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Exploring Cryptocurrency: How do Individual Behaviors in the Financial World Affect the Potential of Economic Bubbles?

Yick-Ren Leong[1] and Stefano Benigni[#]

[1]Buckingham Browne & Nichols School, Cambridge, MA, USA
[#]Advisor

ABSTRACT

Cryptocurrency has made waves recently with its absurd increase in prices and volume. In this paper, I sought to understand, fundamentally, what factors could have helped its rise to the top. On the other hand, large ascents like this in the past have shown to be fatal, such as the housing market bubble of 2008. It struck me that cryptocurrency seemed to be heading down a similar path, especially with its unpredictable volatility and lack of practical usage in daily life. I explored some of the behavioral trends that are prevalent in finance, and used them to understand the 2008 bubble. I then further explored cryptocurrency behavior to draw comparisons, which were not lacking. By understanding what was behind cryptocurrency's incredible rise and what behaviors and trends may factor into its volume, I was able to come to the conclusion that cryptocurrency is an asset class that treads dangerously along the lines of forming bubbles.

The Rise of Cryptocurrency

The financial world has recently experienced a surge of a new asset: cryptocurrency. Even with a lot of media attention and buyer's frenzy, a fundamental question still remains. What exactly is cryptocurrency?

At its simplest form, cryptocurrency is just another form of alternative currency, as opposed to a national currency like the US dollar or Euro. Specifically, it is a digital currency, existing only in digital form and only transactable through online databases. Cryptocurrency runs on blockchain technology, which is basically a universal digital ledger that stores and tracks financial transactions. Blockchain technology reduces the risk of fraud and other similar unethical practices because it is not controlled by an entity but rather it is run by the people that use it. Essentially, all users have access to the same data, so any alterations are obvious. This technology allows cryptocurrencies like Bitcoin to possess a decentralized nature. There are no banks or governments regulating the transactions or distribution and anybody can contribute to the supply chain through mining.

Beyond being just another asset class to invest in, cryptocurrency does carry some advantages. The biggest one is the decentralization aspect; without a central entity, cryptocurrency allows users to feel more comfortable that one point of failure, like a bank crash, will not destroy the currency. Decentralization also allows transactions to be more unregulated, which makes them faster. Furthermore, with blockchain technology focused against fraud and other similar dangers, users can feel more comfortable using cryptocurrency. Cryptocurrency has also gained relevancy, as it is now easier to trade cryptocurrency through apps and exchanges, and El Salvador has even made Bitcoin a legal tender. By factoring in these advantages and heightened relevancy, there may be a case to be made for the practical use of cryptocurrency beyond arbitrage.

However, as it stands, the surge in cryptocurrency is fueled by speculation; not only do buyers hope that cryptocurrency will become more useful in financial transactions as it becomes more relevant, they often trade cryptocurrency with the intent to profit off the continuous rise in value in the crypto market.

From January 2017 to November 2021, Bitcoin increased from a price of around $900 to around $63 thousand per coin, an increase of approximately 6,900% (Yahoo Finance). In a similar timeframe, Ethereum increased from around $300 to around $4,600 per coin, an increase of approximately 1,433% (Yahoo Finance). For comparison, the NASDAQ went from around $5,500 to around $15,500 and the Dow Jones went from around $20 thousand to around $36 thousand in that timeframe (Yahoo Finance). These United States stock exchanges increased approximately 180% and 80%, respectively, a far cry from the rise of the cryptocurrencies.

This kind of rise is unprecedented for an asset class. When property rose in value in the late 2000s, it was not at this rate. The key to cryptocurrency's recent success is its strong appeal to its audience. The factors of cryptocurrency like accessibility and price volatility work in harmony with its particular audience to boost the inflation of cryptocurrency prices. They key to understanding its strong appeal is to understand the basic human natures in finance, and how they are more relevant than ever in this case.

Individual Behavior

In 1977, David Myers, Sandra Wojcicki, and Bobette Aardema conducted an experiment to discover what they referred to as the bandwagon effect (Myers, Wojcicki & Aardema, 1977). Put simply, the bandwagon effect is when people will mold their behaviors and opinions to match those around them. After the experiment, a few key tendencies were noted. First, people desire to present themselves favorably compared to others. In other words, people want to be better than the average. Second, group interaction can intensify socially approved actions and thoughts because people want to maintain positive self-perception. Third, more often than not, people will compromise between their own ideas and the group's ideas even if they differ massively.

In 2004, Ilan Yaniv of the department of psychology at the Hebrew University of Jerusalem tested how people are influenced by advice. He learned that the use of advice generally plays a large role in individual decisions, since people expect that the advice will help their judgment. The most effective form of advice is near advice: advice that is similar to the individual's personal thoughts. Often, people rely on advice to improve judgment accuracy, as they believe that the advisor knows more. Therefore, people that know less are more likely to use the advice they are given without much thought and research.

There is another side to this influence of individuals; leadership and authority can play a large role. In a paper by Andrew Lo, he referenced the analysis on administrative behavior of a well known political and psychological scientist, Herbert Simon. Simon declared that an authority determines acceptable behavior by using positive or negative social reactions, like praise or embarrassment. Since it has been established that social perception is a prevalent factor, this makes perceived authority all the more influential. As economist Robert Shiller put it, "if people have learned that when experts tell them something is all right, it probably is, even if it does not seem so." This strengthens the statements mentioned above, that people who believe they know less will be more apt to take advice from those they see as above them in terms of knowledge and experience.

It can be observed from these conclusions that people are easily susceptible to the influence of the thoughts and actions that are around them. However, outside information is not the only thing that can influence individual behavior. Incentives, especially in finance, play a huge role as well. In the process of decision making, motivations of self interest can overshadow ethics and logic. When a large sum of money can be gained, people may be quick to make the transaction without much research, especially when they learn of this prospective move from an advisor or someone they look up to for information.

While these basic human trends and natures are relevant in daily life, these particular ones are even more important concerning finance. As will be explored further, the pressure and nature of finance culture will enhance these individual behavior trends.

Culture and Behaviors in Finance

Culture is often a large driving force of personal behavior. A clear example is fashion. As the trends of fashion culture changed throughout the years, the way society dressed changed alongside them. Shoes that were popular one month would lose all types of value the next, then return at a higher demand just a year later. These peculiar behaviors and patterns beg the question: why are people so susceptible to the actions of those around them, rather than their own thoughts and opinions? Understanding this could help reveal why cryptocurrency rose so extraordinarily in recent years.

Culture at its core is defined by the behavioral patterns that are spread within the group that carries a culture (Lo, 2016). It is formed by the shared values of the group members, thus defining the norms or the appropriate behaviors of the culture. Think ethnic culture: traditions, clothing and holidays are widespread and have been passed down for generations. Culture spreads quickly; it is initially taught within the group, then to others as they begin to join. Since we already understand that people are easily influenced in a group, culture makes this effect even stronger, as it fosters the ideals of the community and spreads them outwards.

Communities within finance possess strong cultures. Since finance is so widespread, there are of course differences in philosophies and opinions. However, a few overarching themes remain.

An important aspect to keep in mind is speculation. Speculation in this case is defined as the purchase or sale of goods in order to resale or repurchase them in the future, where the motive is purely the expectation of a change in the prices and not a gain in the use or any transformation of the goods. Speculation is often prevalent during trends, like the rise of the housing market in the late 2000's or cryptocurrency in recent years.

Another key piece of the culture in finance is incentive or profit-seeking. More often than not, traders are fueled by the prospects of large gains. The prioritization of economic returns in finance can blind people from the risk of their actions because of the appeal of high returns. This will be a key point to return to in the next section, about the culture strictly in cryptocurrency.

The most important theme is herd behavior and influence. Herd behavior is another way of describing the aforementioned behavior of following the crowd. In finance, herd behavior has a lot to do with imitation and influence. For example, if an investor was not planning to make an investment, but changed his mind and decided to invest when he saw others do so. This generally happens because of people's intrinsic preference for conformity, to match with the group. This type of behavior can be dangerous while investing because people can very easily make bad decisions when influenced. For example, if a group of investors were debating whether or not to make an investment, and the majority were more on the negative side, the smarter decision would be to not invest altogether. However, if the minority that are positive go ahead and make a decision and invest before the others, chances are the rest of the group will more or less follow along. And if it turns out that the investment was a bad choice, then the investors made the wrong decision, even though the majority had the right decision in mind all along. Therefore, the actions of early investors can truly decide the path for many other investors, and usually the most aggressive investors will get in first, which may not be the best decision. This herd behavior works the other way around as well. Consider the previous example, where the investors decided to go for the investment. Once they figure out they are losing money, people will start to sell their shares. Seeing this, the rest of the group will follow, incurring another herd movement. Herd behavior often stems from momentum investment strategies. This type of strategy concerns buying recent winners and selling recent losers. Such behavior will be key when discussing cryptocurrency culture.

Economic Bubbles

When there are surges in the market like that of cryptocurrency, prices can get blown out of proportion. When this happens, there is always the danger of a financial bubble.

To understand a bubble, the definition of fundamental value must be established. The fundamental, or intrinsic, value of something is what the majority believes it should be priced at, based on different qualitative and quantitative factors. For example, the fundamental value of a stock is often reflected in its price per share on the market because it is growing or declining according to the company's actions and financials. Keeping that in mind, an economic bubble occurs as follows.

First, there is a boom - a new opportunity, technology or future prospects. Then, the initial wave of investments and money start flowing in, causing a rise in the price of the asset. Seeing these attractive gains, more investors are interested in joining in, fueled by the incentive, as discussed before. As more investors buy in, the value reflected in the price begins to rise, but so does demand because everybody wants to make money on this next big thing. This is called a positive feedback mechanism, a key aspect of a bubble. A positive feedback mechanism where both demand rises based on the price (value) rising and price (value) rising because demand is rising creates unsustainable growth. This occurrence is fueled by herd behavior, as more investors join in on the trend because they see the people around them doing so and the high returns they are getting. As the herd and the positive feedback strengthen, the price of the asset begins to move further and further from its fundamental value. This is critical because there is no longer equilibrium between supply and demand. During critical periods of a bubble, small occurrences will have large effects, until they build up and cause a crash. Think of it like a rope holding a heavy weight from the ceiling. Under such immense pressure as more weight is being added (unsustainable growth), little frays in the rope will cause it to get weaker until it crashes. When the buildup gets too much, the bubble crashes.

A very recent example is the housing bubble of the late 2000s. At the time, the economy was thriving; as the average citizen was making more money, they were spending more too. Naturally, people sought to buy better houses due to an influx of wealth; living conditions are important to people and property is generally expected to appreciate over time. Along with a lack of government regulation and low interest rates at the time, people saw that there were opportunities to buy property they otherwise could not have afforded. This behavior can be considered 'the boom'. However, houses are not something that can be quickly produced, thus limiting their supply. This supply issue created the makings of the positive feedback mechanism: the increased flow of demand created a rise in prices, but demand continued to increase because people had money to spend and expected that the land would only rise in value. This is where momentum investing and speculation came into play: people believed that due to recent prosperity, houses would continue to increase their value at this break-neck speed. This spurred them to invest more heavily and take more risk because they believed it was a guarantee that it would pay off. The continuous drive of demand and value is testament to the power that speculation and herd behavior have on people's decisions.

As the prices continued to increase, naturally they began to drift further and further away from their fundamental values as the property itself. A good way to understand this is looking at rent: even as buying and selling prices rose, rent stayed relatively the same (Baker, 2008). The simple explanation for this is that houses were much too overpriced; the prices that people were willing to pay for them trumped the cost of actually living in them by a large margin.

As aforementioned, such a positive feedback mechanism causes the equilibrium between supply and demand to break down. With the increase in demand and prices, the production and building of houses were boosted as well to try to create that equilibrium. Over time, production reached a point where there was a surplus in supply, but not the demand to match it. With an excess of available housing, prices of homes were starting to decrease. Supply and demand was back to equilibrium, and there was far more supply than demand. As a result, the overpricing of the houses that had already been bought was suddenly glaring; homeowners owed more in their mortgage than what the house was actually worth. What the herd thought could never happen had happened: not only was land not appreciating, they were depreciating.

When the housing market crashed, it crashed hard. Multiple different factors were weighing on the bubble that ultimately caused it to fall. The wave of new home ownership had dissolved into a frenzy of defaults

and foreclosures as rising interest rates among other factors made it hard for homeowners to deliver on payments. Value began to accelerate downwards quickly and the economy began to take a turn for the worse as the nation's gamble on real estate started to show its cracks.

Real estate investments, which had begun as a normal interaction, eventually created a herd of investors. The market was then accelerated abnormally to great heights because of simple herd behavior, increased speculation on future value and profits, and subsequent heavy risk taking. Property prices had become unnatural, a bubble. When the time came for the inflated prices to balance out, the effects sent the nation spiraling downwards. Essentially, the people inflated the bubble and when it burst, the consequences ruined many.

The characteristics and factors leading up to the housing bubble draw very similar comparisons to what is happening in the cryptocurrency world. The only difference is that everything is enhanced in cryptocurrency: the herd's strength and the price increases among others.

Cryptocurrency Culture

Now that the basic themes of individual behavior, culture and financial culture have been established, it should be easy to unfold how these aspects are heightened in the world of cryptocurrency.

In the mid 2010's, cryptocurrency was just an alternative currency, another asset class to be traded. From 2015 to 2020, they hovered around the same prices, as people did not see much of a practical use for this form of currency. Near the end of 2020 however, things started to change. Inflation was rising, so consequently purchasing power was decreasing. Institutions like JP Morgan started buying into cryptocurrency, stating speculation of future value. Cryptocurrency trading also became more accessible as a currency and as a tradeable asset. This was the initial wave.

After being stable for so long without significant volume, this wave of money propelled a spurt in price. From December 6th, 2020 to January 3rd, 2021, Bitcoin doubled from $19.1 thousand to $38.3 thousand. Seeing these massive gains would be enough to attract any investors, and volume continued to increase. Shades of the positive feedback mechanism were beginning to appear.

As prices began to increase non-stop, everyone saw this as the next huge boom, a way to earn money quickly. And since it was so accessible, everyone started to buy in. At the same time, in January 2021, NFTs quickly rose to popularity. An NFT (non-fungible token) is a collectible stored on the blockchain that can be bought and sold with Ethereum. They can be compared to trading cards or action figures; you are paying for the exclusive ownership and rarity of the collectible. They are generally graphics, with the most famous one being the BoredApe line which pictures an ape with different designs. NFTs boomed, selling for millions of dollars to a large market. Seizing this as an opportunity, internet influencers like YouTubers or social media personalities began to promote NFTs, either their own or ones of their sponsors. This is where the culture and individual behavior begins to play in.

As a new technology of sorts, cryptocurrency appealed the most to young adults and kids, while older, seasoned investors just viewed it as a new asset class. Coincidentally, internet influencers also share the audience of teenagers and young adults. As they marketed their lavish lifestyles and high returns on social media, it became the new trend. Spurred by the desire to match those around them, especially at an impressionable age, suddenly everyone was into cryptocurrency and NFTs. TikTok and Twitter were flooded with so-called "crypto experts", new alt-coins and NFTs.

With all the new trends and surges in value, the herd continued to strengthen. A lot of the trading being done was strictly arbitrary, without much thought into the actual value of these assets. With many of the alt coins, which are all cryptocurrencies that are not bitcoin, they had no hope of gaining any value in the future and were essentially the worse version of penny stocks.

A great example of this is dogecoin. Dogecoin traded at a fraction of a cent before exploding at the same time as NFTs. It was considered a meme coin, as it was named after the famous meme: the doge. There

was no hope for dogecoin to ever have a use in day to day life, but yet it continued to rise in price from January to April of 2021. The reason for this was its massive internet popularity. Dogecoin's increase in price reflected the cryptocurrency community's values: since it made waves on the internet through social media and under the influence of big names such as Elon Musk, and because its price continued to rise and therefore seemed like an easy way to make profit, more and more people began to invest in it. By April 2021, its volume and price had increased 100 times. After hitting a peak of 33 cents, it has dropped drastically since and now trades at 6 cents per coin.

The key point to take away from dogecoin is how it reflects the values of the cryptocurrency community. One, It was an internet phenom: dogecoin made waves as this meme coin that was worth basically nothing. Two, one of the world's richest people, Elon Musk, promoted the coin, increasing its influence and outreach. And three, its value increased 100 times so it possessed value for profit seekers. These three aspects of dogecoin, and largely cryptocurrency, are why there is such a frenzy to trade it. The internet popularity and crowd influence create very strong herds, and the easy profits appeal to many investors. Dogecoin itself was a mini bubble: at its peak, there were 400 billion transactions and currently there are less than a billion. A lesson should be learned from dogecoin

A lot of the logic and reasoning were ignored in the cryptocurrency frenzy. With the increase of promotion and new coins popping up everywhere came pump-and-dump scams. FaZe Clan, a well known gaming organization with over five million followers on Twitter, came under scrutiny after some of its members launched an alt coin project that was meant to allegedly redistribute wealth to charities. The members that promoted the project catered heavily to a younger audience, with millions of followers each. After the launch of the coin, a few members were found to have sold their shares immediately as the coin was released, thus 'dumping' the coin and bringing in massive profits from the volume of the fans who all believed in the project.

These types of scams are more common in cryptocurrency than they are in traditional stock markets because of the unregulated nature of crypto. They also show that the herd is easily influenced because of the personalities that are doing the promoting, whether it be famous YouTubers or a tycoon like Elon Musk. In this day and age, internet popularity enables cryptocurrency to have strong trading volume. In turn, this will boost cryptocurrency values because they are heavily reliant on the hype that is generated around them.

Furthermore, crypto-culture has reached a point where there is a sense of community in trading crypto. There are also policing mechanisms among these communities that enforce holding the coins and taking pride in possessing bitcoin and other cryptocurrencies. This is dangerous, as it only strengthens the herd that has become the crypto community. As discussed previously, individuals are influenced by a culture and will focus on the values that the culture emphasizes. This makes the cryptocurrency herd stronger because it becomes difficult for the individuals, who are already easily influenced, to leave the crypto culture by selling their shares. However, even a strong herd like this wouldn't be a massive problem if cryptocurrency traded like a traditional stock: with indicators, news, and average volatility. But the truth is, it doesn't.

The Difference between Stocks and Cryptocurrency

There is a fundamental difference between stocks and cryptocurrency that sets the two apart as asset classes. While both are tradeable on the public markets, stocks are tied to companies while cryptocurrency is, at its core, a currency. An exploration of the simple fundamentals of trading both stocks and cryptocurrency will help.

A tradeable stock on an exchange is a fraction of the ownership of a company. For example, each Amazon stock is a miniscule percentage of what Amazon is worth as a whole. If there were only ten shares, each share would be worth a tenth of Amazon's total value. The stock is a reflection of the company. Therefore, as prices of stocks increase, the value of the company increases with it. Generally speaking, a stock's movement will reflect how well the company is doing, whether that be financial performance, new products, new hires, or even ____. For example, if Company A were to announce a release of a new line of products with never-before-

seen technology, their stock price would probably surge because investors view the news as optimistic and assume that Company A will do well upon the release. Thus, there would be an increase in the company's value, which would increase the stock price and bring in earnings for the investors. Conversely, if Company B's reports showed that they were operating at a loss and were laying off an absurd amount of employees, their stock price would probably decrease because investors view this as bad news that does not bode well for Company B's future. Investors would either sell or short Company B's stock because they company is on a downtrend, and the stock with it. In short, while they are keeping future prices and personal gains or losses in mind, they are doing so based on what is literally happening to the company in the real world.

Currency, or cryptocurrency, is different. Traditional currencies are based on how well the country or countries that use it is doing economically. The value of the US dollar would be tied to America's performance and the Euro would be tied to the European Union's performance. These trends are real life happenings: they are displayed on the news and people can understand why the value may change beyond arbitrage. Cryptocurrency on the other hand is not so straightforward. Since cryptocurrency is not used as a day to day currency and most of the popular coins do not reflect ____, it is difficult to ascertain the reason for the prices and why they change.

"A large part of cryptocurrency trading is based off of speculation and arbitrage," cryptocurrency expert and CEO of BitSquared, Frank Albo, says. "But there is also an equal amount of speculation about its future utility."

Herein lies the fundamental difference. Without concrete news and trends to analyze and follow, trading cryptocurrency becomes a game of speculation. Traders become focused on the price itself, rather than the factors that form that price. Essentially, cryptocurrencies—especially the alt coins—become heavily driven by pure supply and demand. While this is similar to stocks, as they fluctuate due to supply and demand as well, cryptocurrency's demand is driven by speculation. The values of cryptocurrency become dependent on how the market feels about its future prices and how much hype it is generating. This does two things: one, it creates intense volatility because it relies on the feelings of investors and speculation rather than changes or happenings to the actual coin and two, it makes it difficult for the public to understand the true value of the coin because the price is controlled by the market and not actually a usage in real life.

The Dangers of Cryptocurrency

Cryptocurrency built up to a critical point in November of 2021, reaching all time highs. It was showing many signs of a bubble: immense herd behavior, high risk taking, speculation based trading and positive feedback mechanism. As the market began to decline from highs in November, cryptocurrency was hit especially hard. In a span of 6 months, Bitcoin and Ethereum dropped almost 70% and 75% respectively, both astronomical crashes. In comparison, the NASDAQ and DOW only fell about 36% and 19%. Both cryptocurrencies returned to just around their prices pre-spike; in short, it was a terrible fall.

Cryptocurrency as an asset class has a high potential for bubbles. In 2017, Bitcoin experienced the same rise and fall, surging from $7 thousand to $20 thousand, before crashing right back down to $7 thousand. At that time, the same themes of massive herd behavior and speculative trading were present as well. Now, with an even more impressionable and young audience, the bubble potential is even higher. Cryptocurrency, without a true value or usage in society, and being traded upon solely arbitrarily, will continue to experience bubble scares.

The different levels in the forming of a bubble are apparent. The recent rise of cryptocurrency integration into payment and trading platforms as well as more hype in the media served as the boom. This boom was followed by a new wave of traders that sought to make money while promoting it to their audience: internet influencers. While it has been established that herds fuel bubbles, the crypto herd is stronger than any other. The widespread outreach of the influencers and promoters partnered with the accessibility of cryptocurrency

trading helps push high volume as more people are able to get involved. And although it was relatively easy to buy houses at their high prices during the housing bubble, that is nothing compared to how easy it is to buy cryptocurrency nowadays. Since a new technology like cryptocurrency is catered more towards a younger audience that will inherently be more impressionable than an older one, the herd behavior witnessed in cryptocurrency is especially strong. The absurd rise in value is visible as well; increases in the hundreds of thousands of percentage points trumps the value increases during the housing bubble immensely.

The danger in cryptocurrency lies in the nature of its being and its audience. There is nothing substantial to judge the value of cryptocurrency on. Without that, it may be difficult to tell inflated prices from natural ones. And with its audience being young, the strength of the herd is multiplied. The culture is extremely strong and makes it difficult for members of the herd to break apart. The continuous rises in price, which bring in profit for traders, sometimes seems too good to pass up on. As long as cryptocurrency is controlled solely by market sentiment, the herd will continue to follow it and its successes. Without a practical use in sight and insane volatility, cryptocurrency is in danger of its bubble bursting every day.

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