Bitcoin Price History:
An analysis on the events affecting bitcoin market price

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Disclaimer. All of the price information used in this project comes from CoinDesk. I did a lot of research in determining which resource I would use to pull price data from. I knew that I would want to choose one source and stick with in order to maintain a control variable across my search

CoinDesk was chosen was a number of reasons. CoinDesk brands itself as a bitcoin and digital currency news source claiming it is "the world leader in news, prices and information on bitcoin and other digital currencies." Their motivation and intentions seem very reliable, with many user friendly introductions and guides to bitcoin, promoting bitcoin, investors, traders, startups and developers who are a part of the Bitcoin community. They make their editorial policy public as well as a disclaimer acknowledging the importance of doing your own research and not relying solely on CoinDesk for investment purposes.

Secondly, it was important for me to not choose a bitcoin exchange to pull prices from because there would be too much of a bias. One of the features I like and trust most of CoinDesk was their methodology for the Bitcoin Price Index (BPI), which is the tool I primarily used. The CoinDesk BPI pulls an average price from the top leading global bitcoin exchanges as based upon in their publicly-made criteria for which exchanges to include. Among the criteria, some of the highlights and my favorites are: USD exchanges must serve an international customer base, Exchange must provide a bit offer spread for an immediate sale (offer) and an immediate purchase (bid), Exchange must represent at least 2% of the total 30 day cumulative volume for all of the exchanges included in the BPI. The exchanges that "survive" the criteria, and thus make up the sources of data for this project are: Bitfinex, Bitstamp, BTC-e, itBit, and OKCoin.

A third feature that was important in the decision to choose CoinDesk was the inclusion of the actual methodology for calculated the BPI. The criteria states that the BPI is a "simple average", is expressed as the midpoint of bid/ask spread (appropriately chosen as a followup to one of the criteria for choosing an exchange, see above), updated every 60 seconds, dynamic exclusion of exchanges that do not update the price longer than every 30 minutes until they meet that demand, and use of Coordinated Universal Time.

The last feature that I will point out that made CoinDesk an easy choice was the ease-of-use of their website. I found their data, charts, and graphs to be the most interactive, precise, and navigable. Without the precision and details they include, my analysis would not have been as thorough. It is also helpful to know that they do have a public API that I would take advantage of in any future iterations of this project.

It is obvious that CoinDesk puts a lot of thought and effort into offering accurate, fair, objective, and responsible data and tools to use in researching and learning about bitcoin. CoinDesk is my top recommendation for anyone looking for a source on bitcoin.

This report is accompanied by this prezi: http://prezi.com/zi0kbca2bc3z/?utm_campaign=share&utm_medium=copy&rc=ex0share

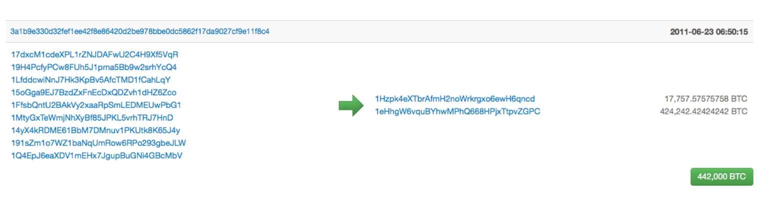
1 A History of BTC Price Fluctuations

One of the defining factors of the Bitcoin currency is its volatility. Bitcoin's history is characterized by quick rises and devastating falls. In his report on "Virtual Currencies", Mark Williams of Boston University cites Bitcoin's price risk to be 7 times that of gold. While almost any currency is subject to routine ups and downs, the nature of a cryptocurrency brings many other possible features into the picture.

The high price risk is extremely problematic for users, investors, and miners of bitcoin. Following the graph in Figure 1, here is a breakdown of some of the most significant changes in the history of bitcoin's market price.

The currency had already existed for well over two years before it had any change in its market price (previous $0.00). On January 30th, 2011 Bitcoin's market price went up to $1.00 and would never go back down to $0.00 (except for one exception).

In the second week of June in 2011, Bitcoin experienced its first peak at $32 with an initial price decline of 68 percent, which continued into a bear market that eventually met $2 in November, declining 94 percent. It is supposed that the initial peak was a result of media hype that summoned some early investors. Security was likely the cause of the downfall in this situation; there were reports that a hacker was able to user a Mt Gox auditor's credentials to transfer a large number of bitcoin to himself then proceeded to sell them. There was doubt in Mt Gox after this occurrence so in order to prove themselves solvent, they moved 424,242.42424242 bitcoin to a Mt. Gox address, found in block 132749.



Bitcoin saw another, much much smaller peak on January 16th, 2012. In fact, this peak is so small (reaching $7.20) that it is almost negligible; however it is an interesting phenomenon to describe because it is the first change in Bitcoin price that is a result of a surge in popular culture relating to bitcoin. In fact, if you look at the Google Trends for the search "Bitcoin", there is an even larger peak at the end of January 2012. The reason for this surge in bitcoin popularity is the focus on Bitcoin as the subject of an episode of the CBS drama, *The Good Wife*.

Fast forward a little over a year, and Bitcoin suffers its first major crash and garners a lot of attention to the currency. On April 10, 2013 Bitcoin peaked at $266 then declined 61 percent. What made this crash so devastating was that Bitcoin had been growing very quickly in the month prior; in fact, about a month before the crash, February 16, 2013 Bitcoin was at $27. The growth from $27 to the peak at $266 then back down to $68 all in a calendar month was a huge hit to the quickly growing currency and was possibly the first big hint at Bitcoin's volatility. The exact cause of the burst is largely undetermined, probably because it is the cause of multiple factors. However, there is speculation. One *unlikely*, yet interesting possibility and potential factor was the "charitable act" of a reddit user " bitcoinbillionaire" spontaneously giving away 63 bitcoin (worth about $12000 at the time, using a Bitcointip bot) to 13 supposedly random fellow redditors. Several hours after the act, the plunge in the market price occured. Seems unlikely, right? Well the first tip occurred when the first receiver of the tip started a thread on r/bitcoin "I wish for the price to crash".

Initially many conspirators concluded that the most reasonable explanation was a distributed denial-of-service attack on Mt. Gox, which was the most popular bitcoin exchange at the time. However, Mt. Gox later made a statement that they were not the victim of an attack at the time of the crash, yet did become victims of a DDoS attack later. The culmination of the bubble burst and the delayed DDoS attack on Mt. Gox caused Mt. Gox to shut down trades completely for about a day, citing the need for a "market cooldown".

As a result of the April 13th peak and tumultuous fall, Bitcoin again surged in popularity and was front and center of the public eye. According the Google search data, April 2013 saw the second largest increase in google searches for bitcoin. In addition, the subreddit r/bitcoin rose to be the 14th most-viewed reddit community.

Many members of the bitcoin community saw April as the first real test of bitcoin's function as a currency. The events of that month revealed a lot of strengths of the market, but also made apparent what would become one of the biggest weaknesses of the cryptocurrency -- bitcoin exchanges. During the events of the bubble burst, many of the exchanges shut down temporarily, proving that they were unable to handle the increase of requests; BitStamp suffered a one hour shutdown, Bitfloor suffered 3 shutdowns lasting 2 hours each, and BTC-E missed over 3 hours. Many members of the bitcoin community expressed anger and distrust at the way the exchanges handled the market. One of the big takeaways from these events was the realization that the bitcoin market is too large in volume to be handled by a single exchange -- Mt. Gox held 97 percent of the exchange market. So, an effect of Mt. Gox's instability over the course of the crash was the rise of multiple other exchanges; two exchanges that rosen quickly after the crash were ButterCoin and Ripple.

The six months following the bitcoin crash of April consisted of Bitcoin trying to stabilize. During this time, there was a lot of jagged movement in the market price. This time was characterized by a lot of uncertainty from the public. It makes sense that investors would be skeptical to put trust into Bitcoin's economy. However, this phase would come to an end with a few major events that occurred in October of 2013. Leading up to October, it was pretty clear that a United States government shutdown was impending. Unsurprisingly, the United States Federal Government entered a shutdown from October 1 2013 until October 16 2013, when Congress was finally able to reach a budgetary approval for the end of the fiscal year. As expected, the nation was dissatisfied. According the Gallup, Americans gave an 11% approval rating for Congress, one of the lowest overall ratings in Gallup history; in addition, approval ratings for the Republican party were lower than they had ever been since Gallup had began measuring party favorability over 20 years before. Along with a general disregard for the American government during the shutdown, the US dollar also suffered. Forbes noted the downfall of the dollar when the Asian and European markets left the Dollar behind. As a result of the failing dollar and the government shutdown, much of the public gained a new interest in alternative currencies.

Presumably, Bitcoin should've seen a huge increase in market price if it hadn't been for an ever more significant event event in the bitcoin community. Just a day after the government entered the shutdown, the Federal Bureau of Investigation shut down the notorious online black market, Silk Road. Bitcoin and Silk Road have a tight link because Bitcoin is the preferred currency for illegal goods because of the "anonymity" Bitcoin offers. Jeremy Cook, the chief economist at currency brokers World First had this to say about the logic behind the price drop, "You've bought Bitcoin as an investment or you've bought it as a transactional medium. If it's one, you've just seen a major marketplace shut down, and if it's the other, the value has dropped suddenly. You will sell it." Fortunately two days after the shutdown, the price stabilized back to $121.29, only slightly lower than it was before either shutdown.

Despite all the excitement in October, nothing could prepare Bitcoin for November 2013. On the first day of the month, the bitcoin market closing price was about $197.54; by the last day of the month, the price was closer to $1124.76, considered by many to be the absolute all time high for the currency. Since then Bitcoin has experienced a very gradual decline in market price that has (arguably) continued till this very day (April 8, 2015). While there is an endless pool of possibilities for the cause of this speedy price increase, some reasons seem more apparent to others. Many analysts point their finger to China's bitcoin community.

David Zeiler, the Associate Editor for *Money Morning*, a source for financial news run by "investment strategists", cites a "sudden surge in Chinese interest in Bitcoin - mostly as buyers". There seem to be 3 specific events that may have motivated the "surge" in the Chinese bitcoin market in November of 2013: the first was Baidu's October announcement to begin accepting Bitcoin as a form of payment for "some services" (Baidu is China's primary search engine (comparable to Google for our purposes). The second event was a 30 minute broadcast of a bitcoin documentary that showcased bitcoin in a "favorable" manner; even more, the documentary was shown on the official state television network, CCTV. The third event was a newspaper article published by *People's Daily*, shining a positive light on Bitcoin. Zieler suggest that these last two events suggest that the Chinese government encouraged citizens to invest in Bitcoin, he even cites an ulterior motive to "poke holes in the dominance of the US dollar".

To add fuel to the Bitcoin fire, the US government also had a lot to say the week of November 18th 2013. In a response to the closure of the Silk Road, the US Senate held its first congressional hearing on the future of Bitcoin, and to the surprise of many people, there was a lot of positivity about the digital currency, which could also be a good explanation for the spike in bitcoin price during November. One of the very first comments made was chair of the Committee of Homeland Security and Governmental Affairs, Tom Carper, who opened by drawing a parallel between the Internet and Bitcoin; suggesting that many were skeptical of the Internet and illicit potential. Business Insider later reported that then-Chairman of the Federal Reserve, Ben Bernanke, released a letter to "guide the senate". In the letter, he mentioned that Bitcoin "may hold long-term promise, particularly if the innovations promote a faster, more secure and more efficient payment system".

However as with all major peaks, there is always a major crash to follow; in this case, the market price was $1147 on December 4, 2013 and fell to $694 just three days later on December 7th. Interestingly, while Chinese government may have brought Bitcoin up to its all time high, it seems that China and Chinese government may be the reason for the massive crash that occurred in December 2013. On December 5, 2013 the People's Bank of China announced that it would then be prohibited for financial banks in China to use bitcoins as legal tender. After the announcement, exchanges were reporting a fall of up to 20% in the bitcoin market price. Following suit, Baidu took back their acceptance of bitcoins they had allowed months before. While the market price rebounded a few days following the news, it was quick to crash again on December 18th, 2013 (even lower than the crash at the beginning of the month) to $522, losing almost half its value overnight. The cause of this crash is fairly undebatable; China's largest bitcoin exchange had just announced that they would no longer accept deposits in Chinese currency (still allowing withdrawals). BTC China's chief executive, Bobby Lee, blamed government regulation as a result of the People's Bank of China's decision to not accept bitcoin as legal tender.

Although the month of December saw a lot of volatility and uncertainty in Bitcoin, it did draw a lot of attention to the currency. In fact a lot of the reason Bitcoin reached its all time high at the beginning of the month was because of all the media attention. Just a few days after Bitcoin hit its highest maximum, the popular television show the Simpsons featured one of the characters mentioning Bitcoin. Google Trends also show the same trend; December 2013 is the month that Google measures the most searches containing Bitcoin. It is possible that as a result of this revived interest in bitcoin and the spotlight it had in the media that encouraged two big companies, Overstock.com and Zynga to begin accepting bitcoin as acceptable payment. Coindesk cited Overstock as the "first major retailer to accept Bitcoins". And the move proved to be somewhat successful; after just 21 hours post-announcement, the company had sold over $124,000 worth of goods in bitcoin. This public use did represent a paradigm shift in bitcoin, as in the past it was widely known for being used illegally or in black markets. It was an important move for the bitcoin community to show use and acceptance in an everyday retailer.

Zynga's similar announcement was met with enthusiastic bitcoin users as well. Bloomberg suggests that it was Zynga's announcement that pushed the bitcoin price up to as high as $1045 at exchanges such as Mt. Gox. While it is difficult to tell whether it was Zynga's doing or Overstock's doing that pushed the price up (certainly it was some combination of the two), Zynga users may match closer to the demographic of Bitcoin users than that of Overstock users.

January 27th, 2014 brought the arrest of Charlie Shrem, the CEO of the exchange BitInstant. BitInstant's site went down on that day, and never came back up. Bitcoin did suffer a minor price drop, from $880 to $814 in less than 24 hours.   It's possible that the exchange being down caused the drop, but more probable that Bitcoin and the negative attention towards the allegations and Shrem's involvement with Silk Road caused the dip in price. The price recovered to $848 by the last day of the month.

Less than a month after Shrem's arrest brought another low point in Bitcoin's history and consequently in its market price - the crash of the largest Bitcoin exchange, Mt. Gox. Retrospectively, it seems that Mt. Gox's fall could've been easily predicted. In June of 2013 Mt. Gox announced they were halting withdrawals in US dollars. In July they resumed withdrawals in USD but the Paul Vigna of the Wall Street Journal reported that withdrawal requests "are not being processed as fast as we would like". In fact as of September of 2013, "very few requests had been completed". Wired Magazine suggested that Mt. Gox had "been frozen out of the US banking system because of its regulatory problems."

A few months later in February of 2014, all withdrawals with Mt. Gox were halted and greater than 850,000 bitcoins were left missing as a result of the Mt. Gox fall.

Bitcoin continued to fall after the Mt. Gox incident hitting its lowest point since the bubble of 2013. While it seems like Mt. Gox could've been the nail in the coffin for Bitcoin, that doesn't seem to have been the case. Although the numbers has seen an overall decline since spring 2014, the overall volatility has seemed to decrease and bitcoin has stabilized. As the number of people in the bitcoin community has increased, and the currency has grown, the price is not as sensitive to day-to-day events which has caused the overall drop in volatility. However, the next big question is will bitcoin be sustainable. For more on the subject, I now transition to my Prezi on Mining Reward Halving.
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2 A quick word on Mining Reward Halving

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Cyptocurrencies that use a Proof of Work algorithm experience what is called a block reward halving. When miners solve puzzles required of the Proof of Work they are rewarded with new coins and that is how new currency is introduced into the world. The halving refers to this coin reward halving at certain blocks or after a certain set of transactions have been completed. Because mining rewards are the procedure for introducing new coin into the market, the halving is a way to cap the amount of money that can be introduced -- this is one of the defining points of a decentralized currency because there is no single entity introducing unlimited money into the market.

The most evident consequence of the halving is the there is an immediate drop in profitability for miners unless the price of bitcoin doubles at the same time, which is unlikely to occur immediately. Therefore it is expected when the mining reward halves, there is a drop in number of miners mining because it may not be profitable for them any longer; this would cause a drop in the hashrate and a drop in the difficulty to compensate. Another obvious effect is the limited supply of new coin which could cause pressure on the price due to limited supply. This trend would be more obvious, the higher the demand is.

3 Resources

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