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Cryptocurrency Fluctuations

Samrth Kanungo

samrth.kanungo@gmail.com

NMIMS Anil Surendra Modi School of Commerce, Mumbai, Maharashtra

ABSTRACT

Crypto currency, an encrypted, peer-to-peer network for facilitating digital barter, is a technology developed eight years ago. Bitcoin, the first and most popular crypto currency, is paving the way as a disruptive technology to long-standing and unchanged financial payment systems that have been in place for many decades. While crypto currencies are not likely to replace traditional fiat currency, they could change the way Internet-connected global markets interact with each other, clearing away barriers surrounding normative national currencies and exchange rates. Technology advances at a rapid rate, and the success of a given technology is almost solely dictated by the market upon which it seeks to improve. Crypto currencies may revolutionize digital trade markets by creating a free-flowing trading system without fees. In this paper, we analyze the fluctuations in the prices of crypto currencies (bitcoin particularly) and the reasons associated with them.

Keywords— *Cryptocurrency, Fiat, Revolutionize*

1. OBJECTIVES

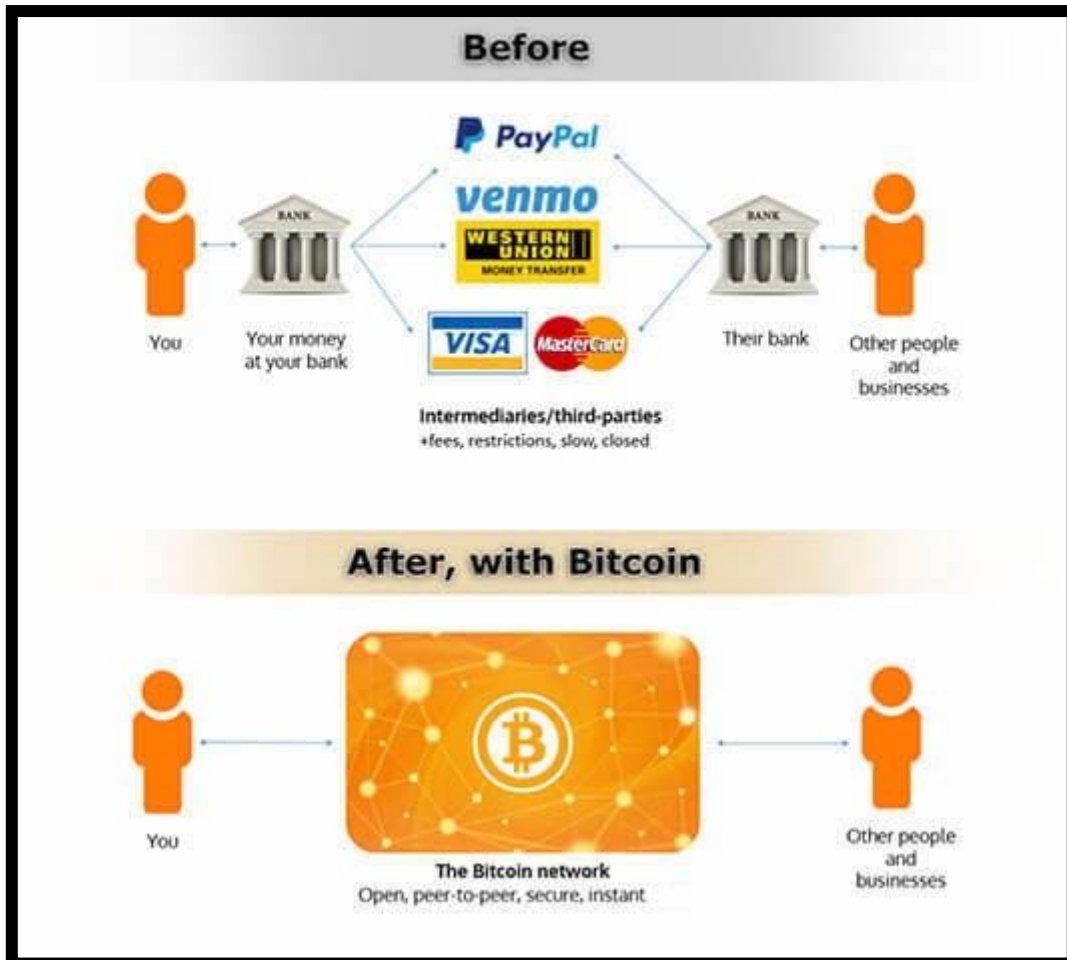
- To observe price fluctuations in the crypto currency Bitcoin
- To analyze the reasons for the price fluctuations
- To derive conclusions for the price fluctuations in bit coin
- To understand the growth/downfall of Bitcoin

2. INTRODUCTION

A crypto currency is a digital asset designed to work as a medium of exchange that uses cryptography to send its transactions. In the current Digital era, crypto currency is moving fast led by Bitcoin which was created in 2009 was the first decentralised crypto currency. Bitcoin is followed by Ether, Lit coin etc are all taking the financial storm and influencing the public to invest and buy these currencies. Government of various countries are much concerned about crypto currency such as Bitcoin. The significant feature of these currencies is payments can be made without the involvement of banks. Customers can transfer the huge sum of money through the digital wallets. Central bank of various countries like Bank of England and Bank of Israel are trying to launch their own digital currencies. This will help people in using the official system which has the benefit of both traditional and crypto currencies.

India tops in usage of smart phones, social media etc and financial institutions are digitalizing the transactions very fast. From 2015 India was trading Bitcoin, but it got a real entry only in November 2016 when government demonetized 86% of paper currency overnight. This was due to people having bulk paper currency of untaxed and black money, were in search of innovative ways for laundering money to avoid government interference and to avoid paying tax. This paved way to buy Bitcoins to conceal their money so that these transactions would not be under scrutiny by the government.

Another reason for getting into Bitcoin trading was that Indians were in a fear to trust bank and government as at any time their paper currency would become valueless overnight. People lost the trust on the government. People dealing with online transactions found that cryptocurrencies were free from banks and government & so these transactions are done through block chain. This made people encourage Bitcoin as swap to government currency. Though there was steady increase in dealing with Bitcoin transactions in India, it was more expensive as compared with rates prevailing in international markets. This was due to lack in mining of Bitcoin and was lacking in generating new Bitcoins. Due to government restrictions on cryptocurrencies, Indians find it difficult to do trading Bitcoins. RBI has taken measures to regulate Bitcoins. RBI warns Indians about the risk involved in trading cryptocurrency. Due to lack of knowledge about the working of cryptocurrency transactions, it has let to fraudulent transactions and losing the investment made in the same. RBI has set up a committee and Indian government would release a cryptocurrency name 'LAKSHMI' to compete with Bitcoin. If India fails to regulate Bitcoin, then this will become an easy way of funding terrorism



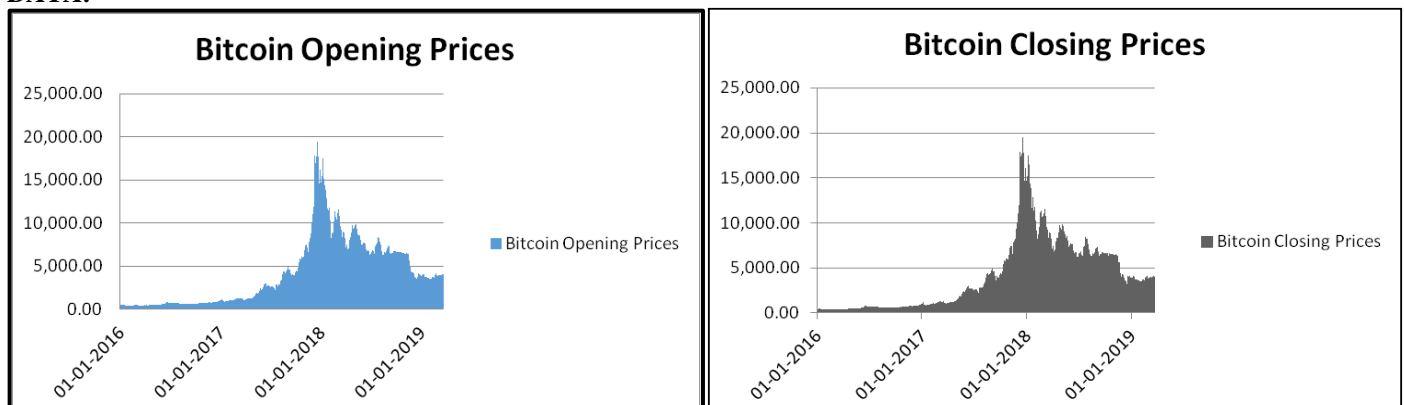
3. WORKING OF CRYPTOCURRENCY

The Bitcoin network is a peer-to-peer network that runs on a decentralized distributed self-clearing ledger called the blockchain. Units of currency that run on the Bitcoin network are called Bitcoins, which are used to store and transmit value among network participants. Unlike most currencies issued by central banks, which can be devalued and manipulated, Bitcoins are issued according to a fixed set of rules to create sound money that can't be manipulated by a central authority or malicious actor. Users can buy or sell goods and services, send money to people or organizations, or even extend credit in a fast, secure and borderless manner. The only prerequisite for access to these coins is an internet connection and a private key that forms a pair with public-facing keys to provide access to the coins stored on the Bitcoin network. Unauthorized access to someone's private key is analogous to stealing gold from their vault.

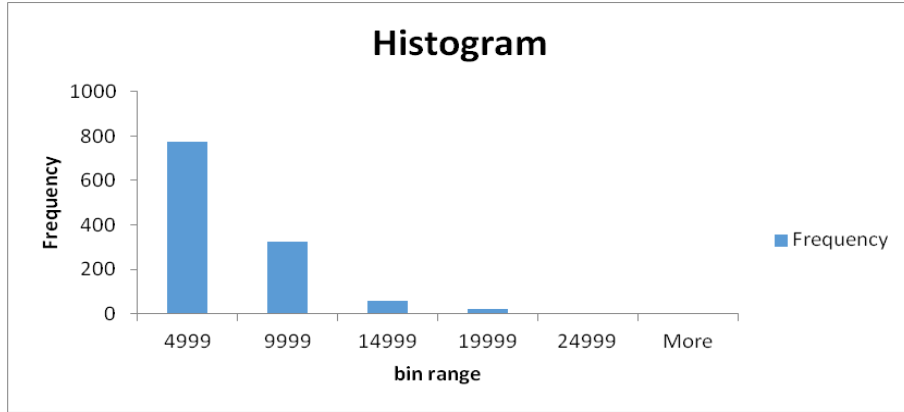
4. TECHNICAL OVERVIEW

Bitcoin (BTC) is a consensus network that enables a new payment system and a completely digital currency. The data presented includes the opening and closing prices of Bitcoin from **1st January 2016 to 22nd March 2019**. This period was specifically chosen for the primary reason being that it witnesses a major rise in the prices of Bitcoin which makes analysis of the date more accurate and understandable. The price mentioned in the data is in US Dollars. In 2016 Bitcoin started at \$434 and rose considerably to \$998 in a year's time. Post 2017 it rose to its all-time high of \$19666. Bitcoin data shows the massive fluctuations it has had and it can be effectively used to predict its forecasted prices. The data collected consists of a total of 1178 records of opening and closing prices of Bitcoin. Source of data is **secondary**.

DATA:

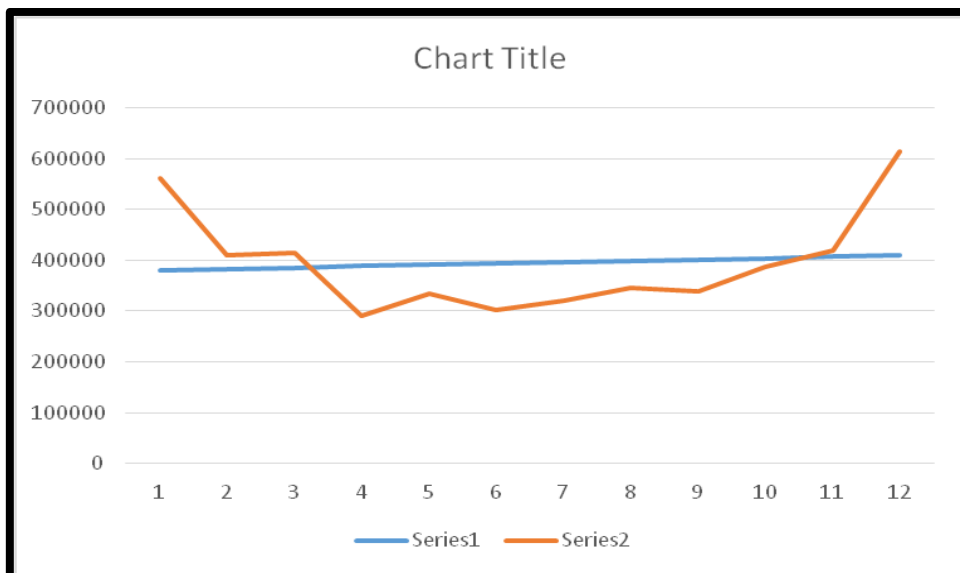


Class Interval	bin range	bin range	Frequency	Class Interval	bin range	bin range	Frequency
0-5000	4999	4999	774	0-5000	4999	4999	774
5000-10000	9999	9999	322	5000-10000	9999	9999	321
10000-15000	14999	14999	58	10000-15000	14999	14999	59
15000-20000	19999	19999	23	15000-20000	19999	19999	23
20000-25000	24999	24999	0	20000-25000	24999	24999	0
		More	0			More	0



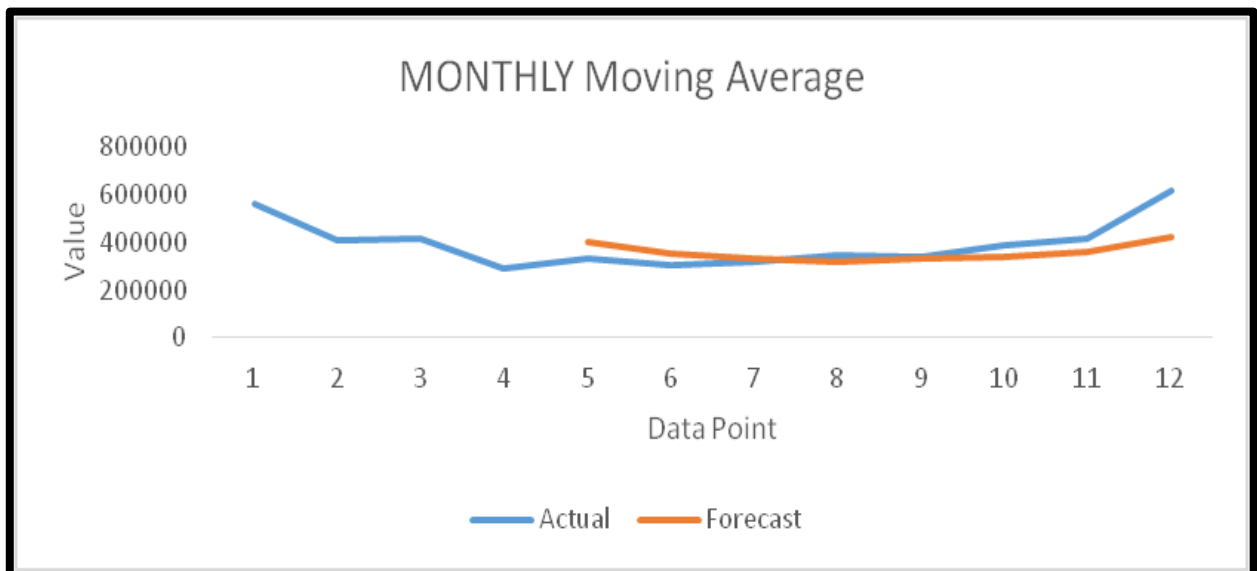
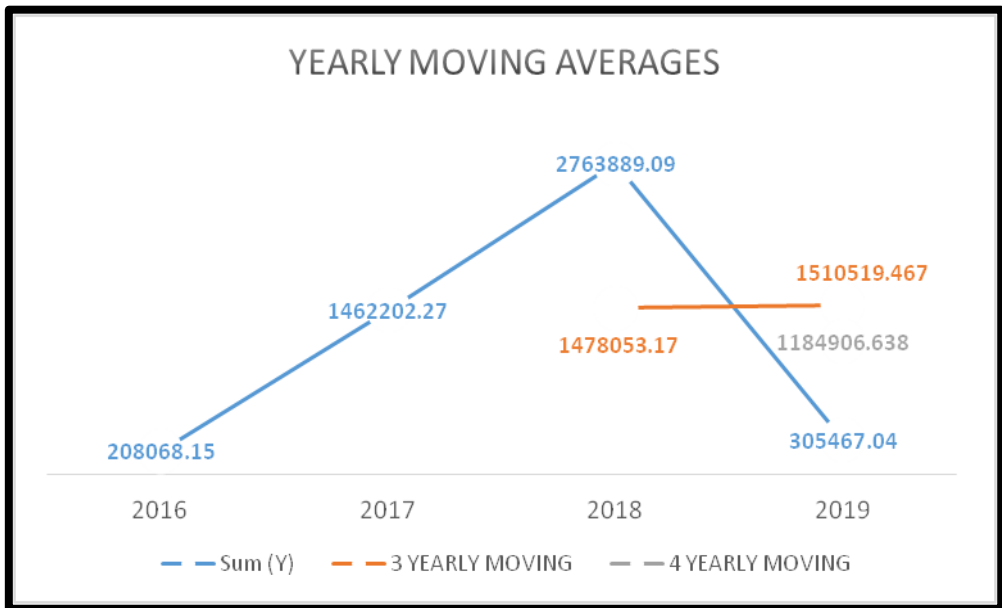
LEAST SQUARE		XY	XX	
2016	208068.15	-3	-624204.45	9
2017	1462202.27	-1	-1462202.27	1
2018	2763889.09	1	2763889.09	1
2019	305467.04	3	916401.12	9
Total	4739626.55	0	1593883.49	20
	A		1184906.64	
	B		79694.1745	

MONTHS (X)	CLOSE (Y)	X	XX	XY	Y=A+BX	CLOSING(Y)
Jan	561499.11	1	-11	121	-6176490.21	561499.11
Feb	410628.21	2	-9	81	-3695653.89	410628.21
Mar	414965.32	3	-7	49	-2904757.24	414965.32
Apr	290237.28	4	-5	25	-1451186.4	290237.28
May	335058.39	5	-3	9	-1005175.17	335058.39
Jun	302177.47	6	-1	1	-302177.47	302177.47
Jul	320140.85	7	1	1	320140.85	320140.85
Aug	345981.85	8	3	9	1037945.55	345981.85
Sep	338440.79	9	5	25	1692203.95	338440.79
Oct	387150.95	10	7	49	2710056.65	387150.95
Nov	418311.96	11	9	81	3764807.64	418311.96
Dec	615034.37	12	11	121	6765378.07	615034.37



YEARLY MOVING AVERAGES			
Year (X)	Sum (Y)	3 YEARLY MOVING	4 YEARLY MOVING
2016	208068.15	#N/A	#N/A
2017	1462202.27	#N/A	#N/A
2018	2763889.09	1478053.17	#N/A
2019	305467.04	1510519.467	1184906.638

MONTHLY MOVING AVERAGES			
MONTHS (X)	CLOSE (Y)		
Jan	561499.11	#N/A	#N/A
Feb	410628.21	#N/A	#N/A
Mar	414965.32	462364.213	#N/A
Apr	290237.28	371943.603	#N/A
May	335058.39	346753.663	402477.662
Jun	302177.47	309157.713	350613.334
Jul	320140.85	319125.57	332515.862
Aug	345981.85	322766.723	318719.168
Sep	338440.79	334854.497	328359.87
Oct	387150.95	357191.197	338778.382
Nov	418311.96	381301.233	362005.28
Dec	615034.37	473499.093	420983.984



CLOSING PRICES		OPENING PRICE	
Mean	4026.870476	Mean	4024.098394
Standard Error	111.330374	Standard Error	111.3794898
Median	3313.68	Median	3257.61
Mode	3419.94	Mode	17760.3
Standard Deviation	3819.459413	Standard Deviation	3821.144451
Sample Variance	14588270.2	Sample Variance	14601144.91
Kurtosis	1.330281133	Kurtosis	1.328090801
Skewness	1.208333897	Skewness	1.208777447
Range	19133.07	Range	19110.73
Minimum	364.33	Minimum	365.07
Maximum	19497.4	Maximum	19475.8
Sum	4739626.55	Sum	4736363.81
Count	1177	Count	1177
Largest(1)	19497.4	Largest(1)	19475.8
Smallest(1)	364.33	Smallest(1)	365.07
Confidence Level(95.0%)	218.4283254	Confidence Level(95.0%)	218.5246899

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.094434355							
R Square	0.008917847							
Adjusted R Square	-0.090190368							
Standard Error	105251.1505							
Observations	12							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	996790956	996790956	0.089980911	0.770344178			
Residual	10	1.10778E+11	11077804684					
Total	11	1.11775E+11						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	394968.8792	30383.39004	12.99950001	1.37201E-07	327270.4674	462667.291	327270.467	462667.291
X Variable 1	1320.091486	4400.771683	0.299968183	0.770344178	-8485.43888	11125.6219	-8485.4389	11125.6219
<i>RESIDUAL OUTPUT</i>				<i>PROBABILITY OUTPUT</i>				
<i>Observation</i>	<i>Predicted Y</i>	<i>Residuals</i>	<i>Standard Residuals</i>	<i>Percentile</i>	<i>Y</i>			
1	380447.8728	181051.2372	1.804143124	4.166666667	290237.28			
2	383088.0558	27540.15421	0.2744327	12.5	302177.47			
3	385728.2388	29237.08124	0.291342274	20.83333333	320140.85			
4	388368.4217	-98131.14174	-0.977859237	29.16666667	335058.39			
5	391008.6047	-55950.21471	-0.55753386	37.5	338440.79			
6	393648.7877	-91471.31768	-0.911495284	45.83333333	345981.85			
7	396288.9707	-76148.12065	-0.758802372	54.16666667	387150.95			
8	398929.1536	-52947.30362	-0.52761039	62.5	410628.21			
9	401569.3366	-63128.5466	-0.629064651	70.83333333	414965.32			
10	404209.5196	-17058.56957	-0.169985588	79.16666667	418311.96			
11	406849.7025	11462.25746	0.114219341	87.5	561499.11			
12	409489.8855	205544.4845	2.048213943	95.83333333	615034.37			

5. ANALYSIS

To investigate collective behaviour in the cryptocurrency market, we consider daily closing prices of the cryptocurrencies. Bitcoin data shows the massive fluctuations it has had and it can be effectively used to predict its forecasted prices. Bitcoin touched the \$4000 mark for the first time in over a month. By the end of the year 2019, the Bitcoin price reached \$23,499, which means that the 2018 bearish trend ended and shifted to the bullish trend. Regression was used to forecast Bitcoin prices based on past records and compare it with predictions made for determining the deviation.

The cryptocurrency market was expected to experience market optimism in 2020, as not only Bitcoin, but all the major cryptocurrencies were also experiencing an upward shift. The first quarter was to see a minor surge up to \$25,000, after which it was estimated jump up to 30,000 dollars in the third quarter. By the end of the year, Bitcoin was expected to be valued at \$33788.5. The year 2017-18 witnessed major rise in the prices of Bitcoin due to various reasons viz:

- Growing interest in cryptocurrency
- Increased media coverage
- Sustained inflows
- Initial coin offering frenzy

The significant rise was up to 400% in 2017-18 until the SEC rejected Bitcoin exchange proposals. Buying a Bitcoin is different than purchasing a stock or bond because Bitcoin is not a corporation. Consequently, there are no corporate balance sheets or Form 10-Ks to review. And unlike investing in traditional currencies, Bitcoin it is not issued by a central bank or backed by a government, therefore the monetary policy, inflation rates, and economic growth measurements that typically influence the value of currency do not apply to Bitcoin. Contrarily, Bitcoin prices are influenced by the following factors:

- The supply of Bitcoin and market demand for it
- The cost of producing a Bitcoin through the mining process
- The rewards issued to Bitcoin miners for verifying transactions to the block chain
- The number of competing cryptocurrencies
- The exchanges it trades on
- Regulations governing its sale
- Internal governance

6. CONCLUSION

The emergence of Bitcoin has sparked a debate about its future and that of other cryptocurrencies. Despite Bitcoin's recent issues, its success since its 2009 launch has inspired the creation of alternative cryptocurrencies such as Litecoin, Ripple and MintChip. A cryptocurrency that aspires to become part of the mainstream financial system would have to satisfy very divergent criteria. While that possibility looks remote, there is little doubt that Bitcoin's success or failure in dealing with the challenges it faces may determine the fortunes of other cryptocurrencies in the years ahead. Prices fluctuate primarily because of market forces of supply and demand. With more dependence on the digital currency over the years, it is expected that Bitcoin prices are likely to keep rising with certain plunges at various junctures. **Liquidity, media coverage and arbitrage** are dominant governors of Bitcoin prices. Reasons for increase and decrease of bitcoin prices include, massive thefts, countries accepting it as a form of payment and being used in schemes for illegal matters.

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