

Overstock.com ventures into digital currencies

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ABSTRACT

This case discusses Overstock's adoption of Bitcoin as a form of payment from its customers, explaining the significance of the event. The case also describes a simple Bitcoin transaction and talks about the advantages and current issues for users of Bitcoin and how Bitcoin compares with a fiat currency such as the US Dollar. Students are encouraged to think critically of Overstock's future strategy regarding digital currencies in an age where they are increasingly accepted.

Keywords: digital currency, payment, Bitcoin, Overstock, cryptocurrency, financial transaction



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INTRODUCTION

Forging the path for large U.S. retailers, Patrick Byrne, CEO of overstock.com, announced in an interview late December that the website would soon begin accepting Bitcoin, a new digital currency developed in 2009, as a means of payment from its customers (Calouro, 2009). In the course of the interview, Byrne revealed his adherence to the Austrian school of Economics (which places high importance on economic decisions made by individuals without being curbed by a central authority) as a guiding factor in the decision to adopt Bitcoin after the company had spent at least a few months considering the adoption. The actual reasons, however, were likely financial: Bitcoin does not require the presence of expensive third party intermediaries such as Visa and MasterCard for the transaction process, and partly because of that, a digital retailer such as Overstock.com stood to reduce a substantial portion of its costs (Berson, 2013).

While the Overstock.com announcement was significant, it was not the first company to allow transactions in Bitcoins. A month prior to the Overstock.com announcement, Virgin Galactic began accepting the currency to pay for a seat in its spaceflight. In the same month, the University of Nicosia, the largest private university in Cyprus, became the first university in the world to accept Bitcoin for tuition and other fees (University of Nicosia, 2013). A Lamborghini dealership operating in California started accepting Bitcoin for car purchases (Trudell, 2013). Furthermore, a number of popular websites boasting millions of users supported the use of the fledgling currency as well, including: social news website Reddit.com (Simpson, 2013), dating website OKCupid.com (OKCupid starts accepting Bitcoin using Coinbase!, 2013), web hosting service Wordpress.com (Pay another way: Bitcoin, 2012). Small businesses may be emulating Overstock.com; Arden Reed, creators of custom suits, also started accepting Bitcoin (Mobile suiting company, Arden Reed, to accept Bitcoins in 2014, 2014).

Overstock.com's adoption of Bitcoin is unique because there is evidence that the initial Bitcoin adopters may have been serving niche interests. A seat on a Virgin Galactic spaceflight costs \$250,000, severely limiting the customer base; the Tesla Model S car that was bought at the California-based dealership was sold for about \$103,000 to a Florida-based buyer; the websites listed above are driven, in large part, by a younger and technologically-savvy demographic. The adoption of Bitcoin by these and other small, independent local businesses throughout the world were not seen as significant events when compared to a large online discount retailer with a nationwide presence such as Overstock. In fact, Berson (2013) argues that [prior to the adoption of Bitcoin by Overstock] there was a limited market for Bitcoins because of the absence of a large retailer willing to accept this new currency.

Overstock began accepting Bitcoins on January 9, 2014 (Overstock, 2014, January 9). In the first two weeks, they estimated to have sold about \$500,000 worth of goods. They also revealed the 25 most commonly bought categories of items (Morphy, 2014). As shown in Table-1 (Appendix), 3 of the top 10, and about half overall, of the categories are completely non-electrical in nature. This indicates that customers using Bitcoin aren't necessarily tech-savvy and looking for electronic goods as was generally assumed. On March 4, Overstock announced in a press release that they had sold over \$1 Million in goods to over 4,300 customers paying in Bitcoin (Overstock, 2014, March 6). Of these, almost 60% were new customers. This caused a revision of the annual estimate in Bitcoin-generated Overstock sales from an earlier value of \$5 Million upwards to \$15 Million. While this may not be a significant portion of Overstock's total annual revenue (which, even at last year's value of \$1.3 Billion, would put Bitcoin's contribution

at a mere 1.1%), it reveals a significant trend in the willingness of shoppers to use digital currency, and could lead to other retailers such as Amazon to consider accepting the currency as well.

A clear indication of Bitcoin's rising popularity can be observed in the estimated daily transaction volume for Bitcoin, as shown in Figure-1 (Appendix). In 2012, the average daily transaction volume was less than \$2 Million. This rose to about \$40 Million in 2013, crossing \$200 Million for two weeks around the beginning of December. As of March 2014, the average value for 2014 was at about \$80 Million. By comparison, Paypal - a major payment processor owned by eBay, had an average daily transaction volume of about \$500 Million in 2013 (About PayPal, 2014). Bitcoin is thus becoming increasingly relevant. However, from Overstock's perspective, there are two viable alternatives with regards to the Bitcoins it earns:

1. Convert all Bitcoins into USD on a daily basis, which is its current strategy;
2. Keep a portion of Bitcoins as a store of value, as Bitcoins are designed to be deflationary, i.e. increase in value over a long time horizon.

In following either strategy, there are risks involved that cannot be ignored. These include:

- Bitcoin is a young currency that originated only in 2009;
- There are other currencies that have arisen with similar objectives and it is possible that Bitcoin will lose ground to one of these in the coming years;
- There are currently no regulations in place concerning Bitcoin transactions;
- Bitcoin's value has fluctuated wildly since its inception, and there are currently no derivatives available for hedging the risk of holding Bitcoins;
- While Bitcoin transactions do not require a third party to intermediate, Overstock depends on Coinbase.com to process its Bitcoin transactions;
- A popular Bitcoin trading exchange, Mt. Gox, filed for bankruptcy on February 28, 2014, after it revealed that it had lost almost \$500 Million worth of Bitcoins (representing about 7% of the total value of all Bitcoins in existence), most of which belonged to its customers, and \$27.3 Million in cash customer deposits in what appears to be a mass theft;

Should Overstock continue with liquidating its cache of Bitcoins every day? Or as Bitcoins increase in importance and adoption around the world, should Overstock maintain a Bitcoin cache? In either case, should Overstock continue using Coinbase for its transactions or should it invest in carrying out its own transactions without the aid of a third party? These are questions that Patrick Byrne will have to contend with as Bitcoin grows in prominence.

THE BASICS OF BITCOIN

Bitcoin is a digital currency, i.e., a currency that can be used to fulfill the roles of conventional currency (a store of value and a medium of exchange) without the ability to be printed onto pieces of paper or shaped in the form of coins. Whereas US Dollars can be stored in a wallet that can be carried around, Bitcoin exists only in "digital wallets" maintained on computers. Consider a simple transaction between Ana and Christian, wherein Ana needs to send 3 Bitcoins to Christian. Both Ana and Christian have their own computers connected to the Internet on which they have their wallets containing Bitcoins. Just as a physical wallet has multiple folds or pockets, each of which can be chosen to hold a varying amount of cash, Ana's

digital wallet contains multiple “addresses”, each of which may hold a varying number of Bitcoins. Ana instructs her computer to send the Bitcoins from one of her addresses in her wallet to an address in Christian’s wallet, that Christian has provided her with. Because Ana and Christian are connected directly through their computers, this transaction is carried out directly between them without the need for an intermediary such as a bank. However, this raises a crucial question: Suppose Ana needs to send a payment to Jose as well. Under conventional circumstances, a bank would clear Ana’s payments to Christian and to Jose independently. If, after paying Christian, Ana’s bank account didn’t have the sufficient funds, her payment to Jose won’t clear. However, in the absence of a bank, what would prevent Ana from using the same Bitcoins to pay both Christian and Jose? This is a well-known problem with digital currencies called double-spending, and it is the prevention of this issue that was the big innovation that Bitcoin introduced.

The concept of Bitcoin was first proposed in a white paper published online in 2008 by “Satoshi Nakamoto”, whose identity remains a mystery (Nakamoto, 2008). This proposal was followed by the creation of the Bitcoin network, which linked everyone who wanted to get involved in the sending and/or receiving of Bitcoins over the internet. Each individual is thus directly connected to every other individual through their respective computers, negating the need for a centralized payment intermediary such as a bank. Each computer in this network also carries a transaction ledger that keeps track of every single Bitcoin transaction that takes place between any two parties. This ledger, called the “blockchain”, includes the first ever Bitcoin transaction and is continuously updated with new transactions as they occur. This is an enhancement to the idea of the double-entry bookkeeping system that revolutionized the practice of accounting in which both parties at the opposite ends of a transaction carry a record of the transaction. In the case of the Bitcoin network, in addition to Ana and Christian having a copy of their mutual transaction, someone else in the network, Kate, verifies the transaction. This makes for a “triple-entry” bookkeeping system (Nakamoto, 2008).

The transaction between Ana and Christian, once initiated by Ana, becomes part of a set of transactions called a “block” that includes every transaction made in a certain time period. Other individuals in the network, say Kate and Taylor, attempt to verify (i.e. confirm as being valid and authentic) the set of transactions included in this block using their own computers. This verification process is computationally very intensive. The reward for successfully verifying this block is a set of newly created Bitcoins. Thus, in this case, once Kate verifies the transactions (before Taylor) in this block, she gets a new address in her digital wallet (akin to having a newly created pocket in a physical wallet) containing a set of Bitcoins. In addition, Ana may also choose to provide a small reward as a further incentive for the transaction to be verified. The verification process provides the assurance that Ana hasn’t simultaneously spent her Bitcoins elsewhere, and the block of transactions now becomes part of the blockchain, which then awaits the arrival of the next set of transactions, i.e. the new block.

The process outlined above, called “mining”, is the only way new Bitcoins can be created. This is in contrast to the traditional way that fiat currency, such as the US Dollar, is created, whereby a central authority such as the Federal Reserve System dictates the printing of currency or credits the balances of its member banks by certain amounts. In the case of Bitcoins, there is no central authority, and therefore no other way to create new money besides the one just described. The reward for successful verification, currently at 25 Bitcoins, is designed to drop by half at set intervals, until a total of 21 Million Bitcoins have been created, at which point further creation of Bitcoins will stop. Figure-2 (Appendix) shows the rate at which new Bitcoins have

been added into circulation since the beginning in 2009. As of March 2014, there were more than 12 Million Bitcoins in circulation.

ADVANTAGES OF BITCOIN

Transferring Bitcoins from one wallet to another is practically instantaneous, regardless of the geographical separation between the two parties involved. Ana could be sitting in her home in New York, and Christian could be down the street from her, across the country in Seattle, or on the other side of the world in Tokyo. The mechanism of the transaction remains the same. Bitcoin transactions are also non-reversible. Once Ana has sent her payment to Christian, there's nothing she can do to undo it because the block that the transaction was part of gets continually buried under the transaction blocks that follow it in the form of a chain (which gives the ledger the name "blockchain"). In order for her transaction to be cancelled, all transactions in every single block following that particular transaction will have to be undone as well, which is practically impossible. Another advantage in conducting transactions using Bitcoins is that there is no need to provide any personal information to the other party. Unlike with a bank account (or an account with a payment processor such as Paypal or credit card issuer such as Discover), Ana doesn't need to know who Christian is, where he is, or even his name for that matter. All she needs is an address composed of randomly-generated characters that she will direct her payment to.

These three advantages: ease of payment, irreversibility of transactions, and the lack of customers' sensitive information at the time of making payment makes Bitcoin transactions attractive to merchants, both online and physical. Bitcoin payments at physical locations are made possible thanks to applications on smartphones. Suppose Ana walks into Christian's hardware store in New York and wants to pay using Bitcoins. In this case, Ana has a wallet not on her own computer, but either on an Android phone, or with a 3rd party provider such as Coinbase or Blockchain, which she accesses using her smartphone and initiate the transaction to Christian. For his part, Christian wishes to avoid the hassle of maintaining his own Bitcoin wallet and instead chooses to maintain a wallet with a 3rd party provider which can also be accessed using his smartphone. Once Ana initiates the transaction from her phone, it takes less than a minute for the transaction to show up on Christian's phone. This transaction is a lot simpler than a typical credit card transaction where (How a Visa transaction works, n.d.):

1. Ana swipes her card through Christian's credit card machine;
2. Christian's bank reimburses Christian for the good sold;
3. A payment processor then negotiates between Christian's bank and Ana's card issuer (typically a bank);
4. Ana's card issuer reimburses Christian's bank;
5. Ana's card issuer bills the amount to Ana.

This can take a day or two to process. In addition to that, credit card fees include both fixed and variable components (around 2-3%) (Visa U.S.A. Interchange Reimbursement Fees, n.d.), making it particularly costly for small businesses. Thus, there are several positive aspects for businesses to consider accepting Bitcoins as payment.

ISSUES WITH BITCOIN

Traditional fiat currency typically lowers in value as an economy grows. As Figure-3 (Appendix) shows, prices in the United States have increased at an annual rate of about 2 to 3% each year for the past two decades, barring one exception during the 2008-09 financial crisis. This makes a dollar in 2014 to be of lower value compared to a dollar in 1990. At the same time, as shown in Figure-4 (Appendix) the amount of currency in circulation in the United States has increased from just under \$400 Billion in 1993 to almost \$1.2 Trillion at the end of 2013. According to the Quantity Theory of Money, the amount of money in circulation has a direct relationship with the level of prices, and therefore the purchasing power of a dollar. On the other hand, the total number of Bitcoins is set to increase steadily at a predictable rate, and then remain permanent after reaching 21 Million. This causes a restricted supply of Bitcoins. Thereafter, in the long run, as the economy continues to grow, the value of each Bitcoin increases. This belief has led to speculative activity by some investors who hold on to Bitcoins as a store of value, hoping to convert into US Dollars at a higher rate at a later time. Other Bitcoin users, particularly merchants such as Overstock, use Bitcoins only at the time of transactions and convert their Bitcoins immediately into US Dollars upon receipt. Yet others choose to remain in between, using Bitcoins to pay merchants that accept that form of payment while maintaining a balance. The growing popularity of Bitcoins has resulted in very high volatility in its value. In fact, 73 percent of Bitcoins have accumulated at addresses that only receive and never send Bitcoins (Tavan, 2013). As shown in Figure-5 (Appendix), the value of a Bitcoin has gone from being under \$15 during 2012, to almost \$1,200 towards the end of 2013, to a little more than \$620 in March 2014. Yermack (2013) found that the exchange rate volatility of Bitcoin in 2013 was 33 percent more volatile than even the most risky of stocks. The increase in volatility has accompanied the increase in the number of transactions during the latter half of 2013, as seen in Figure-1. This high volatility is a source of concern for businesses such as Overstock that convert its Bitcoins into US Dollars at a regular basis because the value received for Bitcoins one day can be substantially different than the next. It is convenient for merchants to maintain an account with a third party for the purpose of carrying out transactions. However, there have been several cases of theft from these services. Some examples of large-scale theft are:

- Mt. Gox, a popular Bitcoin exchange that also held accounts for Bitcoin users, announced towards the end of February 2014 that they were missing 750,000 bitcoins, likely stolen from their computers over a period of years. This amounted to almost half a billion US Dollars at the prevailing exchange rate. On February 28, 2014, Mt. Gox filed for bankruptcy (Mt. Gox, 2014).
- Another website, Flexcoin, shut down after losing 896 Bitcoins, equivalent to about \$600,000 at the time on March 2, 2014 (Bitcoin bank Flexcoin shuts down after theft, 2014).
- On a smaller scale, yet another exchange, Poloniex, lost 76.69 Bitcoins (equivalent to around \$50,000), representing about 12.3% of Bitcoins on the exchange on March 4, 2014 (Osborne, 2014).

As of March 2014, no central government has announced a plan to regulate Bitcoin transactions. On February 27, 2014, the Chair of the Federal Reserve, Janet Yellen, in a testimony to the US Congress, stated that the Federal Reserve did not have the authority to regulate Bitcoin in any way. The lack of government intervention and the anonymity of the Bitcoin system means that users who lose their Bitcoins to theft have no recourse to get them back, unlike a bank deposit account, which is insured by the FDIC up to \$250,000 (Yermack, 2013; and Berson, 2013).

BITCOIN IN THE FUTURE

The convenience provided by Bitcoin points to the likely possibility that this form of transaction is here to stay. However, Bitcoin is not the only digital currency of this sort. Since the Bitcoin platform is based on open source software, anybody has the right to study, change, and distribute the software. As a result, practically anyone with the sufficient technical skills can create a new form of currency with different characteristics and make it available for others to use. As of March 09, 2014, there were more than 100 currencies in the mold of Bitcoin, six of which had a market capitalization of more than \$50 Million at their prevailing exchange rates. These are listed in Table-2 (Appendix) in order of decreasing market capitalization. Any of these currencies or even a new one may replace or complement Bitcoin as a major digital medium of exchange.

DISCUSSION QUESTIONS

1. Should Overstock hold Bitcoins in lieu of cash on its balance sheet?
2. Should Overstock invest on its own infrastructure for Bitcoin transactions instead of going through Coinbase?
3. Should Overstock start accepting other digital currencies such as those listed in Table-2?
4. What are the possible advantages and disadvantages for Overstock if other big retailers such as Amazon also start accepting Bitcoins?
5. For a firm such as Overstock, what is the difference between conducting a part of its business using a foreign currency such as Euro and a digital currency such as Bitcoin?
6. How does switching from credit card transactions to Bitcoin transactions affect businesses that operate on narrow margins and depend on high volumes to make a profit compared to those that operate on higher margins?
7. Perform a brief SWOT analysis for Overstock's decision to accept Bitcoin payments.

REFERENCES:

About PayPal. (n.d.). *PayPal*. Retrieved March 11, 2014, from <https://www.paypal-media.com/about>

Berson, S. (2013). Virtual Money: Some Basic Rules. *ABA Journal* 99, 32.

Bitcoin bank Flexcoin shuts down after theft. (2014, March 04). *Reuters*. Retrieved from <http://www.reuters.com/article/2014/03/04/us-Bitcoin-flexcoin-idUSBREA2329B20140304>

Calouro, E. (2013, December 19). Overstock.com to begin accepting Bitcoin second half of 2014. *NewsBTC*. Retrieved from <http://newsbtc.com/2013/12/19/overstock-com-begin-accepting-Bitcoin-2nd-half-2014/>

How a Visa transaction works. (n.d.). *Visa USA*. Retrieved from
<http://usa.visa.com/merchants/become-a-merchant/how-a-visa-transaction-works.jsp>

Mobile suiting company, Arden Reed, to accept Bitcoins in 2014. (n.d.). *ArdenReed Blog*. Retrieved March 10, 2014, from <https://ardenreed.com/blog/mobile-suiting-company-arden-reed-to-accept-Bitcoins-in-2014/>

Morphy, E. (2014, January 22). Here is what Bitcoin users are buying on Overstock.com. *Forbes*. Retrieved from <http://www.forbes.com/sites/erikamorphy/2014/01/22/here-is-what-Bitcoin-users-are-buying-on-overstock-com/>

Mt. Gox. (2014, February 28). *Announcement regarding an application for commencement of a procedure of civil rehabilitation* [Press release]. Retrieved March 10, 2014, from https://www.mtgox.com/img/pdf/20140228-announcement_eng.pdf

Nakamoto, S. (n.d.). *Bitcoin: A Peer-to-Peer Electronic Cash System*. Retrieved March 11, 2014, from <https://Bitcoin.org/Bitcoin.pdf>

OKCupid starts accepting Bitcoin using Coinbase! [Web log post]. (2013, April 15). Retrieved from <http://blog.coinbase.com/post/48102298494/okcupid-starts-accepting-Bitcoin-using-coinbase>

Osborne, C. (2014, March 6). Third cryptocurrency exchange becomes hacking victim, loses Bitcoin. *ZDNet*. Retrieved from <http://www.zdnet.com/third-cryptocurrency-exchange-becomes-hacking-victim-loses-Bitcoin-7000027052/>

Overstock.com. (2014, January 9). *Press Release - Overstock.com* [Press release]. Retrieved from <http://investors.overstock.com/phoenix.zhtml?c=131091&p=irol-newsArticle&ID=1889670&highlight>

Overstock.com. (2014, March 4). *Overstock.com surpasses \$1 Million in Bitcoin sales* [Press release]. Retrieved from <http://investors.overstock.com/phoenix.zhtml?c=131091&p=irol-newsArticle&ID=1905836&highlight>

Pay another way: Bitcoin [Web log post]. (2012, November 15). Retrieved from <http://en.blog.wordpress.com/2012/11/15/pay-another-way-Bitcoin/>

Peck, M. (2013). The Bitcoin arms race is on. *IEEE Spectrum* 50, 11-13.

Simpson, B. (2013, February 14). What's new on reddit: New Gold payment options: Bitcoin and Credit Card [Web log post]. Retrieved from <http://www.redditblog.com/2013/02/new-gold-payment-options-Bitcoin-and.html>

Tavan, D. (2013, August 8). Technology: Bitcoin-A brave, new Bitcoin world? *The Banker* Retrieved from <http://www.thebanker.com/Tech-Trading/A-brave-new-Bitcoin-world>

Trudell, C. (2013, December 6). Bitcoin meets Tesla with Lamborghini dealership's Model S sale. *Bloomberg.com*. Retrieved from <http://www.bloomberg.com/news/2013-12-06/Bitcoin-meets-tesla-in-california-dealership-model-s-transaction.html>

University of Nicosia. (2013, November 21). *University of Nicosia in Cyprus to be the First university in the world to accept Bitcoin; offers Master's degree in Digital Currency* [Press release]. Retrieved from <http://www.unic.ac.cy/about-us/university-of-nicosia-digital-currency-initiative/press-release>

Varriale, G. (2013). Bitcoin: How to regulate a virtual currency, *International Law Review* 32, 43.

Visa U.S.A. Interchange Reimbursement Fees. (n.d.). *Visa USA*. Retrieved March 11, 2014, from <http://usa.visa.com/download/merchants/visa-usa-interchange-reimbursement-fees-april2013.pdf>

Yermack, D. (2013, December 1). *Is Bitcoin a real currency?* (Working paper). doi: <http://dx.doi.org/10.2139/ssrn.2361599>



APPENDIX

Table-1: Top Bitcoin Product Categories

This table lists the top 25 categories of products purchased by consumers using Bitcoins in the first month of the adoption of the payment form.

Rank	Category	Rank	Category	Rank	Category
1	Sheets	11	Men's Watches	21	Area Rugs
2	Cell Phone Accessories	12	Computer Hardware	22	Computer Components
3	A/V Accessories	13	Storage & Blank Media	23	Decorative Accessories
4	Appliances	14	Living Room Furniture	24	Fiction Books
5	Computer Accessories	15	Shirts	25	Lighting & Ceiling Fans
6	Computers	16	Perfumes & Fragrances		
7	Men's Shoes	17	Networking		
8	Hard Drives	18	Cookware		
9	Bedroom Furniture	19	Memory Cards		
10	Keyboards & Mice	20	Towels		

Table – 2: Top Digital Cryptocurrencies

This table lists the top digital currencies similar to Bitcoin having a market capitalization of at least \$50 Million as of March 6, 2014.

Source: <https://coinmarketcap.com>

#	Name	Market Cap	Price	Total Supply
1	Bitcoin	\$7,958,109,630	\$636.98	12,493,500 BTC
2	Ripple	\$1,478,333,756	\$0.02	99,999,996,426 XRP
3	Litecoin	\$423,073,789	\$16.02	26,413,254 LTC
4	Auroracoin	\$299,226,234	\$28.20	10,611,126 AUR
5	Peercoin	\$69,242,139	\$3.26	21,211,523 PPC
6	Dogecoin	\$50,658,613	\$0.00	58,310,260,256 DOGE



Figure-1: Estimated Daily Transaction Volume of Bitcoins
Source: <https://blockchain.info/charts/>

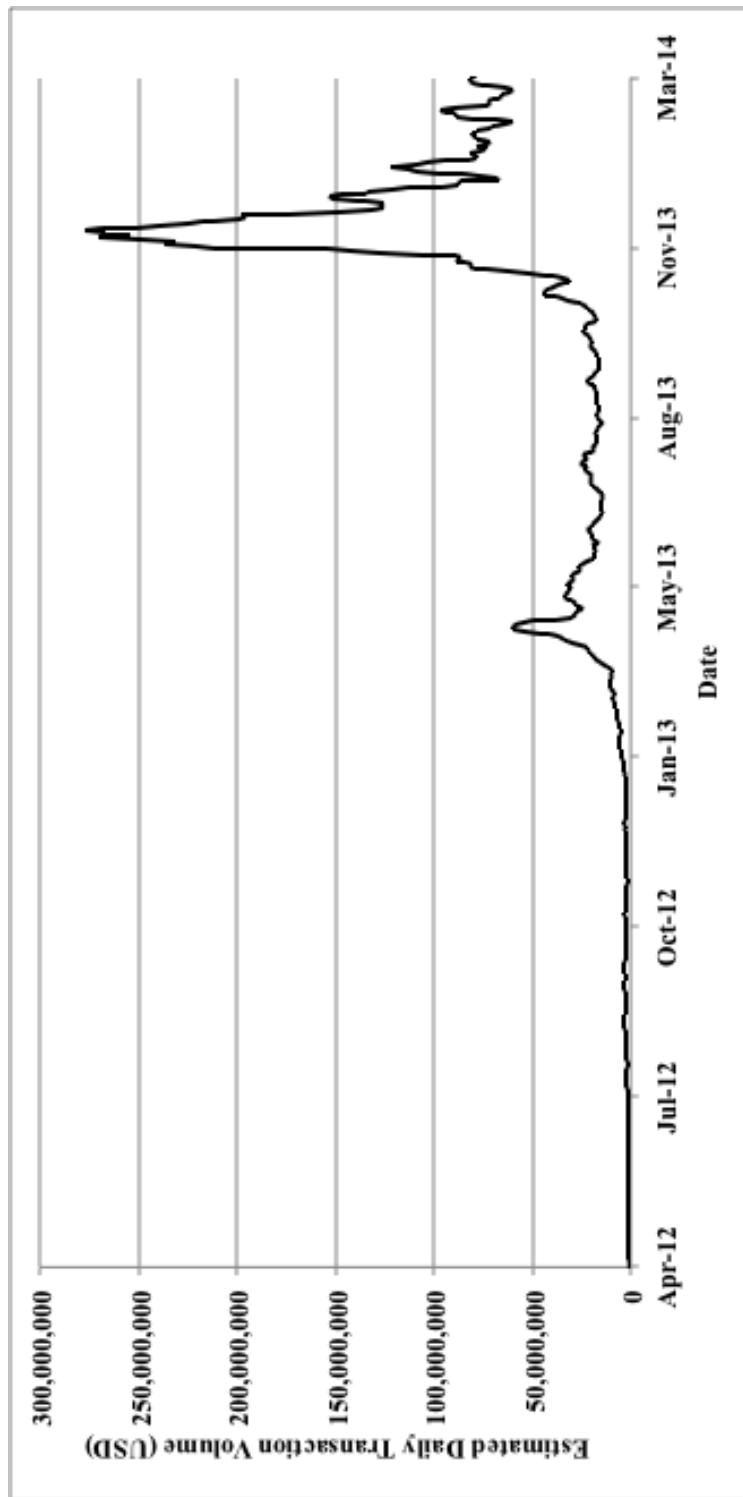


Figure-2: Total Number of Bitcoins in Existence

Source: <https://blockchain.info/charts/>

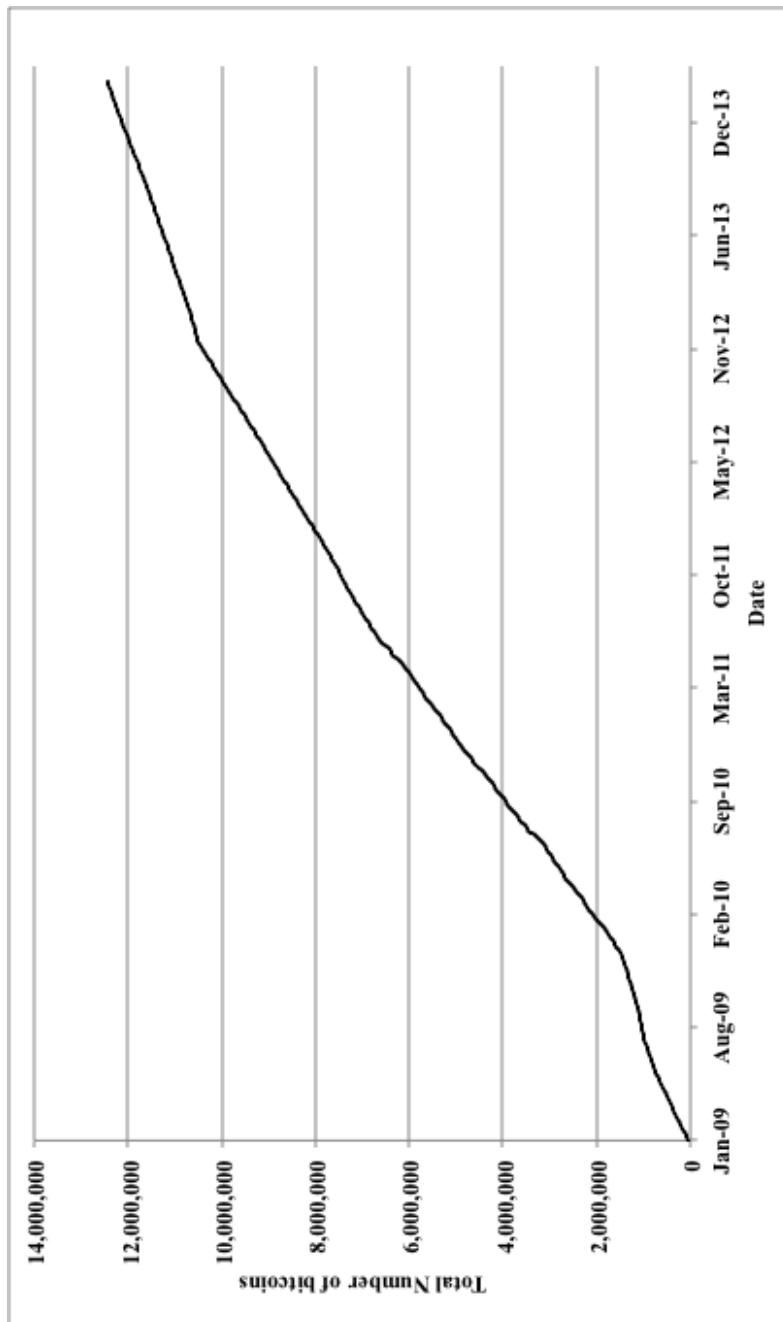


Figure-3: Annual Rate of Inflation in the US (1990 – 2013)

Source: <https://www.minneapolisfed.org/>

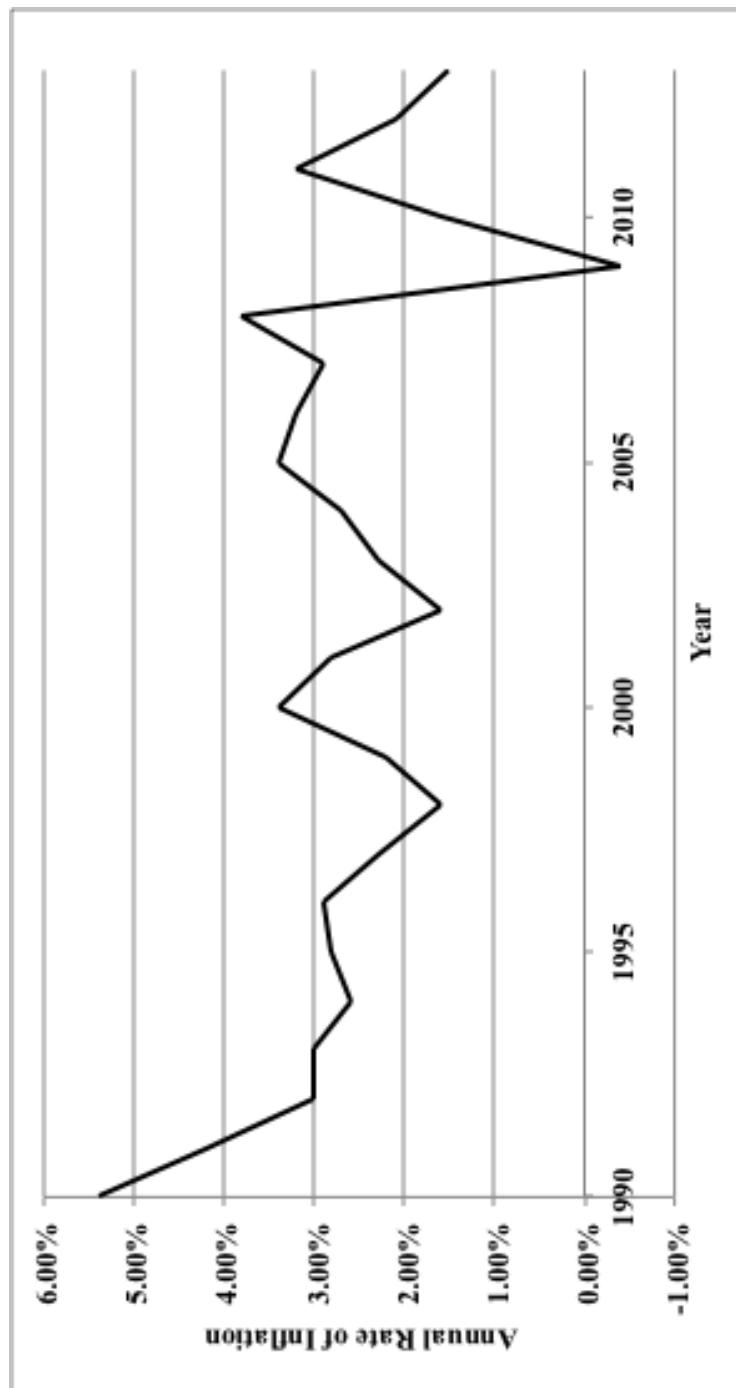


Figure-4: Total US Dollars in Circulation (1993 – 2013)

Source: http://www.federalreserve.gov/paymentsystems/coin_currcircvalue.htm

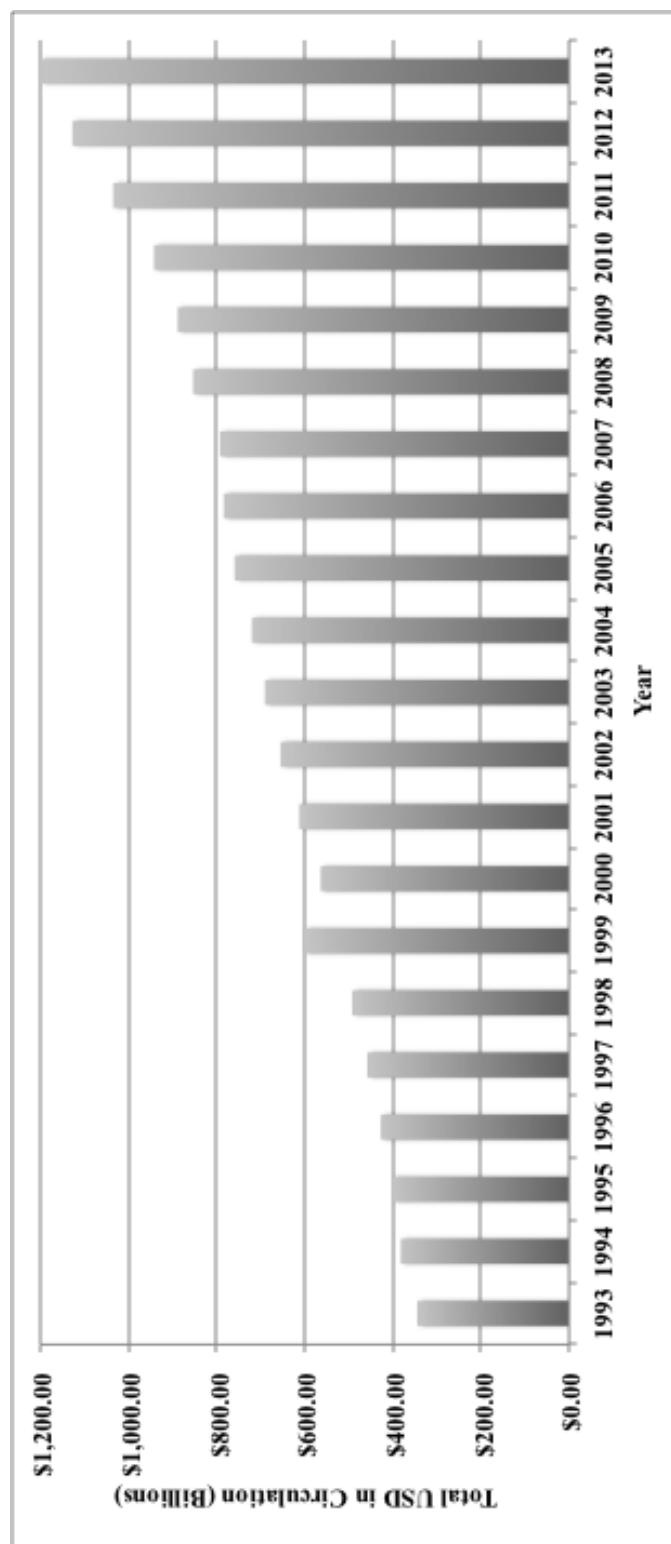


Figure-5: Bitcoin Exchange Rate (USD/Bitcoin)
Source: <http://blockchain.info>

