out' or 'FOMO' and maintains one's social stature.

Finally, my research paper focuses on India and the spill-over effect it can have because analysis of first-hand data prove that there is a large-scale dissipation of asymmetric information. The investors are not able to understand what they are investing in. Thus, the research paper talks about the Indian scenario (which might also apply to other nations), but its impact on interconnected economies will also be discussed.

Literary Review

Fundamental Issues with Cryptocurrency

A variety of arguments are present against as well as for cryptocurrency. However, the most prominent argument against cryptocurrency questions its existence as a form of currency or medium of exchange. The background of this argument began at a very early stage in history when first-time gold, silver, diamonds, or copper was used as a medium of exchange, and the barter system was done away with. These commodities held value in themselves. A number on the gold coin would depict the worth of the gold in the coin, not the stamp on it. Subsequently, commodity-backed money was introduced to the world. Money was backed by gold or silver, which is a commodity so that people could trade and exchange things more conveniently. It was the trust in the government or issuer that the currency note, which has been issued, holds value. If someone loses trust in the government, they can go to the central bank or government and cash the bill for the actual piece of silver or gold. After further developments, the necessity to hold commodity reserves for the amount of money printed was stopped, and fiat money was born. The paper currency was based on 'trust' and assurance by the government that it is a legal tender and can be used to exchange commodities and settlement of debts. Such trust is required for the effective functioning of a currency.

Mitchell Rice (2019) has also stated that no specific building or agency regulates cryptocurrency; thus, cryptocurrency is based on people's trust that it would also be helpful tomorrow. This digital currency is not backed by any asset or guaranteed against a liability. In 2016, DeVeries had stated that Cryptocurrency sustains from the trust and acceptance of its owners and users of the instrument. He also said it is susceptible to easy attacks due to easy access. DeVeries wrote, ". These 'tests' were launched by exchanges and miners to prove a point about Bitcoin's design: that the network cannot handle a high load transaction rate. The mere fact that the participants of Bitcoin's operation can bring the network down to prove a point is an unfortunate design feature of the code." The tests here refer to several 'stress tests' performed by individual miners and exchanges to test reliability and design.

Another paper by Cameron Harwick reiterated the same idea in 'Cryptocurrency and the Problem of Intermediation, 2016' as: "The fundamental problem here is trust. The necessity' of a method transition, however, deserves a few more words. Because a cryptocurrency protocol defines both the coinage and exchange of the base money, issuing liabilities on a fractional-reserve basis requires more than simply adding parameters to coins. A bank that wants to vary its issue with demand needs to create its coinage and exchange mechanism, a new protocol that would not be compatible with the original even if its processing took place on the identical blockchain. Nor would one issuer's liabilities be compatible with another's." The essence of this problem arises from the status of an illegal tender and non-regulation. However, can even this solve the issue will be discussed further.

The inexistence of a governing body is a significant concern. Although it might seem beneficial, it has major disadvantages too, especially in India. Apart from the internal transactions within the country, a considerable chunk of the economy is dependent on trade with foreign nations. Apart from the United States of America, India trades majorly with China, United Arab Emirates, and Saudi Arabia. Saudi Arabia has just legally allowed training on digital exchanges but does not allow it via governmental means or any kind of protection to the trades. UAE also banned any form of trading or exchange of 'virtual currencies.' Some of the bans come from the religious aspect of Sharia Law in these countries. Mufti Muhammad Abu-Bakar (2017) described the compliance and non-compliance of cryptocurrency with Sharia law well. The third nation on the list, China, which had considered cryptocurrency initially, has recently prohibited its mining and trade legally as the government wants to exercise complete control of the finances and minimize financial and business risks. This situation is hardly changing in the future. Therefore, even if India trades in it internally, using it for major international trade will be a concern.

Two other concerns which go hand in hand would be uncertainty and volatility. The question of cryptocurrencies' existence tomorrow is a problem for retail investors in India. Its long-term maintenance makes it a poor choice for being used as a currency in everyday trade. One might be able to buy 100 apples with one Bitcoin today, while less than ten tomorrow. As Rice (2019) puts it- "The other perspective of not knowing if the currency will even be something that will be around for time to come is another disadvantage that cryptocurrency creates. Many of the crucial variables that investors attempt to measure like liquidity, volatility, and sustainability are in question when it comes to cryptocurrency." When drawing a particular focus on volatility, it refers to the extensive price fluctuations of cryptocurrency. The most recent example is the downturn of Bitcoin from a staggering $63,00 to $30,000 within weeks. The novice investors and those with low knowledge are trapped in the system and can hardly make profits. The quick entries and extended exits cause fluctuations in prices.

The disparity between large investors (also known as smart money) and novice 'herd' investors are appropriately expressed by Dierksmeier & Seele as "Vendors can combine the economies of scale afforded by the Internet with the anonymity of cash-transactions hitherto confined to hand-to-hand exchanges. Already there is evidence that the increased opportunities for revenue and the decreased likelihood of detection are attracting an ever-larger supply of illicit wares, driving down costs and, by extension, entry barriers for consumers, thereby effectively increasing demand. In short, by drastically altering the quantity and scope of such exchanges, cryptocurrencies can be said to have transformed the quality and ubiquity of nefarious commerce."

The most widespread demerit of cryptocurrency is its use for illicit activity, such as money laundering, illegal trade of commodities, terrorism funding, and more. The most appropriate explanation of all such potential national security threats were enlisted by Limba et al. (2019) and put in a table by Limba T., Stankevičius A., Andrulevičius A. (2019) is as follows:

<table>
<tr><th colspan="2">I. Crypto currency as an infrastructure for criminal activity</th><th colspan="2">II. Threats to economic security</th><th colspan="2">III. Threats to public security</th></tr>
<tr><td rowspan="3">1. A tool for criminal activity</td><td>A. An Internet platform for drug dealers</td><td rowspan="3">1. Direct forms</td><td>A. Illegal trade activity</td><td rowspan="3">1. Direct forms</td><td rowspan="3">A. Organized crimes:
• drug trafficking;
• crime (illegal. activity;
• money theft;
• criminal fraud;
• tax evasion and tax fraud.</td></tr>
<tr><td>B. Illegal trade in wide meaning</td><td>B. Tax evasion:
• illegal finance-banking activity;
• money laundering;
• tax fraud;
• money transit.</td></tr>
<tr><td>C. Tax evasion:
• money laundering;
• money layering;
• money transit.</td><td>C. Corruption.</td></tr>
<tr><td rowspan="4">2. As an object of criminal activity</td><td>A. Money theft</td><td rowspan="4">2. Indirect forms</td><td>A. Competitiveness</td><td rowspan="4">2. Indirect forms</td><td>A. Financing terrorism</td></tr>
<tr><td>B. Criminal fraud activity</td><td>B. Social exclusion</td><td>B. Hybrid threats</td></tr>
<tr><td rowspan="2">C. Corruption</td><td>C. Non-transparent lobbying activity</td><td rowspan="2">C. Threats to the objects of a critical infrastructure</td></tr>
<tr><td>D. Trust in the government</td></tr>
</table>

Cryptocurrency threat to National Security risk classification

This problem intensifies in a country like India, highly prone to terrorism, Naxalites, and mass violent protests. Most of these activities are funded via illegal means, which is black money. In a country that needs to demonetize its 70 years old currency to counter-terrorism funding and money laundering, adding cryptocurrency as a medium for illicit activity will fuel political instability and hamper national security.

Finally, it is highly debatable if cryptocurrency has a fundamental to be valued upon. Some people argue that the intrinsic value corresponds to the hashing power or cost for mining a cryptocurrency. Arguments for these two factors as determinants of fundamental value have not been based on economic factors but the measurement of it, as presented by Marc Gronwald (2020). Thus, the intrinsic value suggested would be highly volatile, making it difficult to keep track of. Others favor the inexistence of its core values, such as Geuder, Kinateder, and Wagner (2018)- “Cryptocurrencies do neither have intrinsic value nor do they offer a final promised payment or any dividends. At the same time, cryptocurrencies today do not broadly serve as legal tender or as a common and official means of exchange; as such, cryptocurrencies offer an ideal setting for testing speculative behavior. Investors may assume that buying a digital currency that is limited in supply allows them to sell it later at a higher price, which in turn may lead to speculative bubbles.” This disparity might be solved in the future with more trading, but for now, the calculation of fundamental value does not support the true meaning of a ‘fundamental value.’

Asymmetric and misinformation about Cryptocurrency in India

To delve specifically into the lack of information about cryptocurrency, we must define the two terms, asymmetric information, and misinformation. 'Asymmetric information' refers to the situation where one person, party, or group of people has greater material information than the others, which may be leveraged to gain something. Almost every economic transaction has asymmetric information involved; however, an excess of it is harmful, especially with new financial instruments. On the other hand, misinformation refers to the spread of false information without the intent of doing so. This occurs when a small incorrect piece of information multiplies into commonly perceived false information. For example, a statement- cryptocurrency can also be traded like stocks- may grow to be said that 'cryptocurrency is very similar to stocks.' The primary concern with investment in cryptocurrency by Indians is that they are using up their savings and borrowing money in large quantities to invest in cryptocurrency. These borrowings paired with asymmetric and misinformation leads to a 'moral hazard.' A moral hazard is when the lender is subjected to the hazard that the borrower might indulge in activities that might raise the chance of defaulting on loans. These occur because the borrower has a massive incentive to gain a lot if a high-risk investment succeeds; however, the lender loses if it fails. As the lender is unsure where the investment is going, they become fearful and decide not to give loans. Thus, leading to an overall decrease in loans, which are essential to the economy's growth and development. According to F.S. Mishkin (2001)- "The asymmetric information analysis outlined above provides a framework for understanding how a disruption in financial markets can cause a downturn in aggregate economic activity. It also provides the following more precise definition of what a financial crisis is. A financial crisis is a disruption to financial markets in which adverse selection and moral hazard problems become much worse so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities. A financial crisis thus results in the inability of financial markets to function efficiently, which leads to a sharp contraction in economic activity."

Kindleberger has stated in Manias, Panics, and Crashes (4th Edition) that "Speculation tends to detach itself from precious objects and turn to delusive ones. A larger and larger group of people seeks to become rich without a real understanding of the process involved. Not surprisingly, swindlers and catchpenny schemes flourish." The most important aspect of analyzing in this statement is 'without a real understanding.' Until most of the investors know what they are investing in, the markets will be bound to be volatile. Such incidents happened with the stock market during the phase of the South Sea Bubble and Mississippi Bubble. It

took much time for these markets to stabilize to some extent, even when the asset involved had relatively few negatives/concerns than cryptocurrency. Centralization of stock exchanges and mass awareness campaigns added to the stabilization of the stock market. This case seems a lot more complicated as cryptocurrency is a complex concept for an ordinary person to understand in India (based on a survey done, data collected and interpreted below).

According to Rice (2019), more prominent cryptocurrencies have a greater affinity to fluctuate. This arises due to novice investors who are only looking for short-term gains and do not focus at all on the long-haul holding of these 'assets.' Many of them buy-in at high prices with the expectation of them going up but are forced to sell at low due to their inadequate risk tolerance capacity. On a more technical aspect Madey (2017) wrote on Bitcoin specifically: "Given the relatively adolescent nature of Bitcoin, much is not known. This gap in knowledge poses a significant threat to financial, and more importantly, currency Cryptocurrency: What is it? Confidence in any currency is the backbone of its value, as exemplified by the widespread use of the American dollar across the globe. Bitcoin and other cryptocurrencies lack this confidence." While Dierksemeier and Seele highlighted the disparity between full-committed investors and amateur ones, who are just trying to follow the crowd. They wrote, "drastic price differentials are useful only for the arbitrage games of professional speculators. Therefore, the volatility of cryptocurrencies tends to work to the advantage of those who have above-average financial assets, are time-rich and well-informed. However, at the same time, such volatility works to the disadvantage of the less privileged. The only possible redeeming feature of cryptocurrency volatility is that, over time, it tends to invite its demise." In the next section of this paper, we will present some data collected first-hand from the Indian audience at random. The questions asked and their results are discussed below.

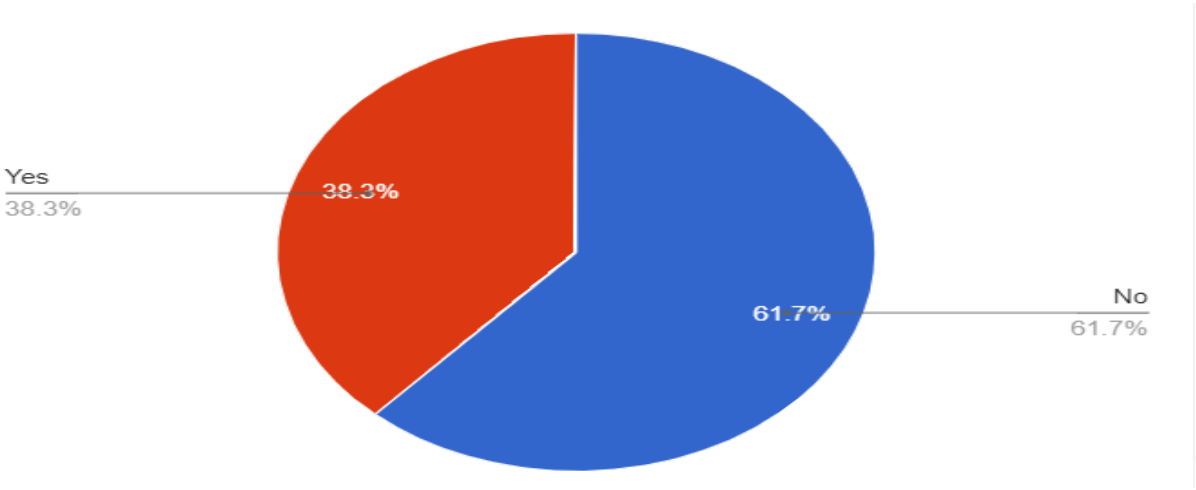
Survey Data

A survey was conducted in India to test the amount of asymmetric information and misinformation among the Indian population about Cryptocurrency. The data has been collected via a questionnaire in Google Forms and spread through organic social media. The target audience of the survey was middle income class to slightly higher income class of India irrespective of their gender. The survey purposely lacks the point of view of those who don't have access to technology because these people do not possess the resources to trade in cryptocurrency. Therefore, their exclusion makes the survey's result more reliable. The survey included people with fair education and technological facilities. In total 161 people took part in

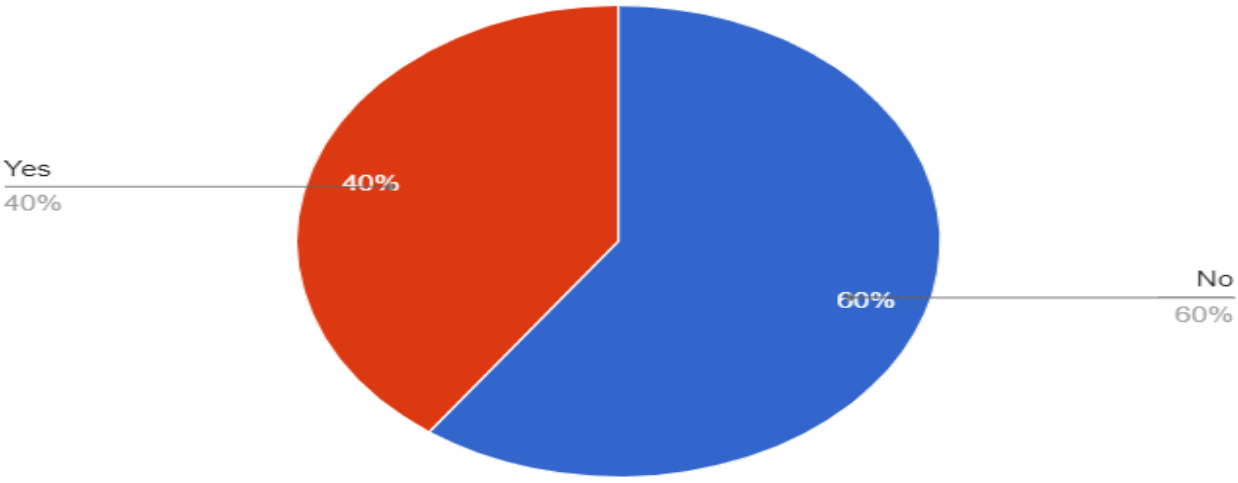
this survey, which is a decent number to generalize the result on the Indian population as this sample is fairly diverse in terms of region and education level.

The first question asked the respondent to identify if he/she is currently trading in cryptocurrency, will be planning to do so, or neither of the above. 50.3% people were either trading currently or planning to do so, while 49.7% chose ‘no’. The data analyses, discussion and result will be calculated separately for these two pools. The people who are currently trading or are will be trading directly take part in the market and are important to be analysed. The other 49.7% is also extremely essential to the analyses as they indirectly contribute as friends and family, who can influence and dissipate information to main investors.

Question 1: Is Cryptocurrency similar to stock market?



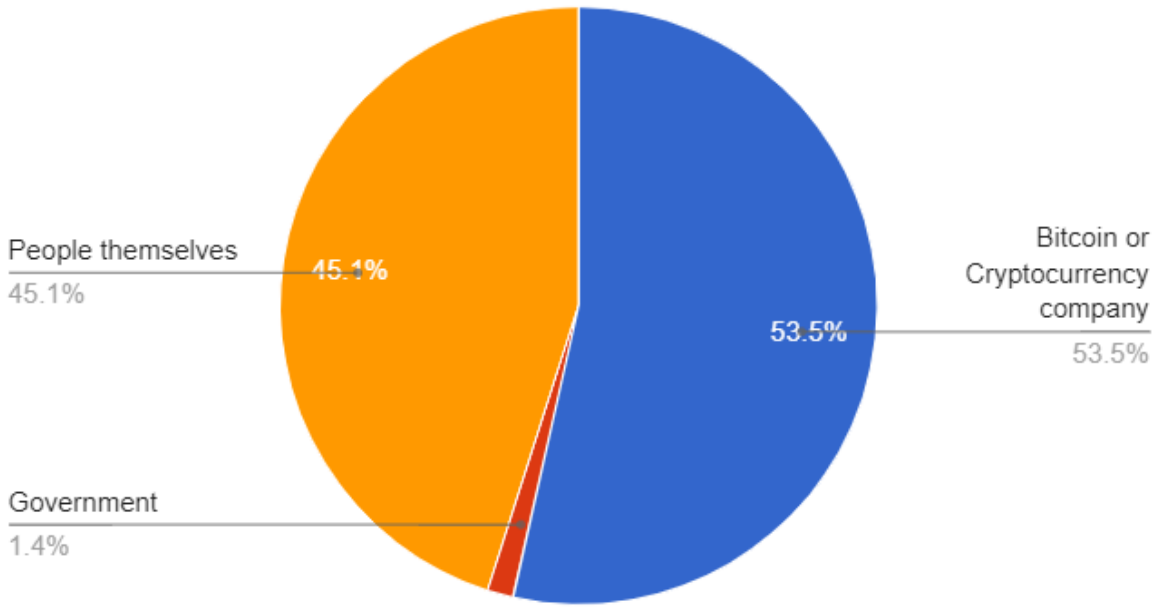
Traders: Cryptocurrency similar to stock market?



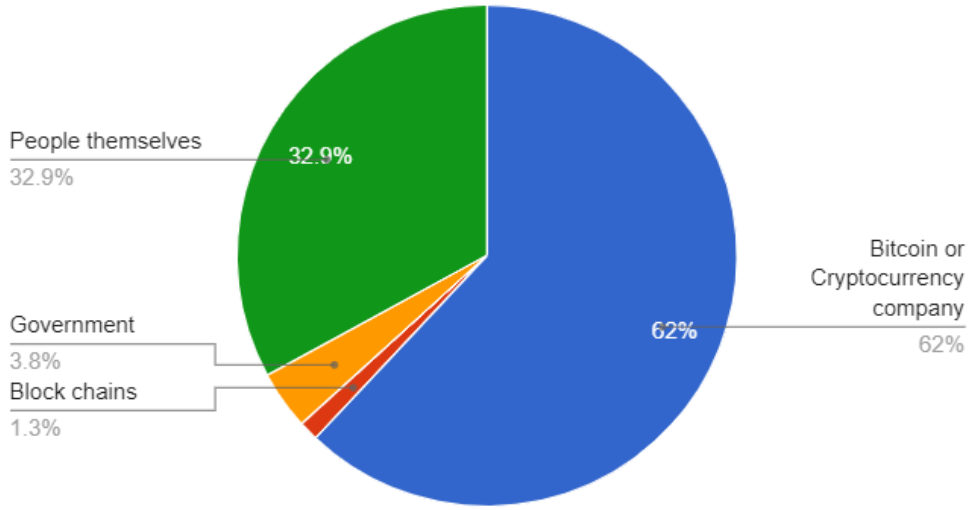
Non-traders: Cryptocurrency similar to stock market?

Asymmetric information is clearly evident among the traders (also refers to the potential ones). Although the majority is right, the very fact that more than 38% of the traders have the wrong information is shocking and a poor signal for the market. The distribution of the answers for non-traders remains similar to that of traders. Non-traders also influence the main traders in wrong decision making.

Question 2: Who makes/mints Cryptocurrency?



Traders: Cryptocurrency is minted by?

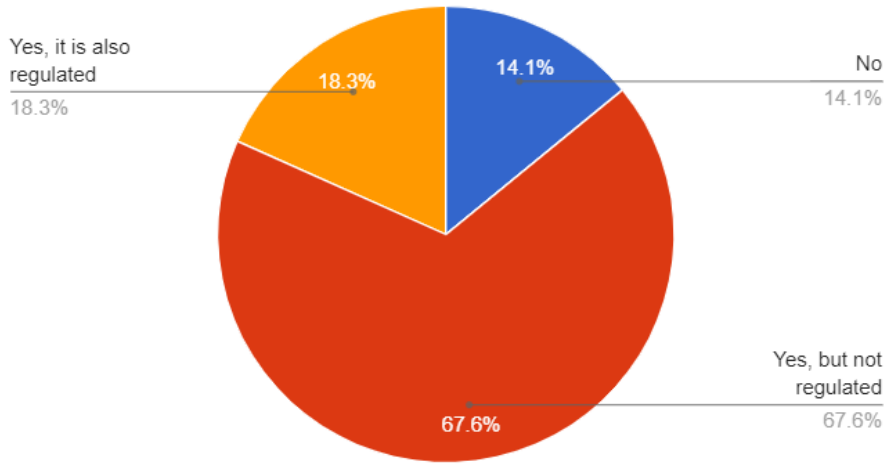


Non-traders: Cryptocurrency is minted by?

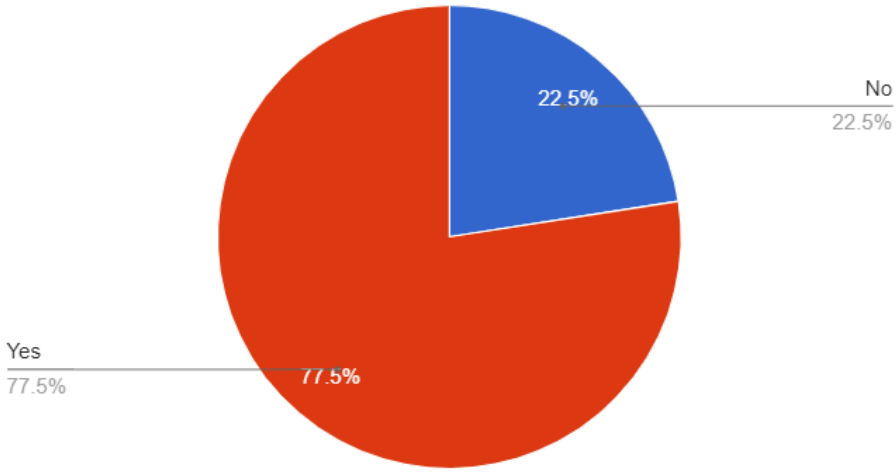
This is the most important question in the survey as it aims to understand if the investors actually know the most basic thing about cryptocurrency. As we know from above that cryptocurrencies are mined by people themselves, the majority has misconceptions about the same. Not only is there asymmetric information, misinformation is more widespread in this. The incorrect responses also arise out of the fact that people think cryptocurrency is similar to stocks; Thus, people think that Bitcoin or Cryptocurrency companies' performance affects the price. This isn't the case. It is purely based on demand and supply. The non-traders have an even larger percentage of people with the incorrect information. This is a serious problem in the new financial market.

Question 3: Is Cryptocurrency legal in India?

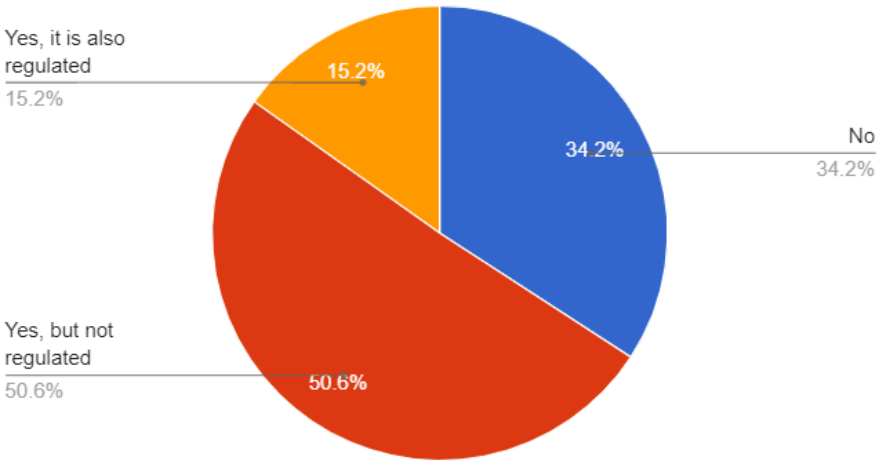
Question 4: Can you be taxed for the profit from Cryptocurrency trading?



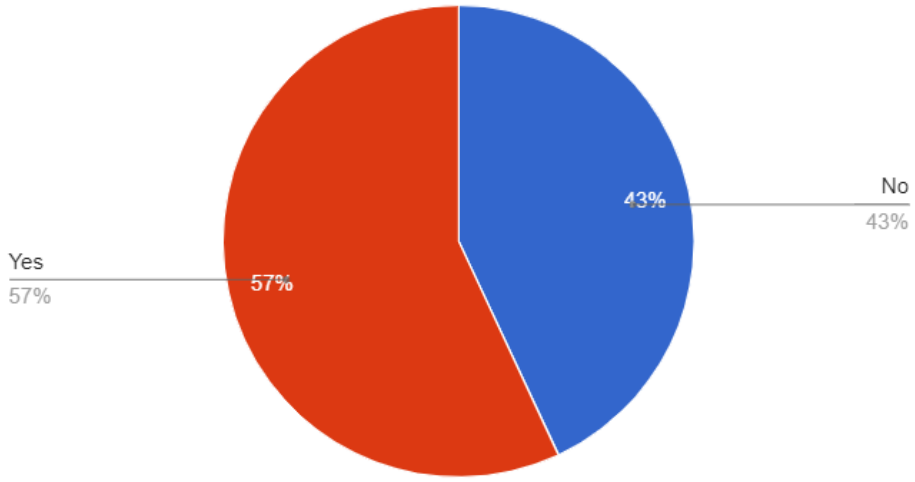
Traders: Is Cryptocurrency Legal in India?



Traders: Can Cryptocurrency Trading’s Profit be Taxed?



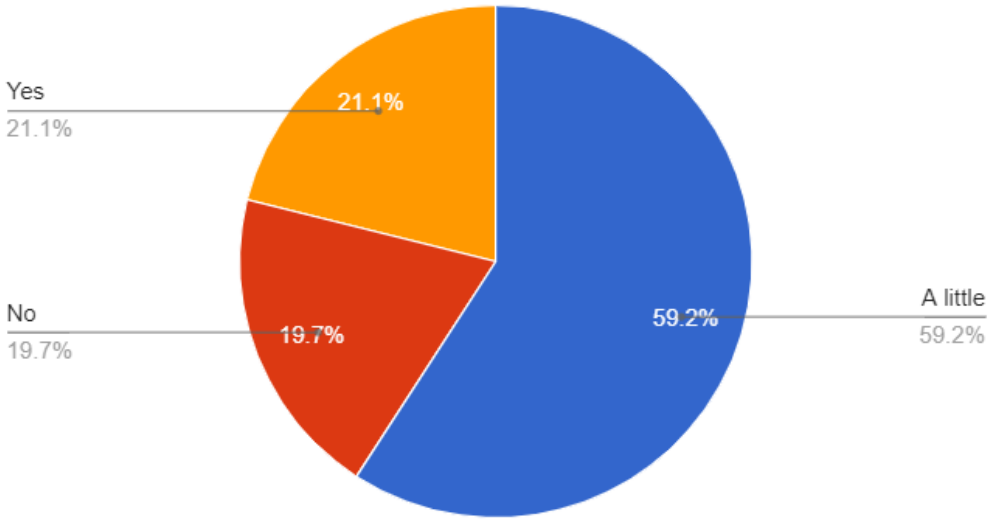
Non-Traders: Is Cryptocurrency Legal in India?



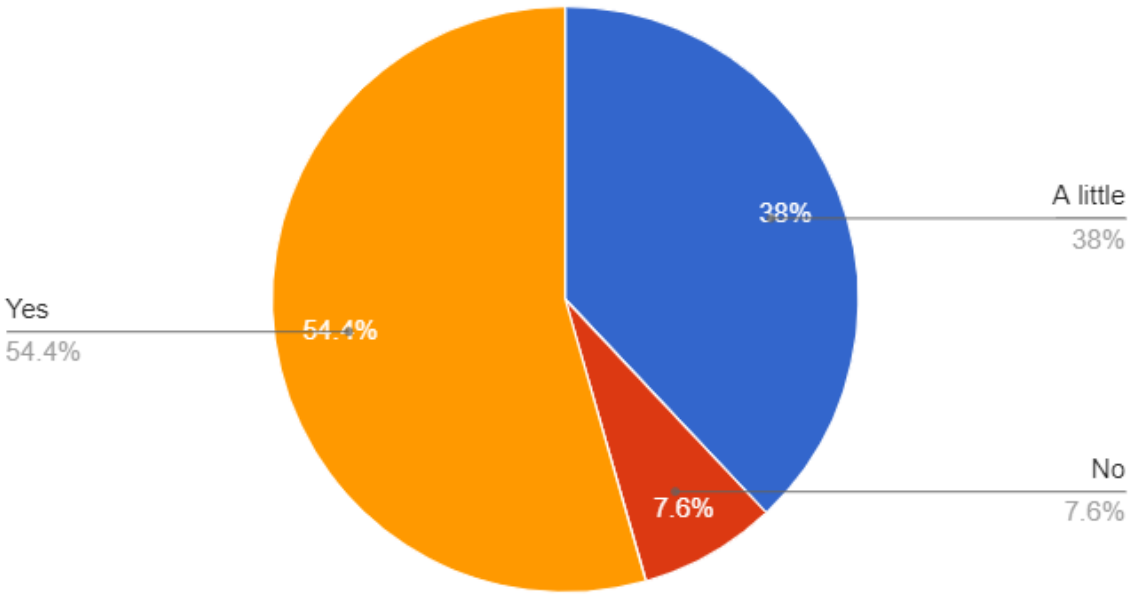
Non-Traders: Can Cryptocurrency Trading's Profit be Taxed?

These two questions target at questioning the legal knowledge of investors about the Cryptocurrency market and its current status in India. 67.6% and 77.5% investors possess the correct information respectively. However, the same situation about asymmetric information continues. Someone who thinks that the profits are not taxed would be motivated to invest, while being unaware of the system. Its legal structure also might create misconceptions for some. In the non-trader's section, misinformation is significantly higher than that in among traders. Those who might consider to delve into the market after a very long time would be poorly informed about it.

Question 5: Is it too complicated for common man?



Traders: Bitcoin is Complicated?



Non-Traders: Bitcoin is complicated?

The final question simply asks for opinion about the complicatedness of cryptocurrency as a concept. Although the audience is split, there is a more inclination towards it being complex. Therefore, specialized knowledge campaign are the solution to this gap. As most non-traders perceive cryptocurrency as too complex, this seems to be their greatest barrier to entry into the market for it. The solution remains the same, which might help them overcome such intellectual barriers and break their pre-conceived notions about it.

Result: The above data, charts, and discussions voice out one thing in totality- there is widespread asymmetric and misinformation in India. This can lead to bubble formation as in history asymmetric information in financial instrument market has been the major contributor in bubble formation.

Herding Behaviour and Disposition Effect in Cryptocurrency

Herding Behaviour refers to a case where a human being acts in a particular manner in which they would not have behaved individually. It is the influence of others' understanding which hampers our understanding of a concept. There are two primary reasons. Firstly, the belief that many people would collectively take a better and more 'rational' decision than a single

person. We believe that the group knows more and has almost all relevant information that another individual might possess. Secondly, social pressure and FOMO (Fear of Missing Out)- To be a part of society, one must act and do things that the group or society is doing or following. Herding behavior is driven by the will to be integrated into the group.

These are the primary constituents of herding behavior. Two more significant factors contribute to herd behavior- envy and greed. Greed motivates one to dive into a market simply because he or she wants to make money without thinking about the source of funding for investment and a 'plan B' in case the investment fails. While 'envy' has been captured by Charles Kindleberger in Manias, Panics, and Crashes as "As firms and households see others making profits from speculative purchases and resales, they tend to follow: Monkey see, Monkey do … There is nothing so disturbing to one's well-being and judgment as to see a friend get rich." Group pressure and crowd influence were developed from le Bon's (1896) analysis of mob psychology (M. Baddeley, C. Burke, W. Schultz, and P. Tobler May 2012).

As the valuation of cryptocurrency is based on the more significant number of people who value it, there are constant efforts from pre-existing investors to attract others to it. Media channels and advertisements promote cryptocurrency sponsored by either exchange or 'whales' (a slang for wealthy early adopters of cryptocurrency). Calderón (2018) has provided a perfect analogy- "In a technological world, one finds utility as far other people's preferences are aligned. For instance, a messaging app aims to communicate with a counterpart that can be a group or individual. Nevertheless, if those whom I want to communicate with do not find the same platform valuable, it makes it worthless for me too. According to the above-mentioned authors, in the beginning, it is essential to reach a certain number of users or critical mass, and a positive feedback behavior drives the mechanism to increment the number." The positive feedback loop being formed is critical to the understanding of herding behavior. When a few people make a profit, they communicate about the positives about the particular thing, and others respond by going down the same track without proper analyses. If someone makes a profit, this loop keeps on moving until the chain is broken by a sharp fall in prices.

The pandemic has severely played its part in creating hysteria. There are limited cash resources in the economy, especially with the middle-income-level households in India. People are on the lookout for passive and accessible income sources. People tend to make shortcut decisions to get quick profits by seeing others do so. This approach is not irrational but not well planned as it involves doing no background check yourself. According to M. Baddeley, C. Burke, W. Schultz, and P. Tobler (2012), if herding is a time-saving decision-making heuristic, certain personality types will be more likely to use a herding heuristic as a decision-making shortcut. This would be consistent with Herbert Simon's (1979) concept of

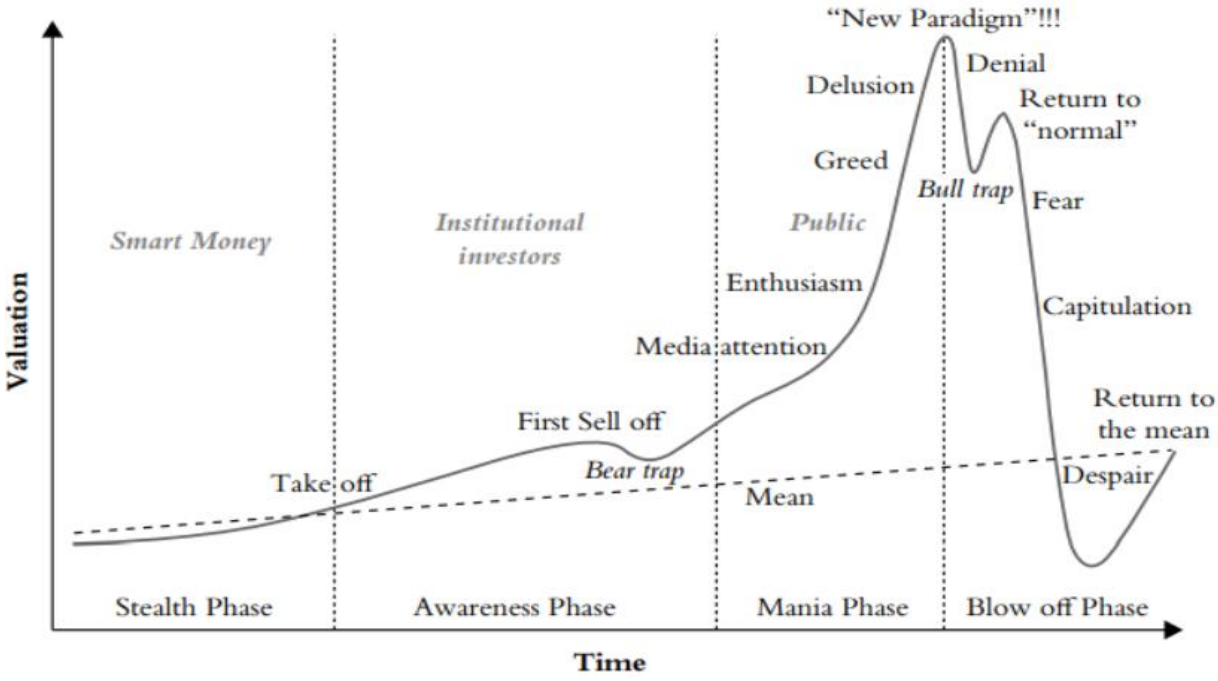
procedural rationality, i.e., behavior is adapted to specific circumstances and will involve applying common sense rather than mathematical or statistical algorithms/rules. An interesting contrast is also there in the cryptocurrency market- “When measured against weekly interval data, herding becomes weaker and less consistent. Measurement against different market conditions shows that herding moves along with market trend (in the bullish market, a positive market return increases herding, while in the bearish market, a negative market return increase herding). It also shows that a low trading volume increases herding, which is different from what is found by the study on the stock market.” (Steven Haryanto, Athor Subroto, Maria Ulpah, 2019). The variety of trends also add to the confusion in the cryptocurrency market. Herding behavior may result from interplays between rational/cognitive and instinctive/emotional processes and a reflection of economic, sociological, and psychological impacts emerging in different situations and individual predispositions (Baddeley 2010).

The disposition effect is when investors are usually reluctant to realize their losses and delay them, while they want to earn quick profits and sell early. This situation is most commonly observed in the stock market among retail novice investors and has been a part of the cryptocurrency market, contributing to its high volatility. The highly famous cryptocurrencies are being bought and sold too quickly in search of minute profits. On the other hand, dipping cryptocurrencies are held for long as the experienced investors go on selling and novice ones make a loss. The famous prospect theory by Kahneman and Tversky (1992, 1979) states that people make decisions by balancing losses versus gains instead of focusing on the absolute outcome, which is the leading theory used as a basis, particularly the aspect regarding asymmetric risk aversion. Such concepts and biases are known to ‘whales’ but not ordinary investors, especially in unfamiliar markets like cryptocurrency. Therefore, this factor is based on misinformation and asymmetric information among the population of investors. After deep empirical research, Schatzmann and Haslhofer presented that the disposition effect is not consistently prevalent over several months but switches drastically from significantly negative to positive and vice versa. This may be the explanation for the 2021 boom and burst too.

Kindleberger-Minsky Model of a Bubble

Charles Kindleberger’s *Manias, Panics, and Crashes: A history of Financial Crisis* (1978, 2000) and Hyman Minsky (1972, 1982) deeply discuss the general nature and pattern of financial bubbles throughout history. Minsky put down a general framework of the crisis, while Kindleberger focused on finding historical evidence for such a framework and check if it applied to them. Kindleberger is able to show that Minsky’s initial model does apply to most of

the crisis from as early as the Tulip Mania in 1637 to the 2008 Housing Bubble. A crash can also be foreseen mathematically as proposed by Gallegati, Palestrini, and Rosser (2011), who took fundamentals and statistics into consideration more. However, the Kindleberger-Minsky Model of a Bubble focuses on the pattern of emotional change among the consumers and investors. It talks about the instability of the financial system or financial innovations. Therefore, 'time' as a factor isn't fixed, that is the model doesn't predict when a bubble will burst or when a crash will occur. We can infer from the model that an economy is at a particular stage and in the future, it can go down a particular track. The model neither discredits financial innovations nor lobbies against them. It simply says that these innovations can finance the boom and its abnormal reception by people will lead to manias and panics. The graph below is a pictorial representation of the model and then, I will discuss its components and general explanation.



Anatomy of Bubble, Variant Perception

Every bubble starts with a 'displacement' (a term coined by Hyman Minsky). A displacement is any kind of external shock or turbulence in the economy, and it can vary according to each bubble. "It may be the outbreak or end of a war, a bumper harvest, or crop failure, the widespread adoption of an invention with pervasive effects…, some political event or surprising financial success, or a debt conversion that precipitously lowers interest rate" (Charles Kindleberger, Anatomy of a Typical Crisis, *Manias, Panics, and Crashes*, Fourth Edition, p.14). Any changes in policies that can have a substantial economic impact would

also be considered a displacement. Displacement events usually do not come alone as simultaneous change impacts more. This gives rise to substantial profit-making opportunities while also resulting in huge losses for some. If the new opportunities are more profit-making and there is an increase in production or investment in the overall economy, this will result in a financial boom.

Credit expansion is the next step in the growth of the boom. In a conventional crisis structure, like the 2008 crisis, banks increase credit supply by offering people loans to procure these new assets. This is termed as money chasing assets. But a credit expansion need not be by a bank only; vendor-financing is also an option (relates to the Tulip Bubble). As banks have greater power to control money, primarily, bubbles are funded by them. It can also be by forming new banks or credit instruments, like credit default swaps and collateralized debt obligations.

The next phase is the mania or euphoria (another term used by Minsky). This phase mainly relates to the two reasons highlighted in the previous section- herding due to social pressure and greed for easy money or the disposition effect. As some people make a profit, a positive feedback loop forms, encouraging more and more people to step into the market. As there is not enough supply to match the sudden rise in demand, the prices keep rising. Overtrading takes place, and Kindleberger highlights that overtrading means no clear concept supporting that trade. It involves either too much leverage, speculation, or profit overestimation. The consumers or investors lose their rationality, and this is called a ‘mania.’ (A significant portion was covered in the Herding Behaviour Section)

This frenzy comes to a sudden halt by another event, such as a displacement. It can be loss of confidence, change in policy, a natural calamity, or a combination of many factors. These factors implode the bubble and causes distress among the investors. Selling and shorting of assets take place. People panic and try to sell their assets to get liquid money, which can be used in times of distress. Thus, the whole market comes down in a jiffy, just like a Domino Effect. Misinformation and asymmetric information play a significant role in this process. As some of the population, that is, the institutional investors or insiders know that the fundamentals of the particular asset are not correct; they can sell early and make a profit. The novice investors do not know about this information, and thus they keep on holding their asset for some time but have to sell it at an even lower price ultimately. Especially, those who bought the assets with borrowed money are doomed as they can neither pay off the debt nor fully pay off the debt by selling the assets as their price is meager now. They have to release their other assets, like houses and cars, to pay off debt and get enough money to sustain themselves. This is called assets chasing money. The economic system has failed and, thus, is called a ‘crash.’ As the world economies are integrated into each other, especially after globalization, such crashes can have spillover effects on other economies.

The graph above also conveys the same information but uses different terminologies to express it. It provides a detailed synthesis as the mania phase has been split into media attention, enthusiasm, greed, and delusion. It even points out what kind of people participate in different phases. We will be using this model and putting it into an Indian context in the next section.

The Current Indian Cryptocurrency Market: A Bubble in the Making

Firstly, identifying the displacement for the current cryptocurrency boom. The invention of cryptocurrency and the slowing down of the pandemic was the joint displacements that have caused a boom. Although cryptocurrency was invented long back, its circulation and popularity began in 2021. A reason also associated was the increase in the stock market. The stock market had taken a massive dip during the pandemic but has been increasing since then. Investors think it is in its correction stage but failed to realize that the fundamental prices have already been passed. Seeing the asymmetric and misinformation people had about cryptocurrency is similar to the stock market and is based on a company's performance, they thought it would also rise as the stock market grows. This psychology had led to the mass popularity of cryptocurrency at the starting of 2021. One final factor contributing to the rise in cryptocurrency prices was Elon Musk, the Chief Executive Officer of an electric car manufacturing company, Tesla. He is believed as a pioneer in futuristic technology, and his simple tweets that indicate his interest in a particular cryptocurrency can drive its prices to the sky. As people believed in his vision, they mindlessly followed him and bought cryptocurrencies. These are some of the sources of displacement in the Indian cryptocurrency market.

The media fuelled the frenzy and herding behavior and even businesses were attracted to the market. Various start-ups and companies launched Online Cryptocurrency Exchange platforms and bombarded the Indian Media with a paid sponsorship. There are over 350 cryptocurrency-based start-ups in India, while the government has no perfect data. Some of the exchanges- Wazir X, DCX, and Coin Switch- have promoted themselves via all possible media channels, like television, websites, YouTube, games, influencers, newspapers, movies, and sponsoring events. People are being lured towards it as cryptocurrency is all around them.

We discussed above that credit expansion is a fundamental part of a bubble. The credit expansion is not conventional but based on vendor financing, like the Tulip Bubble. Various exchanges in India increasingly take up Crypto-lending. Crypto-lending is a form of securities-based loan where cryptocurrency is used as collateral. The person has to pay the loan off over

time, and these loans are usually sent out by either crypto exchanges or crypto lending platforms. Sending out cryptocurrency as collateral does not allow you to trade it or make any transactions with it. There are primarily two reasons why people take up crypto lending. Firstly, either the person does not intend to trade or use the cryptocurrency asset in the near future; Thus, they want to earn some income out of that. Secondly, the person requires money, and they feel that buying the cryptocurrency and taking a loan on it is way cheaper than investing the whole amount. The second incentive is harmful to the economy because if the price decreases significantly, the person will have to pay back more than he borrowed. In a market like a cryptocurrency, which is highly volatile, this is a serious issue that needs to be addressed. The Credit Default Swaps are a perfect analogy for crypto lending- a highly risky financial innovation.

The sudden mass attraction of the Indian population towards cryptocurrency is worrying. The price of Bitcoin climbed from $30,000 in January to $63,000 during the beginning of April. It is safe to assume that Bitcoin's price movement represents all currencies as it constitutes a significant market volume. Additionally, novice investors invest in the famous currencies only as they are not aware of the others. However, distress came into the picture with several factors playing simultaneously. The second wave of the pandemic unleashed in India, which brought panic among the Indian investors. China's various Bitcoin mining sites had severe power cuts, leading to a loss of global confidence. A few countries' governments proposed to regulate the currency. In May, Tesla's CEO, Elon Musk, declared that the company would not be accepting Bitcoin to buy cars over climate change concerns. This shook investor confidence as the price dipped from around $50,000 (in mid-May) to just below $40,000 in less than ten days of the statement. Finally, numerous rallies in the prices made the institutional investors and insiders feel that these prices are unbearable; Thus, they made a profit while leaving the general public in dismay. These factors combined had a severe impact on the market, and Indian investors lost millions and billions. The point to ponder is that cryptocurrency's excitement still has not slowed down, with promotions ramping up over all platforms. So, either the market has normalized, which does not seem right as the frenzy is still prevalent, or there is a more significant crash underway as prices seem to be rising again. The third wave of the pandemic or regulation of cryptocurrency by the government could be the distressing displacement. Although this paper speaks of the Indian economy only right now, a great shock will have spillover effects on other nations and India's stock market and economic production.

Regulation or Deregulation: A Moral Dilemma

Cummins (2009) defines government regulation as effective rules that define the bounds of legal behavior. Additionally, he states, “In some cases, regulations are intentionally vague to accommodate special interests or political pressures or to allow for a range of circumstances.” Although the definition makes regulation sound like a very formal term, the statement clarifies that regulation has been open to interpretation. There is a need for regulation in nearly all industries to prevent misbehavior, but the extent of supervision is severely debated upon. In financial markets, regulation has been highly promoted.

A recent example is the 2008 crisis, where Credit Default Swaps (CDS) were not regulated, and private banks’ operations were not checked upon. A variety of economists and investors- Brooksley Born, Sheila Bair, Warren Buffet, Dean Baker, Raghuram Rajan, Nouriel Roubini, and Robert Shiller- had warned about the potential threat of deregulation. As the US Federal Reserve overlooked these arguments, it contributed majorly to the Housing Bubble. This example and the argument seem plausible, however logical counterarguments are also there, and one of the most famous is by Hyman Minsky. According to him, central financial institutions (like central banks and the government) are key to the economy's advancement. The primary duty of the central financial institutions is to provide stability, but their regulatory compliances open streams for uncontrolled financial innovation. Debt starts to gain momentum compared to equity or self-financing as there are expensive capital assets with a complex financial system. Minsky’s financial instability hypothesis states that “stability breeds instability.” Cummins (2017) said, “Not only are regulations constantly changing, but the regulations impose different requirements in different countries and changes to the business organization itself can create risks of violations.” Thus, regulation, deregulation, and extent of regulation need to be discussed to come to an optimum solution for the cryptocurrency market.

The first thing to keep in mind while regulating cryptocurrency is to provide a perfect legal definition- either as money or as a financial instrument/security. The US has tried to regulate cryptocurrency, and it is necessary to analyze how that went. The following information is adapted from Eric C. Chaffee (2019). “The US federal securities law regulates securities transactions involving cryptocurrencies in three main instances. Firstly, a transaction in securities is covered by federal securities law if payment is made in a cryptocurrency, regardless of whether the cryptocurrency happens to be security itself. Secondly, suppose an investment, which involves some sort of activity relating to a cryptocurrency, qualifies as a security under the definition of security found in the Securities Act of 1933 (Securities Act) and

the Securities Exchange Act of 1934 (Exchange Act). In that case, that investment will be covered by federal securities regulation, regardless of whether the underlying cryptocurrency is security itself. Thirdly, federal securities regulation will apply to transactions involving a cryptocurrency if the cryptocurrency itself is security." The US Securities Exchange Commission (SEC) could not identify when cryptocurrencies can be called securities even after this. Categorizing a cryptocurrency transaction as buy and sell or not is purely dependant on the circumstances. There are a few things that can be learned and then implemented in India. Recommendations will be provided in the next section.

Regulation can certainly help cryptocurrency overcome its negatives. Government regulation means that irrational financial innovations, like Crypto-lending, can be strictly monitored and aid in the public's financial security. An essential aspect of government regulation means that government shows some confidence in the financial instrument. Therefore, regulation will make cryptocurrency more acceptable, reduce volatility as knowledge awareness campaigns can take place, and the international trade partners can gain confidence. As cryptocurrency would come under the government purview, the enormous amount of illicit activity can be curbed to a greater extent. Finally, the loss of cryptocurrency due to false/mistaken transfers or fraud relating to cryptocurrency can be protected as the government could reverse transactions and track down fraudsters.

On the other hand, too much confidence generation will incentivize people to take more risks. They will think that if anything goes wrong, the government is there to protect them. The 2008 Bubble was called the "Greenspan Put" (Komlos 2019) as Americans believed that Alan Greenspan, the Chair of US Federal Reserve, would protect them. This situation needs to be prevented in India.

The last portion of this section discusses the difference between cryptographic regulation and conventional regulation. Cryptocurrencies are not unregulated. The basis of their formation was regulation by the people themselves- the network of miners. Cryptocurrencies are called unregulated because it is not done conventionally, i.e., by the government. These currencies are essentially decentralized. "When one says that Bitcoin is unregulated, he or she refers to the absence of traditional legislation specific to cryptocurrencies" (Oleg Stratiev 2018). Needless to say, that regulation by irrational market participants is not a reliable option, financial institutions better understand the economy from a macro perspective; Thus, traditional regulation is necessary for cryptocurrencies to expand and blockchain technology to be integrated into various fields, such as law and finance. Although trying to fit cryptocurrency into previous standard regulations is cost-friendly. However, it is impossible to do so as this is an entirely new form of financial instrument.

Conclusion and Recommendations

A detailed discussion of cryptocurrency, its origin, price history, and growing popularity was present in the initial part of this paper. Many drawbacks of cryptocurrencies include volatility, uncertainty, usage for illegal activity, lack of trust, and unclear distinction as a commodity or currency are highlighted. Apart from that, the lack of a regulatory body to provide confidence, international acceptability, and no fundamentals are significant issues. It is familiar to most concerns that they can be dealt with effective government control. I would take inspiration from the American regulation model and suggest some measures to regulate cryptocurrency to some extent effectively.

1. Identification of the type of transaction to control it efficiently. This involves understanding who all are involved in the transaction, who is the beneficiary and stakeholders of the transaction, medium of cash flow or cryptocurrency flow, seeking information if the transaction is for the medium of exchange or investing, who are the long-term beneficiaries, and if it complies with the definition of cryptocurrency, which needs to be developed by the government and Reserve Bank of India (RBI).

2. The next step involves the identification of malpractices. The influencers of price (is there a major player controlling the prices by bulk-buying or dumping cryptocurrencies?), reasons for buying and selling (although hard to detect but some information is better than nothing) to monitor illegal activity, and major holders of cryptocurrencies must be identified.

3. There is an immediate need to form a regulatory body, like the Securities and Exchange Board of India (SEBI), to overlook transactions, holders of specific currencies, and facilitate the reversal of mis-transactions. In order to check the number of cryptocurrencies flowing in the national economy, strict regulation over international transactions must take place, and they must be accounted for. This helps decrease illegal activity and keep a regular check on the volume of international trade happening using cryptocurrency to understand its international usage and confidence.

4. Recent thought process on a government-launched cryptocurrency must be held as pure advocates of cryptocurrency would argue that the primary aim of being decentralized is being defeated. At the same time, those who would be willing to adopt it would soon realize that there is hardly any difference between trading other actual currencies or commodities except that these have no fundamentals and relatively higher volatility. All kept aside, the amount of political pressure and investment towards generating a national cryptocurrency will be

immense for the government and financial system to handle during the pandemic and post-pandemic recovery.

5. The most necessary regulatory measure to curb the chance of a Cryptocurrency Bubble is protecting public money from going into the cryptocurrency market. All public sector banks and private central banks in India must not trade or invest in cryptocurrencies directly or indirectly via subsidiaries. The arises from the fact that “too big to fail” financial institutions tend to invest in hazardous assets, thus leading to instability and loss of confidence in the financial system. This was analyzed after and during the 2008 Financial Crisis as the top five banks in the US started investing heavily in risky mortgage assets, one of the most significant causes of the crisis.

6. Another proposal that arises after the 2008 crisis is a ‘Robust-response Society.’ That means a committee under the new regulatory body must be formed, which would have to power to take robust decisions to prevent the domino effect in economies during a crisis or crash. This is also necessary because cryptocurrencies, like Bitcoin, have a limited amount to be produced, and a lot of it is being lost either in transaction or storage. Therefore, policies to tackle such effects must be developed on-spot depending on the situation at that point in time.

7. Finally, many areas are still open to interpretation and must be dealt with while regulations are being made- supervising the regulatory body, legislation in case of violation of new crypto-laws, and avoiding overregulation.

The need for regulation rises as days pass, and quick yet effective regulation laws must be established. In a nutshell, misinformation, asymmetric information, herding behavior, and fundamental negatives of cryptocurrency markets must be dealt with via regulation, and this research paper aims to provide the specific situation in the Indian Market.

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