“Financial shielding that Bitcoin grants to capitals in the world”

AUTHORS	Angel Enrique Chico Frias https://orcid.org/0000-0002-3662-6246 Edwin Javier Santamaría Freire https://orcid.org/0000-0003-2636-9685

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Angel Enrique Chico Frias (Ecuador), **Edwin Javier Santamaría Freire** (Ecuador)

FINANCIAL SHIELDING THAT BITCOIN GRANTS TO CAPITALS IN THE WORLD

Abstract

Market forces are not the only influence on currency exchange rates. They can change due to monetary and fiscal policies among other international repercussions. Bitcoin, for its independence from all the central banks worldwide, has a natural shield that will change the direction in the economic policy of the industrialized countries. The research aim is to analyze the influence that indicators and financial assets can have on Bitcoin. The study tries to confirm the reasons why it has begun to be the solution in economies with unstable currencies.

The behavior of the different agents appears as the core of the study. It is creating a backward 5-year work horizon. The data are continuous values, and they are the numerical variables for Pearson correlation analysis. The time series in fixed periods are the basis for the study of projections. Besides, the Relative Strength Index or Relative Strength Index called Welles Wilder is useful in the research. Bitcoin does not get influenced by the Dow Jones, gold price, and Gross Domestic Product (GDP). The independence in the creation of this cryptocurrency could in the long term end up turning it into a currency of world use. As a result, the understanding and management of this cryptocurrency could generate new ways of building the future monetary system. The new direction of the economy will be registered in the blockchain and not in a central bank.

Keywords Bitcoin, financial shielding, world capitals, influence, indicators

JEL Classification G11, G14, G15, G23

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Angel Enrique Chico Frias, Associate Professor, Universidad Técnica de Ambato, Ecuador.

Edwin Javier Santamaría Freire, Associate Professor, Universidad Técnica de Ambato, Ecuador.

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INTRODUCTION

The creation of a cryptocurrency through new and ingenious emission systems was not only to generate a new exchange option based on technology. Bitcoin was created to avoid price manipulation by any government or economic policy.

Jha (2018) assures that the mechanism to obtain a cryptocurrency is with a computer through codes. Bitcoin uses technologies that do not require bank names or names of people. The characteristics of Bitcoin are the non-existence of government; there are no capital limits; there are no banks. It works as a currency, and an account cannot be blocked. Anonymity is one of the most important characteristics.

The problem of research is the influence of the variation of a financial index, an economic aggregate, and essential commodities in the price of Bitcoin.

The aim is to analyze the security that Bitcoin can offer when investing through the analysis of time series. Stock market instruments such as the Dow Jones, gold price, and GDP are the indicators. The study tries to show that the cryptocurrency is independent with some conventional indexes and commodities.

The research question of the work is related to determine the affectations suffered by Bitcoin with the variability of global indicators and commodities.

The data are continuous values for Pearson correlation analysis. The time series are in fixed periods that will be the basis for the study of projections.

The correlation between the indicators concerning Bitcoin shows that there are significant correlations with Dow Jones, but not independence. Dow Jones and GDP have a lower ratio.

1. LITERATURE REVIEW

According to Maggini (2013), Bitcoin is a digital currency in which its value depends exclusively on supply and demand. Salmerón (2017) found that Bitcoin is digital and not controlled by the central bank. It was created in 2009 by a person whose pseudonym is Satoshi Nakamoto.

Berentsen and Schar (2018) defined a Bitcoin as a virtual currency. Its origin begins with the white paper published on a mailing list for cryptography. A Bitcoin has 100 million Satoshis.

Bitcoin (2009) argues that BTC is the standard unit of currency, such as USD. A block is a record in the chain of blocks that has pending transactions. Chain of blocks is the record of Bitcoin transactions.

Fernandez and Terán (2015) suggest that Bitcoin is free of devaluations and inflationary pressure. Also, its price depends on supply and demand. Bitcoin must be mined solving mathematical problems in computers. Through this software, the equations arrive at an answer, and if the same one is correct, the Bitcoins are created. Every time the problems become more complicated, and the generation of Bitcoins is more difficult than before. The complexity grows to a point where the system decreases the difficulty. The growth of the number of cryptocurrencies is always increasing (Fernández & Terán, 2015).

According to Soldevilla (2017), Dow Jones has no impact on the price of Bitcoin. The research concludes that the Standard and Poor's could help to understand the volatility of Bitcoin.

Ciaian, Rajcaniova, and Kancs (2015) suggest that the price of Bitcoin in the long term is not affected by the price of oil, Dow Jones, and exchange rate.

For Kjaerland, Khazal, Krogstad, Nordstrom, and Oust (2018), the amount of Google searches, previous prices and optimism influence the prices of Bitcoin. According to Ciaian, Rajcaniova, and Kancs (2016), the macro-financial variables are insignificant from the statistical point of view. There is the significance of the price of this cryptocurrency with the related queries in Wikipedia.

According to Zhu, Dickinson, and Li (2017), the US Dollar Index (USDI) has the most significant influence, which is negative in Bitcoin prices. Dow Jones Industrial Average (DJIA), the Consumer Price Index (CPI), Effective Federal Funds Rate (FFR), Gold Fixing Price (GP) influence it in a weak way.

According to Dyhrberg (2015), Bitcoin is a mix of merchandise and currency. Bitcoin is sensitive to the federal funds rate. This cryptocurrency has a resemblance to gold in its volatility, and it can be a wise investment to anticipate difficult times.

For Jerdack, Dauletbek, Divine, Hult, and Carvalho (2018), there is a negative relationship between the volume of trading of the Dow Jones Industrial Average (DJIA) and the negotiated amount of Bitcoins. Also, the trading volume is not related to financial news.

Van Wijk (2013) argues that the Bitcoin price correlates positively with the growth of the North American economy. However, the increase in the price of oil affects the consumption of families, and the demand for Bitcoin falls. The Dow Jones influences Bitcoin in the short term.

Vaddeppalli and Antoney (2017) suggest that Bitcoin is a refuge for inflationary currencies. The growth of inflation can increase the demand for it. However, the study shows that the relationship be-

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tween internet penetration and Bitcoin demand is not significant.

Chu, Nadarajah, and Chan (2015) suggest that the possibility that Bitcoin does not succeed in the traditional purchase of goods and services is high. It is because other digital currencies have not succeeded in replacing Paypal or debit and credit cards.

Hayek (1983) suggest that the proposal for the future is to create a formal treaty, which would consist of not hindering free trade in their territories in each country's currencies. The idea is to suppress exchange controls and their movement in these countries. The primary purpose has being to impose monetary and financial agencies a discipline that prevents the emission of money that is not too useful and safe. It would cause the public to replace the lower quality money with another.

BBVA (2015) suggests that Bitcoin proposes a currency with a computer code controlled by its users on their computers. Also, it has a finite number; the model is peer to peer.

Cedeño (2016) suggests that the printing of money accompanied by hyperinflation in a country that experiences capital blockades and also with closed borders. Bitcoin could be a solution, because it has no limits. There is no way for governments to manipulate this cryptocurrency, and it is also anti-inflationary.

Bartrem et al. (2017) explain that the nature of the cryptocurrencies related to their decentralization incorporated to the nonexistence of frontiers does not allow them to be regulated. The regulations have varied in attempts to regulate actors until they reach their simple prohibition.

Table 1. Price of Bitcoin in 2009–2018

Source: Bit2me (2017), Freecurrencyrates (2018).

Date	Price
January 2009–January 2010	0 USD
February 2010–May 2010	Less than 0.003 ctvs
July 2010	0.08 ctvs
February 2011–April 2011	USD 1
8 July 2011	USD 31
December 2011	USD 2
December 2012	USD 13
April, 2013	USD 266
May, 2013	USD 130
June, 2013	USD 100
November, 2013	USD 350-1,250
December, 2013	USD 600-1,000
January, 2014	USD 750-1,000
February, 2014	USD 550-750
March, 2014	USD 450-700
April, 2014	USD 340-530
May, 2014	USD 440-630
March, 2015	USD 200-300
November, 2015	USD 395-504
February, 2017	USD 1,222
March, 2017	USD 1,270
June 19, 2018	USD 11,599.7
February 28, 2018	USD 10,678
March 31, 2018	USD 7,010.30
April 30, 2018	USD 9,317.96
May 31, 2018	USD 7,498.13
June 30, 2018	USD 6,344.30
July 24, 2018	USD 7,990.41

The Bitcoin starts to take importance from the year 2017. The markets fail to understand that confidence in this new technology is on the rise.

The latest exchange rates of the Bitcoin 2017 are as follows:

Table 2. Historical price of Bitcoin

Source: ElEconomista.es (2019).

Date	Price
June 26, 2019	12,490.53
June 25, 2019	11,459.43
June 24, 2019	10,925.22
June 23, 2019	11,036.36
June 22, 2019	10,582.57
June 21, 2019	9,904.26
June 20, 2019	9,559.03
June 19, 2019	9,172.60
June 18, 2019	9,065.89
June 17, 2019	9,256.21
June 16, 2019	9,008.79
June 15, 2019	8,804.77
June 14, 2019	8,613.53
June 13, 2019	8,315.82
June 12, 2019	8,141.53
June 10, 2019	7,950.65
June 9, 2019	7,645.85
June 8, 2019	7,893.72

The price of Bitcoin in the last month has seen significant increases. The predictions of his disappearance fail again and again. The quotation of the cryptocurrency is transferring more and more precise information on the evolution of the same.

According to Salmerón (2017), the Bitcoin is accepted by Microsoft since December, 2014 for the virtual stores of Windows and Xbox. Also, they would include it in Excel. Dell is in the list of companies that accept this new form of payment.

Salmerón's (2017) Bitcoin ATM Radar affirms that there are 949 ATMs in 53 countries, which are 73% in the United States, 20.4% in Europe, 4.1% in Asia, 1.7% in Oceania, 0.3% in Argentina, Mexico, Brazil, and 0.1% in Africa. The customer receives local money such as pesos, euros, or dollars from his virtual wallet.

The hypothesis of the research is the existence of total independence of Bitcoin behavior from the fluctuations of relevant indices and commodities.

The theoretical framework of this work revolves around Hayek (1983) who says that the business of issuing currency is to regulate its quantity to stabilize it. The overissuing of a monopoly distorts the markets and destroys market mechanisms. Fiat money is different from the one that has acceptance in free form. The confidence of its stability gives full recognition if the risk is lower than others, and for that reason is accepted. The stabilization of the currency will be directly proportional to your confidence.

The research gap is the benefits and damages that cryptocurrencies will cause and the reasons for their creation.

Criticism of past research is related to the lack of interest in investigating changes in economies. The crises that will suffer the global financial systems to move to economic structures controlled by cryptocurrencies from private issuers. The disappearance of the central banks will be the end of inflation, of economic cycles, and the usefulness of the current macroeconomic theory.

The ignorance of whether the market failures will be attenuated or accentuated by the use of these cryptocurrencies. There are no traces of research on how poverty or wealth will concentrate on this new economic pattern. The exponential speed of these new electronic systems surprised researchers around the world.

1.1. Bitcoins as tools in crisis

Salmerón (2017) argues that the Central Bank of Venezuela does not sell dollars, which creates parallel markets. As a result of this, to avoid inflation and exchange controls, Bitcoin is the answer.

Zamani and Babatsikos (2017) support that the effects of the 2007 crisis were diverse. The Bitcoin was one of them. The idea of creating the Bitcoin was to avoid control of the market price by financial institutions, regulatory organizations, and probably governments. The replacement of the fiduciary money would eliminate the financial crisis. Trust would no longer be necessary to deposit it in an intermediary.

Weber (2014) explains that Bitcoin appears as a response to a system that is experiencing a crisis of legitimacy. Bitcoin is characterized by anonymous transactions and is not related to any debt. This cryptocurrency defends the market approach – the reason why it is close to the Austrian school.

Portero and Pererira (2019) found that the demand for Bitcoin had increased in crisis scenarios such as those experienced in Argentina when the government depreciated its currency. The bank rescue experienced in Greece was a trigger for more significant movements in this cryptocurrency. Countries like Venezuela that are in economic problems are relying on Bitcoin. In the same way, China and India. Bouoiyour and Selmi (2017) suggest that the volatility of Bitcoin is the result of Brexit, the demonetization in India and the fall in confidence of the Chinese yuan.

Salmerón (2017) shows that Bolivar can be exchanged for Bitcoin through the page Localbitcoin or Surbitcoin and then resell them in portals such as Coinbase or Poloniex. These portals pay 10% lower than the rate of Dollar Today (parallel dollar price).

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Table 3. Dow Jones quote

Source: elEconomista.es (2018).

Date	Close of the day	Var	Var (%)	Max	Min
October 6, 2009	9,731.25	131.5	1.37	9,774.32	9,601.26
October 6, 2010	10,967.65	22.93	0.21	10,974.16	10,918.57
October 6, 2011	11,123.33	183.38	1.68	11,132.6	10,858.67
October 8, 2012	13,583.65	–26.5	–0.19	13,610.38	13,552.09
October 7, 2013	14,936.24	–136.34	–0.9	15,069.3	14,920.83
October 6, 2014	16,991.91	–17.78	–0.1	17,099.39	16,930.38
October 6, 2015	16,790.19	13.76	0.08	16,865.09	16,746.03
August 8, 2016	18,529.29	44.89	0.24	18,585.32	18,538.05
October 6, 2017	22,773.67	11.97	0.05	22,803.37	22,757.2
October 5, 2018	26,447.05	–197.67	–0.75	26,466.79	26,233.09

According to Salmerón (2017), on Friday, January 20, at the close Bitcoin was quoted at 3 million 150 thousand bolivars. About 894.27 dollars was quote in other countries. These dollars will send to systems such as Paypal or bank accounts.

El Confidencial (2017) indicates that citizens are generating Bitcoins due to low electricity costs. Venezuelan citizens can get around 500 dollars per month.

Salmerón (2017) suggests that due to capital flight from China trying to find refuge in the middle of Brexit and the triumph of Donald Trump in 2016, the value of Bitcoin rose from USD 429.9 to 968.6. However, the single announcement by the Central Bank of China of the initiation of an investigation to analyze whether money laundering, illicit financing, or market manipulation existed. Bitcoin fell from USD 1,135 to USD 779 on January 11th.

Olvera (2015) shows that in Argentina, where the volatility is typical in cryptocurrency, Bitcoin due to low handling costs has received more considerable attention.

While Salmerón (2017) argues, Saxo Bank explains that if Trump elevates the budget deficit and drives inflation. Federal Reserve will react by adjusting interest rates, which will strengthen the dollar. China will start looking for alternatives, and the value of Bitcoin could triple its amount.

According to Germes (2017), all Bitcoins in the world are less than 0.05% of world GDP.

The behavior of Bitcoin is independent with the fluctuations of the indices and commodities.

1.2. Market rates of indicators and commodities

Some indicators and market prices could influence the exchange rates of different financial assets, such as stocks, bonds, currency prices, among others.

Dow Jones has increased since 2009 except for 2015 where it experienced a slight decline. Dow Jones has grown 178.37% since 2009.

According to S&P Dow Jones Indices (2019), the Dow Jones Industrial Average measures the 30 largest companies in the United States. Dow Jones Transportation Average represents the 20 most essential industries in the transport sector. Dow Jones Utility Average measures 15 companies in the public sector, specifically for services.

Table 4. World GDP in USD

Source: World Bank (2017).

2006	3.96E+17
2007	4.54E+18
2008	5.06E+18
2009	4,8E+14
2010	5.34E+18
2011	6.00E+18
2012	6.15E+18
2013	6.38E+17
2014	6.55E+18
2015	6.16E+18
2016	6.18E+18

The previous table shows the evolution of the world GDP. According to the Bureau of Economic Analysis (2015), GDP cannot measure well-being. It is an indicator that measures the production of an economy.

Table 5. Gold price

Source: BullionVault (2017).

October 27, 2010	USD/oz	1,364.12
October 22, 2011	USD/oz	1,678.70
October 16, 2012	USD/oz	1,715.91
October 11, 2013	USD/oz	1,287.54
October 06, 2014	USD/oz	1,143.59
October 31, 2015	USD/oz	1,064.33
October 25, 2016	USD/oz	1,186.29
October 24, 2017	USD/oz	1,275.87
June 25, 2018	USD/oz	1,260.97
June 29, 2018	USD/oz	1,252.42
July 8, 2018	USD/oz	1,256.49
July 24, 2018	USD/oz	1,228.0

Table 5 shows that the price of gold has no significant variations between 2011 and 2018. It is one of the reasons why it has become one of the principal commodities in the world. According to The London Bullion Market Association (2016), the resulting price is imposed in London at 10.30 am and 3.00 pm.

1.3. The RSI oscillator

According to Amat Salas and Puig (1999), the RSI oscillator or Welles Wilder index serves to measure the speed of the price variation obtaining signals that lead to purchase or sell. The RSI uses 10 to 15 session data. It is using averages of increments and averages of declines. If the value of the RSI is above 70 is overbought, oversold if it is below 30. For Bhargavi, Gumparthi, and Anith (2017), the RSI (Relative Strength Index) evaluates the variations, speed in price changes and trends. Any number of periods can be useful. When the result is greater than 70, there would be the possibility that prices fall.

According to Naved and Srivastava (2015), the technical analysis commonly uses oscillators. The signal can exist when the moving average crossed with the RSI.

According to Hadi, Habibi, and Binti (2019), the RSI has a better performance in the signals of purchase than in the sale signals. According to Ding, Fang, and Zuo (2013), the RSI demonstrates the weakness or strength using the prices with which the market closed.

Taran-Morosan (2011) ensures that one of the advantages of RSI is the ease of interpretation. This relationship to the closing prices with the falls suffered. The relation studied by this index is the relative strength about itself. The classic form of this index does not take into account the trading volume.

1.4. Analysis of the time series

When decisions are made, the environment of uncertainty regarding the events that may occur in the future is the problem that the decision-maker faces. These events are facts generally located in the future, or who have to take the decision-maker does not know it. Hence, the emergence of prediction techniques that reduce uncertainty about the future. Also reduces the risk when making decisions (González, 2016).

Time series analyze the behavior of a numerical variable over time, and there is seasonality, trend, and random variations (Arango, 2009). One of the methods to perform time series analysis is the analysis of autocorrelations on the same variable and technique of moving average (Parrales & Tamayo, 2012). It is combined through the method of exponential smoothing.

1.5. Aim

The study aims to analyze the influence that indicators and financial assets can have on Bitcoin. Besides, it shows that Bitcoin is a new and useful investment tool. The goal of the study was to confirm the reasons why it has begun to be the answer in many economies with unstable currencies.

The research used important indicators and one of the principal commodities in the economic sector to study the behavior of Bitcoin. World GDP, Dow Jones, and gold price, respectively, represent production, investment, savings and wealth.

The article seeks to describe the current state of Bitcoin and look for the necessary projections of

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the continuity of this currency over time. Also, it aims to determine the stability of the cryptocurrency through the prediction of the values over time and the relationship that exists between this variable and the behavior of other reference products in the world market.

2. METHODOLOGY

The research is quantitative. It is following the standardized measurement guidelines that allow knowing the studied reality of Bitcoin through metrics that have their measurement and treatment methodology.

The behavior of the different agents creates a working horizon of 5 years backward.

Dow Jones is the leading indicator of the world's largest economy. The global GDP tells us the evolution of world production. Finally, gold is the most used commodity for investments in the short and long term.

The data used in the study are between 2012 and 2017. The justification for the use of this period is that between these years, Bitcoin starts to take importance in the financial scenario. The world observes its irruption in the market astonished in 2009. The production of it starts to be profitable. The price of cryptocurrency increases, because speculators create bubbles. Another reason for the use of this period is the number of economic prohibitions in different countries of the world.

It allows the replication of the calculations made and obtaining relevant information. For that reason, the database was the input for the treatment of the data.

The obtained data were continuous values that will be numerical variables for Pearson correlation analysis. The time series are in fixed periods that will be the basis for the study of projections.

Part of the development of this research used the Relative Strength Index or Relative Strength Index called Welles Wilder. It allowed knowing if Bitcoin is undervalued or overvalued.

3. RESULTS

$$RSI = 100 - \frac{100}{1 + \frac{AU}{AD}},$$

where *AU* (Average UP) – average increase in closing prices about the previous session; *AD* (Average DOWN) – average decrease in closing prices.

Table 6. Increase and decrease in prices

Source: elEconomista.es (2019).

September 15, 2017	3,795.94	Δ
September 16, 2017	3,692.55	–103.39
September 17, 2017	3,690.86	–1.69
September 18, 2017	4,065.94	+375.08
September 19, 2017	3,906.31	–159.63
September 20, 2017	3,958.57	+52.26
September 21, 2017	3,660.63	–297.94
September 22, 2017	3,580.31	–80,32
September 23, 2017	3,740.73	160.42
September 24, 2017	3,660.86	–79.87

The reason why this period is part of the study is that the Bitcoin price in this period does not have much volatility. The existence of a relatively stable price can help us to study buying or selling decisions.

$$AU: 195.92$$

$$AD: 120.47$$

$$RSI = 100 - \frac{100}{1 + \frac{195.92}{120.47}},$$

$$RSI = 100 - \frac{100}{1 + \frac{195.92}{120.47}},$$

$$RSI = 100 - \frac{100}{2.62},$$

$$RSI = 100 - 38.16$$

$$RSI = 61.83$$

The RSI analysis indicates that it is between 70 and 30. It is not overbought and not oversold being in a neutral zone. The price of Bitcoin in this period

Source: Authors calculations.

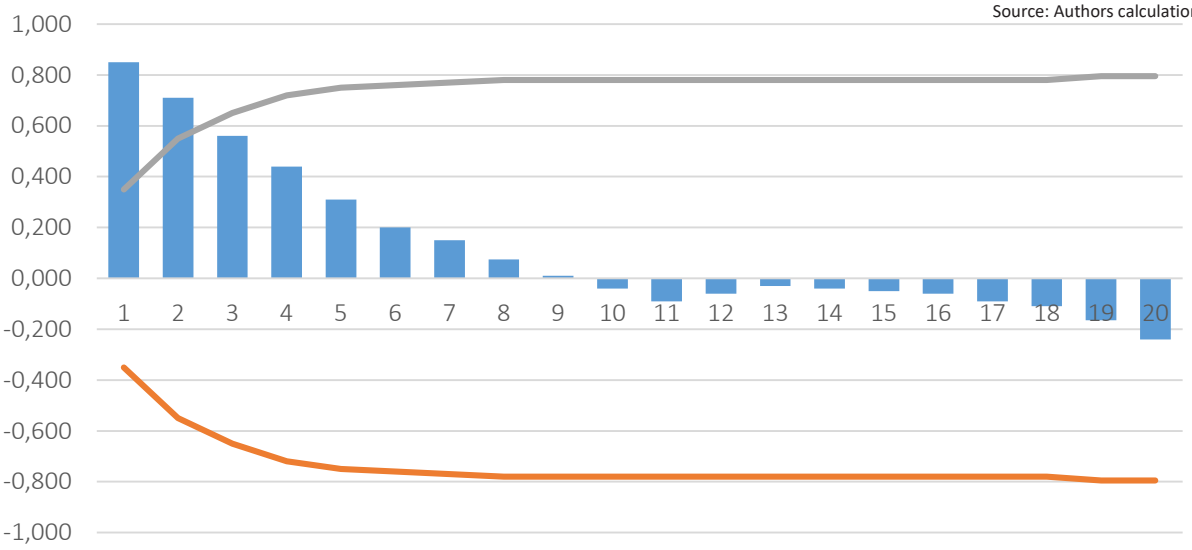

Figure 1. AFC daily

represents solidity as a financial asset. The price of the period analyzed still does not represent the world's confidence in this cryptocurrency. The reason is that the uses of Bitcoin are more understood. The neutral zone represents the utility and protection that users find in this cryptocurrency.

3.1. Analysis of the time series

Analysis of the time series is used to determine the volatility of the currency. The daily quotation of Bitcoin is during the 30 days from the year 2017 (series 1) and the monthly quote from the year 2012 (series 2). The analysis of univariate series was applied

The application of the autocorrelation function (ACF), which allows identifying the correlations of the current values with the delays. Establishing the possibility of projection of the present moment with a determined number of delays. Figure 1 shows that in front of the daily quotation, there are significant values up to 2 periods ago. Figure 2 shows substantial amounts in 3 periods; however, in the monthly projection, the trend line is obtained up to period 15. These results show similarity to the delays of treasury bonds and stock quotes in the stock market. Therefore, the projection in monthly fixed values is susceptible to forecast over time.

Source: Authors calculations.

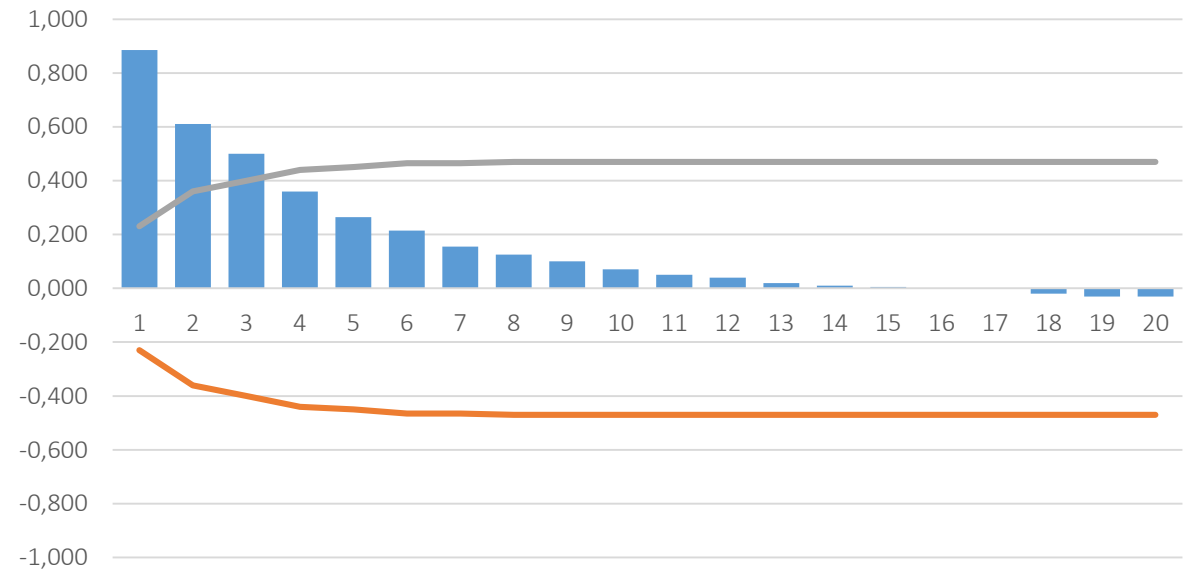

Figure 2. AFC monthly

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Source: Authors calculations.

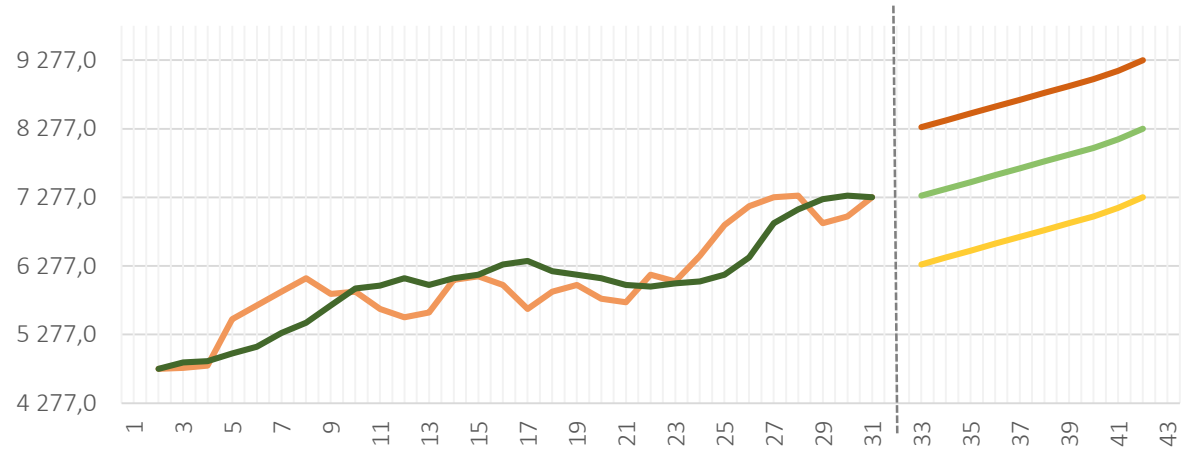

Figure 3. Exponential smoothing daily

Subsequently, the projections use exponential smoothing forecast for series 1 and series 2. Figure 3 shows the prediction of daily values with a trend of 2 periods. It generates MAPE 4.67 and error of 352 (less than 5% of the quote), which indicates that the Bitcoin quote is recommendable for short periods of maximum two days in market trend. It suggests that exists still volatility in the quotation.

These changes are typical of the characteristics of this market and confirm that short-term estimates are the best option. Longer projections of results will have a high margin of error.

MAPE values above 100 indicate that monthly trend lines cannot be marked and no trend can be marked. The best alternative is the daily tracking of the currency. It is mainly due to the exponential growths presented in the last periods that respond to other external factors to the time series analyzed. These growths hinder the traceability of the projections. The exponential model does not reflect the habitual behavior of the stock market.

3.2. Relation to indicators

To know the relationship of the price of Bitcoin with other indexes of global impact such as Dow Jones, GDP, and gold price. The correlation coefficient is applied. Thus, it highlights the relationship that exists with the Dow Jones price.

Table 7. Correlation statistics

Source: Authors calculations.

	DOW JONES	GDP	GOLD	Bitcoin
DOW JONES	1			
GDP	0.7821	1		
GOLD	−0.5829	−0.2790	1	
Bitcoin	0.8857	−0.0209	−0.0663	1

Source: Authors calculations.

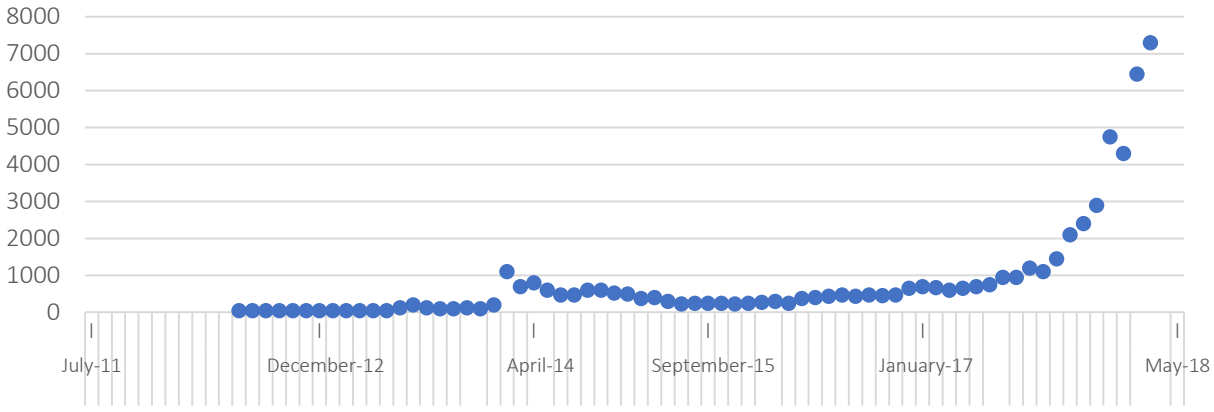

Figure 4. Trends of Bitcoin

The correlation between the indicators concerning Bitcoin shows that there are significant correlations with Dow Jones. The relationships between the Dow Jones and Bitcoin variations can estimate the changes in the traditional market with the trends of change in the cryptocurrency. Dow Jones and GDP have a lower ratio. The lower level of estimation among these traditional instruments means less dependence between indicators.

Table 8. Correlation coefficient

Source: Authors calculations.

	Coefficients	Statistic t	p-value
Intercept	–2,175.21	–0.71423	0.605157
Variable X_1	0.15728	2.93507	0.209048
Variable X_2	–6.687E–17	–0.18222	0.885253
Variable X_3	0.28596	0.67869	0.620394

4. DISCUSSION

The analysis of variance results 6.05 with a p-value of 0.288. The model shows that beta coefficients none of them are statistically significant. Finally, Bitcoin does not have a dependence on the other variables.

The model of regression between the elements allows observing that each component does not have dependency between them. There is a relation between the behavior of the traditional markets and cryptocurrencies. However, the behavior of Bitcoin is impossible to predict through the functioning of the conventional markets. It indicates that there is a need to generate own indicators.

CONCLUSION

The study tries to contribute with useful information for investors and policymakers. Investors can analyze the results presented to make decisions based on the research. These decisions can be related to global financial turbulence scenarios where Bitcoin can be a refuge. The relation of the volatility of Bitcoin to the economic indicators and commodities studied is useless. Policymakers will understand that it is necessary to find new ways to stimulate or contract an economy based on cryptocurrencies.

This study is useful to understand that the government will lose control of influencing the economy. The new direction of the economy will be registered in the blockchain and not in a central bank.

The dependence of this cryptocurrency makes us think of a parallel, independent, and private economy. Free of inflation, devaluations, depreciation and possibly counterfeiters. Economic systems that in the future will be independent of central banks, private banks, and the stock exchange as a result of Bitcoin. Wealth begins to have an individualistic conception in which the government can not influence. Bitcoin was built to avoid the government. It is the answer to unfair wealth distribution.

For the first time, the world will find a currency invulnerable to the interests of different nations and even international organizations.

Bitcoin can genuinely be used to save wealth, because it is determined exclusively by supply and demand it.

The hegemony created by the existence of a single currency will disappear the central banks achieving a time of global stability as long as the duration of this cryptocurrency.

Bitcoin could become a possible solution to the impact of economic cycles in the worldwide, decreasing unemployment and poverty rates.

This cryptocurrency does not have an overselling scenario. It generates expectations for investors as well as all the applications that it may have.

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The uses of this cryptocurrency are still not understood by some governments that try to eliminate it.

The cryptocurrency market is slightly correlated to the stock market worldwide. In spite of this, the behavior of Bitcoin is independent of the nervousness of investors worldwide.

Bitcoin is currently in the phase of exponential growth. However, the projection period does not exceed three days for which it is not yet possible to make long-term projections of the currency.

The variations suffered by the principal North American industries do not tie to the cryptocurrency.

The independence in the creation of Bitcoin means that it cannot be affected by any other index, price of metals, and commodities. Bitcoin is a desirable asset for investors.

Business cycles cannot affect this cryptocurrency. It will not be affected by bad decisions in economic policy that can produce a contraction. Likewise, it will not represent the illusion of expansion. Bitcoin will be unable to generate inflation.

Bitcoin is free from the economic and political influence of governments and large corporations that are behind the financial indexes. It gives greater credibility to the supply and demand behavior of the cryptocurrency.

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REFERENCES

1. Adriano, A., & Monroe, H. (2016). The Internet of Trust. *Finance & Development, 53*(2), 44-47. Retrieved from https://www.imf.org/external/pubs/ft/fandd/2016/06/pdf/fd0616.pdf
2. Amat Salas, O., & Puig, X. (1999). *Análisis Técnico Bursátil.* Barcelona: Gestión 2000.
3. Arango, J. A. (2009). Determinación de la mezcla óptima de productos para una tejeduría textil. *Scientia et Technica Año, 15*(42), 125-129. Retrieved from https://www.researchgate.net/publication/277183410_Determinacion_de_la_mezcla_optima_de_productos_para_una_tejeduria_textil
4. Banco Central del Ecuador (BCE). (2017). *Precio del Oro*. Retrieved from https://www.bce.fin.ec/index.php/component/k2/item/266-precio-del-oro
5. Banco Central del Ecuador. (2017). *Preguntas frecuentes Banco Central del Ecuador*. Retrieved from https://www.bce.fin.ec/index.php/component/k2/item/156-preguntas-frecuentes-banco-central-del-ecuador
6. Banco Central del Ecuador. (2018). *Precios del oro*. Retrieved from https://www.bce.fin.ec/index.php/component/k2/item/266-precio-del-oro
7. Bartrem, K., Curtis, J., Dorosz, J., Hein, H., Sarah, L., Landes, S., Lippard, J., Mandile, G., Rahbari, K., Annalise, S., & Wondra, C. (2017). *Risk and Vulnerabilities of Virtual Currency. Cryptocurrency as a Payment Method.* Retrieved from https://www.dni.gov/files/PE/Documents/9---2017-AEP_Risks-and-Vulnerabilities-of-Virtual-Currency.pdf
8. BBVA. (2015, July). *Monedas digitales Divisas Móviles y Descentralizadas*. Retrieved from https://www.slideshare.net/cibbva/bbva-innovation-edge-monedas-digitales
9. Berentsen, A., & Schar, F. (2018). A Short Introduction to the World of Cryptocurrencies. *Economic Research, 100*(1), 1-4. https://doi.org/10.20955/r.2018.1-16
10. Bhargavi, R., Gumparthi, S., & Anith, R. (2017). Relative Strenght Index for Developing Effective Trading Strategies in Constructing Optimal Portfolio. *International Journal of Applied Engineering Research, 12*(19), 8926-8936. Retrieved from https://www.researchgate.net/publication/322558056_Relative_strength_index_for_developing_effective_trading_strategies_in_constructing_optimal_portfolio
11. Bit2me. (2017). *Cuánto vale un bitcoin?Cómo y quién determina su precio*. Retrieved from http://blog.bit2me.com/es/precio-bit
12. Bitcoin. (2009). *Algunas palabras en Bitcoin que usted puede escuchar*. Retrieved from https://bitcoin.org/es/vocabulario

13. BLOCKCHAIN. (2017). *Gráficos de Bitcoin*. Retrieved from https://blockchain.info/es/charts/market-price

14. Bouoiyour, J., & Selmi, R. (2017). The Bitcoin price formation: Beyond the fundamental sources. *HAL,* 1-28. https://doi.org/10.13140/rg.2.2.23880.32000

15. BullionVault. (2017). *Gráfico de BullionVault de precio del oro en tiempo real*. Retrieved from https://oro.bullionvault.es/Precio-del-oro.do?currency=EUR&weight=kg&timeframe=5y

16. Bureau of Economic Analysis. (2015, December). *Measuring the Economy.* Retrieved from https://www.bea.gov/sites/default/files/methodologies/nipa_primer.pdf

17. CaixaBank. (2017). *El Dow Jones*. Retrieved from https://www.caixabank.com/deployedfiles/caixabank/Estaticos/PDFs/AprendaConCaixaBank/Aula_780.pdf

18. Cedeño, A. (2016, December). *La crisis económica en Venezuela y cómo ayuda Bitcoin*. Retrieved from http://infocoin.net/2016/12/14/la-crisis-economica-en-venezuela-y-como-ayuda-bitcoin/

19. Chu, J., Nadarajah, S., & Chan, S. (2015). Statistical Analysis of the Exchange Rate of Bitcoin. *PLOS ONE, 110*(7), 1-27. https://doi.org/10.1371/journal.pone.0133678

20. Ciaian, P., Rajcaniova, M., & Kancs, A. (2016). The Economics of BitCoin Price Formation. *Applied Economics, 48*(19), 1799-1815. https://doi.org/10.1080/00036846.2015.1109038

21. Ding, T., Fang, V., & Zuo, D. (2013). *Stock Market Prediction based on Time Series Data and Market Sentiment.* Retrieved from https://pdfs.semanticscholar.org/2c91/447c35fe2d4426b6661b8c8c97f439f3172e.pdf

22. Dyhrberg, A. (2016). Bitcoin, gold and the dollar – A GARCH volatility analysis. *Finance Research Letters, 16,* 85-92. https://doi.org/10.1016/j.frl.2015.10.008

23. El Confidencial. (2017). *Bitcoin ante el colapso económico: por qué la criptomoneda está en auge en Venezuela?* Retrieved from https://www.elconfidencial.com/mundo/2017-08-31/miles-de-venezolanos-apuestan-por-el-bitcoin-para-sobrevivir-al-colapso-economico_1433988/

24. ElEconomista.es. (2018, October 10). *Dow Jones.* Retrieved from http://www.eleconomista.es/indice/DOW-JONES/historico-fechas/2011-05-08/2017-05-20

25. ElEconomista.es. (2019, September 26). *BTCUSD*. Retrieved from http://www.eleconomista.es/cruce/BTCUSD

26. Fernández, P., & Terán, D. (2015, August). *Investigación para probar que en una economía Latinoamericana se necesita que un 35% de la población maneje una divisa virtual (como el Bitcoin) para ser considerada como moneda vehicular, con una tasa sostenible de crecimiento de un 4 % anual.* Retrieved from http://repositorio.uide.edu.ec/bitstream/37000/762/1/T-UIDE-0697.pdf

27. Cardozo, N. D. (2017). *Qué efectos tendría en la economía global la ilegalización del uso de bitcoins como reacción al virus WannaCry?* Retrieved from https://es.quora.com/Qu%C3%A9-efectos-tendr%C3%ADa-en-la-econom%C3%ADa-global-la-ilegalizaci%C3%B3n-del-uso-de-bitcoins-como-reacci%C3%B3n-al-virus-WannaCry

28. Freecurrencyrates. (2018, July). *Online Currency Converter.* Retrieved from https://freecurrencyrates.com/en/exchange-rate-history/BTC-USD/2018

29. González, C. M. (2016). Tecnicas de predicción económica. *SARRIKO-ON, 5*/09. Retrieved from http://hdl.handle.net/10810/12493

30. Hadi Mir Yazdi, S., Habibi Lashkary, Z., & Binti Ismail, I. (2019). *Technical analysis of FOREX by RSI Indicator.* Retrieved from https://www.academia.edu/8378078/Technical_analysis_of_FOREX_by_RSI_Indicator

31. Hayek, F. (1983). *La desnacionalización del dinero.* Retrieved from http://www.esfl-spain.org.server.studentsforliberty.org/wp-content/uploads/2015/09/la-desnacionalizacion-del-dinero.pdf

32. Jerdack, N., Dauletbek, A., Divine, M., Hult, M., & Carvalho, A. (2018, November). Understanding What Drives Bitcoin Trading Activities. In *Conference: Annual Meeting of the Decision Sciences Institute*. At Chicago, IL., USA. Retrieved from https://www.researchgate.net/publication/329000594_Understanding_What_Drives_Bitcoin_Trading_Activities

33. Jha, V. (2018). Bitcoin: Good Bad ugly. *Journal of Bank Management & Financial Strategies, 2*(1), 7-15. Retrieved from http://management.nrjp.co.in/index.php/JBMFS/article/view/189

34. Kjaerland, F., Khazal, A., Krogstad, E., Nordstrom, F., & Oust, A. (2018). An Analysis of Bitcoin´s Price Dynamics. *Journal of Risk and Financial Managment, 11*(45),1-18. https://doi.org/10.3390/jrfm11040063

35. Lameiro, J. D. P., & Pereira, E. (2019). *The Relevance of Bitcoin in Modern Economics.* Retrieved from https://www.th-luebeck.de/fileadmin/media/AustrianEconomics2017/pdf/lameiro_bitcoins.pdf

36. Maggini, H. (2013). Bitcoin, una nueva economía o una nueva burbuja? *Revista UCEMA,* 18-24. Retrieved from https://ucema.edu.ar/publicaciones/download/Nota_Bitcoin.pdf

37. Naved, M., & Srivastava, P. (2015). Profitability of Oscillators used in Technical Analysis for Financial Market. *Advances in Economics and Business Management, 2*(9), 925-931. https://doi.org/10.2139/ssrn.2699105

38. Olvera, J. (2015). *Países donde Bitcoin está ayudando de verdad.* Retrieved from http://sobrebitcoin.com/paises-donde-bitcoin-esta-ayudando/

39. Parrales, V., & Tamayo, J. (2012). Guayaquil: Escuela Superior Politécnica del Litoral.

http://dx.doi.org/10.21511/imfi.16(3).2019.06

40. S&P Dow Jones Indices. (2019). *Dow Jones Averages Methodology.* Retrieved from https://us.spindices.com/documents/methodologies/methodology-dj-averages.pdf

41. Salmerón, V. (2017). *Cómo compran dólares los venezolanos a través de bitcoins.* Retrieved from http://prodavinci.com/blogs/como-compran-dolares-los-venezolanos-a-traves-de-bitcoins-por-victor-salmeron/?output=pdf

42. Soldevilla, J. (2017, May 5). *Analyzing Bitcoin Price Volatility.* Retrieved from https://www.econ.berkeley.edu/sites/default/files/Thesis_Julio_Soldevilla.pdf

43. Taran-Morosan, A. (2011). The relative strength index revisited. *African Journal of Business Management, 5*(14), 5855-5862. Retrieved from https://academicjournals.org/journal/AJBM/article-full-text-pdf/D7BE87A24350

44. The London Bullion Market Association. (2016, May). *A guide to the London Precious Metals Markets.* Retrieved from http://www.lbma.org.uk/assets/downloads/presspack/A_guide_to_the_London_Precious_Metals_Markets.pdf

45. Vaddeppalli, S., & Antoney, L. (2017). Are Economic Factors Driving BitCoin Transactions? An Analysis of Select Economies. *Journal of Emerging Issues in Economics, Finance and Banking, 6*(2), 2215-2227. Retrieved from http://globalbizresearch.org/economics/images/files/66159_KL724_JEIEFB_Surendar%20Vaddepalli_Laly%20Antoney.pdf

46. Van Wijk, D. (2013, July 18). *What can be expected from the Bitcoin?* Retrieved from https://thesis.eur.nl/pub/14100/Final-version-Thesis-Dennis-van-Wijk.pdf

47. Vanguardia. (2016, May). *Al fin se sabe quién creó el Bitcoin.* Retrieved from https://www.vanguardia.com.mx/articulo/al-fin-se-sabe-quien-creo-el-bitcoin

48. Weber, B. (2014). Bitcoin and the legitimacy crisis of money. *Cambridge Journal of Economics, 40*(1), 1-25. https://doi.org/10.1093/cje/beu067

49. World Bank. (2017). *Inflación, índice de deflación del PIB (% anual).* Retrieved from https://datos.bancomundial.org/indicator/NY.GDP.DEFL.KD.ZG?end=2016&start=2016&view=bar

50. Zamani, E., & Babatsikos, I. (2017). The use of Bitcoins in lights of the financial crisis: The case of Greece. *The 11th Mediterranean Conference on Information System.* Genoa. Retrieved from https://www.dora.dmu.ac.uk/bitstream/handle/2086/14418/MCIS-2017BITCOINcameraready.pdf?sequence=1&isAllowed=y

51. Zhu, Y., Dickinson, D., & Li, J. (2017). Analysis on the influence factors of Bitcoin´s price based on VEC model. *Financial Innovation, 3*(3), 1-13. https://doi.org/10.1186/s40854-017-0054-0