Does Bitcoin's Price Affect on the Economic Factors? Cross Country Evidence

Ahmad Alqatan*

Arab Open University, Kuwait.

Abstract: In this paper, I aim to identify the relationship between the Bitcoin and the economic factors using the Fully Modified Least Square (FMOLS) estimator. In fact, the Key economic factors identified for the investigation are the exchange rate, the net trade, the consumer price index, inflation, and the interest rates. Therefore, to test the validity of the chosen technique, I conducted the unit root and the co-integration tests of Pedroni (1999,2004) based on monthly data over the period from January 2015 to December 2019. Actually, the obtained results indicated that, excepting the interest rate, the variables have a strong positive correlation with the Bitcoin, However, I did not find a positive correlation with the Bitcoin. Then, the long-run relationship between the Bitcoin price and the different variables considered in the FMOLS estimate is stronger than the short-run impact since inflation favors the use of the Bitcoin.

Keywords: Bitcoin; economic indicators; co-integrating relationship; FMOLS.
JEL Classification: G15, M21, O47

INTRODUCTION

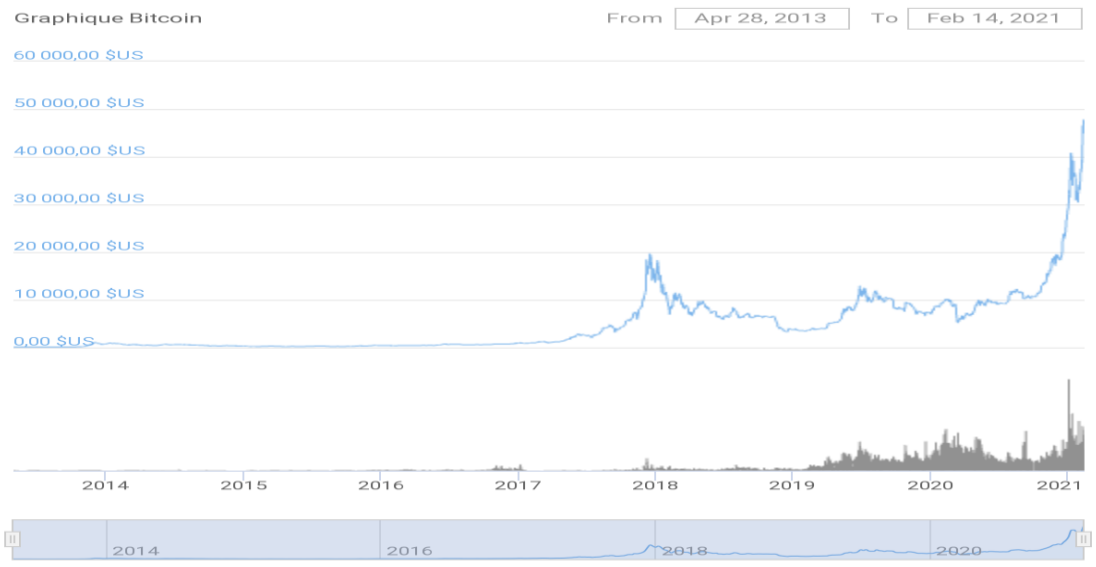
In fact, over the past twenty years, the monetary management of Central Banks in the OECD countries has been highly questionable from various points, such as the considerable increase of liquidity, which has led to asset price bubbles, the excessive indebtedness and the maintenance of very expansionary monetary policies even in a situation of full employment. Therefore, this destabilizing behavior has triggered the emergence of a currency out of the control of both the States and their Central Banks as well as of their destabilizing behavior. Eventually, I opted for the Bitcoin, which is a digital currency that could free consumers from their dependence on the financial system (Sansonetti, 2014). Besides, like any radical innovation, the disruptive nature of technology, which carries the crypto currency backed by the new economic logic generated by the spread of the Internet, appears as a potential threat to the existing monetary order. Beyond the mere technical aspect, the Bitcoin system clearly appears as an alternative to contemporary capitalism and is therefore a response to the failure of the world monetary and financial organization (Laguerre and Desmedt (2015), Abdel Ennabati (2019)). In fact, this is part of a movement to challenge the political and banking powers that have been deemed incapable of offering a good currency quality.

For his part, Grinberg, (2011), mentioned the Bitcoin as a real alternative to traditional currencies. He argues that to promote local economies, business people and lawmakers have developed several alternative currencies in recent years, such as the Bitcoin. In fact, it is used to make purchases and sales on the Internet, or with merchants who accept this method of payment. In this context, Herry and Pécastaing (2014) wrote that the Bitcoin is based on a free software that relies on a secure data exchange without any financial intermediary. In addition, transactions are identifiable by a unique cryptographic signature and recorded in a public and anonymous account book. On the other hand, the "chain hoist" guarantees the security of the system. Therefore, this finding is contrary to the opinion of Lo and Wang (2014) Laguerre and Desmedt (2015) who claimed that the Bitcoin is an alternative currency to the major world currencies in commercial and financial transactions.

As a payment system, the Bitcoin establishes a unit of account and rules to organize the transactions so that it follows its own logic. Being both a payment system and a unit of account, the price of this crypto-money has seen a massive increase. Worth a few cents in 2009, it crossed 0.562 dollars in January 2012 and began to climb to 1028 dollars in January 2017 and almost 20000 dollars in December 2017. However, this rise was followed by a drop in value in 2018, which affected all the crypto-currencies. Currently, the value of the Bitcoin is approaching 50 600 dollars (The Echoes 2021, 16/02/2021).

In fact, there are several reasons for the dynamism and popularity of this virtual currency. First, the real technological progress and the profound social change and second, the very accommodating financial conditions. According to Herlin (2014) and Zhu et al. (2017), this crypto-currency is accessible to all because it is not controlled by any State or company, but it is totally independent of the banking system, in addition to being self-regulated and secure. Moreover, the low cost of operations makes the Bitcoin more advantageous than the traditional system although some critics suggest that this system is an undesirable financial innovation. On the

*Address correspondence to this author at the Arab Open University, Kuwait. E-mail: aalqatan@aou.edu.kw



Source: CoinGecko

Fig. (1). The Bitcoin USD price.

other hand, the anonymity of the Bitcoin, which makes it possible to evade taxation, is particularly an attractive tool for fraudsters (Gruber, 2013) and a potential threat to justice. Therefore, the absence of a financial intermediary in the transactions makes the use of the Bitcom particularly interesting for criminal groups seeking to launder their "dirty money". Moreover, some had the opportunity to divert the Bitcoin towards arms and drug transactions (Karlstrom, 2014), which implies that the trust problem can limit the Bitcoin efficiency. In fact, despite the security of the computer code that the Bitcoin defenders consider as a better source of confidence in the stability of the currency, some Bitcoin trading and purchasing platforms have experienced resounding crashes. For example, the bankruptcy of the MtGox platform in February 2014 in Japan led to the disappearance of 850,000 Bitcoins (Vigna and Casey, 2015).

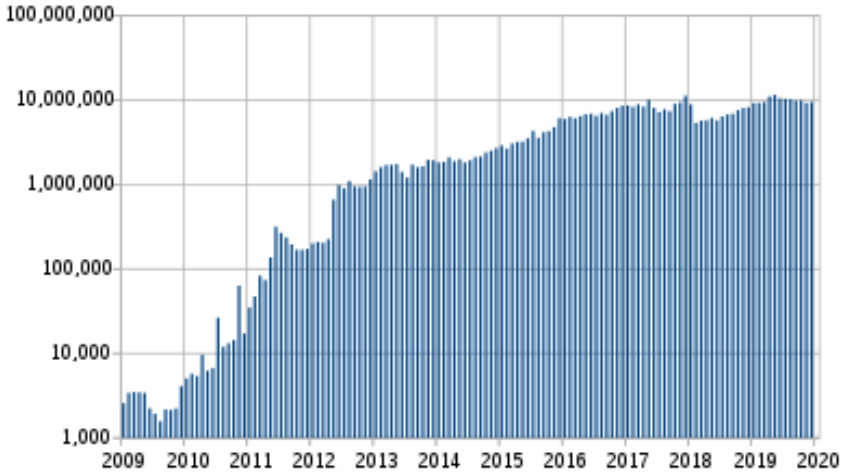
As a result, as early as 2014, questions about the advantages and limitations of the Bitcoin began to mobilize the financial media, making economists wonder whether this invention is a currency even though the answers of the authorities were very different. Conventionally, the Bitcoin would only be a currency if it fulfills the three functions of a currency, namely, to be a means of exchange, a unit of account and a store of value. However, some countries have drawn attention to the fact that the Bitcoin is highly speculative besides, it offers no guarantee of security of convertibility and value and therefore does not fulfill the three functions of a currency (Georg and Dube, 2017). For example, France maintained that crypto-currencies no longer meet the definition of a means of payment within the meaning of the CMF, and therefore, cannot be considered a financial instrument. In other countries, such as the United States, Italy and Japan, macroeconomic difficulties led to question about the widespread use of the Bitcoin as a currency performing all its essential functions. On the other hand, other countries, such as China and Russia, found that due to its volatility and institutional fragility, the Bitcoin is not efficient as a means of payment.

On the other hand, drawing on the work that assesses whether the Bitcoin can be considered a monetary instrument, this financial innovation can play a crucial role in coordinating the economic decisions. In fact, when a new currency emerges, the challenge is to study its true impact on the monetary and financial systems. For this reason, I thought it important to ask the following question: Does the Bitcoin efficiently serve the economy? Therefore, in order to provide some answers to this question, this work is subdivided into four sections. The first reviews the literature on the relationship between the Bitcoin and the economic indicators, the second specifies the sample, the used model and the adopted empirical validation technique, and finally, the third section presents the interpretation of the obtained results.

1. THE BITCOIN AND THE ECONOMIC INDICATORS: A REVIEW OF THE LITERATURE

In fact, the Bitcoin-related topics are not really developed by their recent appearance. However, a great deal of literature deals with the history, the functioning and the evolution of the Bitcoin and the anonymity it provides. Moreover, some other research studies dealt with the encryption methods compared to others, while the articles dealing with its impact on the real economy are rare.

Actually, Decker and Wattenhofer (2013) were the first researchers in the world to study the Bitcoin. They found that this innovation responds to an eroded confidence in the monetary exchange, the result of a mistrust of the joint policies of central banks and commercial banks. Therefore, the objective of this innovative payment system is to control inflation. In fact, the idea behind this is that the monetary environment proposed by the Bitcoin is radically different and therefore there are no fractional reserve holdings and neither credit markets, nor interest rates. Moreover, many high-inflation



Source: Blockchain

Fig. (2). Number of Bitcoin transactions per month.

States consider the Bitcoin as an advantage for circumventing capital movement regulations. Moreover, the increase of the number of transactions (Fig. **2**) engaged for the development of the Bitcoin network could be considered as one of the measures of the system's success.

However, the mistrust conveyed to the inflationary policies of central banks was criticized by Berrdear et al., (2014), who claimed that when companies no longer have access to credit, the investments fall, leading the economy into a severe depression and therefore deflation. In fact, Yermack (2013) argues that the use of the Bitcoin in trade faces a great difficulty resulting from high volatility. On the other hand, the frequent price changes would entail a significant cost and create confusion for buyers who would find it difficult to compare the Bitcoin prices among different sellers. Similarly, this raises some currency risk problem for sellers with a large volume of transactions. For this reason, Wijk (2013) empirically investigated the direction of causality between the exchange rates and the Bitcoin prices. In fact, the obtained result indicates that the Euro-Dollar exchange rate and the oil price have a significant impact on the long-term value of the Bitcoin. In contrast, the work of Briere et al., (2015) on weekly data for the period 2010-2013 revealed a low correlation between the Bitcoin and traditional assets, which validates the results of Chen and Vivek (2014) who showed that the Bitcoin is an investment vehicle that offers significant advantages for a diversified portfolio due to its high volatility.

Simultaneously, the theoretical analysis of Krugman (2014) made a devastating judgment on the Bitcoin in relation to the macroeconomic and financial stabilization. His idea is that the Bitcoin is a private digital currency the value of which depends on the expectations which, in turn, depend entirely on the extent to which others will later accept it at a sufficiently higher value. This characteristic makes the Bitcoin prone to speculation and also to bubbles. Therefore, the price collapse is not inconceivable as it is likely to erode financial stability. In the same perspective, Atik et al., (2015) explored the relationship between the Bitcoin and the exchange rates in the case of Turkey over the period 2009-2015. In fact, they examined the most trading currencies around the World in order to influence the Bitcoin in relation to the exchange rates. The results of the analysis indicate the existence of a one-way causality between the Bitcoin and the Japanese, besides, the Japanese Yen and the Bitcoin have a delaying effect on each other.

For his part, Kristoufek (2015), examined the probable effect of the Bitcoin prices on the Chinese market. Hence, at the end of his analysis, he found that although the Bitcoin is a speculative asset, its suitability to the money supply and to the economic fundamentals affects the price of the national currency in the long run. He also concluded that the Bitcoin is an asset that does not have a secure investment instrument. Moreover, the study concluded that there is a positive and significant relationship between the financial stress index and the Bitcoin statistics. As for Yermack (2016), he argues that the Bitcoin faces some challenges, such as the low correlation with other assets and the absence of derivatives, which makes the hedging impossible, the absence of the consumer's protection, the limited supply of the Bitcoin and its high volatility. Therefore, these challenges limit the Bitcoin's viability as a currency and make of it a speculative investment.

On the other hand, using monthly Chinese data for the 2012-2017 period, Astuti and Fazira, (2018) showed that the wide diversity of the Bitcoin prices and their volatility do not seem to contribute to financial stabilization but they could pose a significant risk to the financial system. In fact, this result contradicts that of the theoretical study of Stevens (2017), which states that the volatility risk would be limited and could be mitigated as this monetary system becomes established in the broader financial landscape. In other words, if the Bitcoin were to become increasingly successful, as a medium of exchange, its practical usefulness would become more valuable. Therefore, this source of value could make the exchange rates less sensitive to the impact of shocks, according to speculators' beliefs. Moreover, a critical analysis of this scenario by Dai and Sidiropoulos, (2018) showed that when a Bitcoin largely replaces the Central Bank's regular money, it would be the predominant monetary value in the economy, while other currencies would be required only for interactions with the public authorities. In

fact, this substitution would have harmful implications for the monetary policy (lack of the Central Bank's control and thus macroeconomic imbalances). Therefore, it becomes more difficult for the monetary policy to get the relevant interest rates react to macroeconomic imbalances in the demand, which induces price volatility that introduces a destructive volatility of welfare in the economic activity.

For Demertzis and Wollf (2018), the Bitcoin is a low-cost monetary platform that seriously competes with all existing payment methods and has been used to finance innovation through the launch of several start-ups, such as the American leader BitPay. In fact, this new currency has some advantages since it provides greater transparency and speed of transactions as well as openness to the general population against several problems of confidence between banks with selective accounting transparency and irreversible transactions. This system, which was born out of the Internet, can thus increase the accessibility of e-commerce in the developing countries.

2. RESEARCH VALIDITY

2.1. Sample and Data

While maintaining the representativeness of the obtained results, and based on the global Bitcoin transaction classification, this research study covers a panel of the largest countries in the number of Bitcoin transactions (the USA, Canada, the United Kingdom, Austria, Switzerland, Spain, Czech Republic, Poland, Italy and Russia). In our empirical test, I estimate a panel model using monthly data over the period between January 2015 and December 2019 from the Economic Research Center of the Federal Reserve Bank of St. Louis.

2.2. Model Specification and Estimation Methods

Moreover, in order to answer the question about whether the Bitcoin effectively serves the economy, I have conducted a study that builds on the work of Wijk (2013), Berrdear and Clews (2014), Kristoufek (2015), Astuti and Fazira, (2018) and Conrad et al, (2018). Therefore, to study the interaction between the Bitcoin and the economic indicators, I used the following variables: the Bitcoin value in the US Dollar (BTC), the Euro-Dollar exchange rate (Exrate), the degree of openness to international trade (Trade), the consumer price Index (Cpi), the inflation rate (Inf) and the interest rate (Int). In addition, the model for our empirical validation test is taken from the literature review and written as follows:

$$BTC_{i,t} = \alpha 0 + \alpha 1\ (EXRATE)_{i,t} + \alpha 2\ (TRADE)_{i,t} + \alpha 3\ (CPI)_{i,t} + \alpha 4\ (INF)_{i,t} + \alpha 5\ (INT)_{i,t} + \varepsilon_{i,t}$$

i: represents the country, i = 1, ……, 10;

t: the period from January 2015 to December 2019.

Indeed, several economic indicators were used in the empirical analyses. However, the indicators used in the estimation of our model are the most widely used because they have been available for many developing countries over a long period of time. These variables are defined as follows:

***EXRATE*:** This is the Euro-Dollar exchange rate (eur/usd). In fact, the Bitcoin represents the possibility of a development of private currencies managed by citizens, companies or organizations, which could compete with the national currencies (Makoto, 2016). Moreover, competition between a national currency and private currencies would break the public monopoly and thus offer alternative means of payment to individuals, which enables them to reject unstable currencies and favor those characterized by low inflation. As a result, the Bitcoin may appear to be competitive for some economies with highly volatile national currencies. Moreover, it offers an escape route for people in countries with devalued currencies (Girisha, 2018). Due to the predominance of the Dollar and the Euro in the international financial system, and based on the previous study of Wijk, 2013, Kancs et al., (2019), I have chosen the Euro-Dollar exchange rate.

***TRADE*:** It is the degree of openness to international trade. Our idea is along the same lines as **that of** Birch (2017), who argues that the speed of a payment method based on the Bitcoins could be an important stimulus for international trade.

***CPI*:** The consumer price index. I used this variable by referring to the study of Zhu et al., (2018) over the 2011/2016 period, which attributed a causal link between the Bitcoin price and the Consumer Price Index.

***INF and INT*:** are the inflation and the interest rates, respectively. Based on the studies of Decker and Wattenhofer (2013) and Andrikopoulos et al., (2018), who predicted that the primary objective of creating this innovative payment system is to limit inflation and the interest rates, I expect to find a positive result between the inflation rate and the rate of using the Bitcoin.

On the other hand, in a study of the relationship between these variables, the econometric methodology is based on the need to ensure the stationarity of the variables or the order of integration of each of them in order to limit the robustness of the obtained results. Therefore, to overcome this problem, I carried out unit root panel tests. Then, if the variables admit the same order of integration, co-integration tests will be conducted. On the other hand, if the series are co-integrated, the Granger panel causality test will be carried out. Finally, a long-term co-integration is estimated. Moreover, all the tests were carried out with the Eviews 10 SV software.

2.2.1. Unit Root Tests

Our methodology starts with the most well-known unit root tests, such as those of Levin, Lin and Chu (2002) (LLC), Im, Pesaran and Shin (2003) (IPS), Breitung (2000) and Maddala and Wu (1999). In fact, these tests are based on the null hypothesis of non-stationary panel and the presence of a common unit root for all individuals. In fact, the results of these tests are presented in the following table:

The results of the unit root tests applied to the model show that the null hypothesis of the unit root in level cannot be rejected for all the variables. Therefore, all the variables are stationary in level (P value<= 5%). Then, when I to the first difference, the results of all the tests confirm the existence of a unit root for all the Bitcoin variables. This result suggests the existence of a long-term panel relationship between the Bitcoin and the economic indicators. However, in the pres-

Table 1. Unit Root Tests.

		Levin, Lin and Chu	Im, Pesaran and Shin W-stat	ADF – Fisher Chi-square	PP – Fisher Chi-square
Variables		Statistic (Prob.)	Statistic (Prob.)	Statistic (Prob.)	Statistic (Prob.)
Level	EXRATE	-1.86016 (0.0314)	-2.78452 (0.0027)*	18.4842 (0.0473)	19.2272 (0.3780)
	TRADE	-1.56568 (0.0587)	-2.66787 (0.0038)*	32.1166 (0.0013)*	32.6676 (0.0011)*
	CPI	-2.14925 (0.0158)	1.18277 (0.8815)	7.09453 (0.8513)	23.2825 (0.0254)
	INF	-0.26612 (0.3951)	1.30570 (0.9042)	4.60910 (0.9698)	4.46378 (0.9735)
	INT	0.78798 (0.7846)	-0.53788 (0.2953)	24.0101 (0.0203)	9.61497 (0.6497)
First difference	Δ EXRATE	-10.6451 (0.0000)*	-9.38683 (0.0000)*	95.9657 (0.0000)*	94.9768 (0.0000)*
	Δ TRADE	-7.61660 (0.0000)*	-11.5254 (0.0000)*	131.864 (0.0000)*	227.046 (0.0000)*
	Δ CPI	-5.5923 (0.0000)*	-7.65362 (0.0000)*	74.8304 (0.0000)*	102.139 (0.0000)*
	Δ INF	-8.11424 (0.0000)*	-6.44970 (0.0000)*	49.3942 (0.0000)*	88.3775 (0.0000)*
	Δ INT	-7.69577 (0.0000)*	-7.19134 (0.0000)*	76.1450 (0.0000)*	115.613 (0.0000)*

* indicates a statistical significance at 1%.

Δ : is the first difference operator.

ence of the non-stationary variables, there is a possibility of obtaining dummy regressions between these variables. One way around this problem is to use the usual co-integration techniques. For this reason, I referred to the work of Pedroni (1999, 2004) whose null hypothesis tests for the absence of co-integration based on the unit root tests about the estimated residuals.

2.2.2. Panel Co-integration Tests

Table **2** presents the results of co-integration tests.

Based on the results of Pedroni's co-integration tests, I can see that out of the 7 statistics, 4 have probability values below 5%. These are mainly Panel PP and ADF-Statistics for intra-individual tests, Pedroni (1999, 2004) (Weighted statistics) and also Group PP and ADF-Statistics for inter-individual tests. As a result, all these tests reject the null hypothesis and confirm the existence of a long-term co-integration relationship between the Bitcoin, the Euro-Dollar exchange rate, the degree of openness to international trade, the consumer price index, inflation and the interest rates.

2.2.3. Estimation of the Long-term Relationship

However, having proved that the explanatory variables of economic growth are non-stationary and that there is a long-term relationship between them, Pedroni (2000) and Mark and Sul (2003) showed that in this case, the OLS technique leads to asymptotically biased estimators. Therefore, they highlight the FMOLS (Fully Modified Least Square) estimator. In fact, the FMOLS panel technique solves the problem of endogeneity and autocorrelation in that it allows the heterogeneity of long-term parameters between countries to be taken into account in which, the estimated parameters are interpreted as the average values of the heterogeneous co-integration vector. On the other hand, for Maeso-Fernadez et al., (2006), the FMOLS estimator considers the presence of the constant term and the possible existence of a correlation between the error term and the differences of the regressors.

Table 2. Panel Co-integration Tests.

Methods	**Within-Dimension (Panel Statistics)**			**Between-Dimension (Individual Statistics)**		
	Test	Statistics	Prob	Test	Statistics	Prob
Pedroni	Panel v-Statistic	-2.703796	0.9966	Group rho-Statistic	4.527759	1.0000
	Panel rho-Statistic	3.414695	0.9997	Group PP-Statistic	-3.453855*	0.0003
	Panel PP-Statistic	-3.371840*	0.0004	Group ADF-Statistic	-3.004879*	0.0013
	Panel ADF-Statistic	-3.703958*	0.0001			
Pedroni (Weighted statistic)	Panel v-Statistic	-2.580393	0.9951			
	Panel rho-Statistic	3.724642	0.9999			
	Panel PP-Statistic	-3.055741*	0.0011			
	Panel ADF-Statistic	-3.257457*	0.0006			

Table 3. Regression Result FMOLS Method.

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CPI	517.7166	96.35503	5.373011	0.0000***
EXRATE	285.8968	139.2984	-2.052405	0.0413**
INF	829.2088	221.1124	3.750169	0.0002***
INT	-432.3329	262.3768	-1.647756	0.1008
TRADE	0.591693	0.209982	-2.817825	0.0053***
R-squared	0.461855	Mean dependent var		3148.918
Adjusted R-squared	0.435309	S.D. dependent var		3740.783
S.E. of regression	2811.045	Sum squared resid		1.76E+09

*** and**indicate 1% and 5% **of** statistical significance, respectively.

Moreover, the adjustments are made to the dependent variable and long-term parameters obtained by estimating the adjusted equation. For all these reasons, I have chosen to apply the estimation of the relationship between GDP and the explanatory variables using this technique. Moreover, in the panel case, the long-term coefficients derived from the FMOLS technique are obtained through the average in the groups of estimators compared to the sample size (N).

3. RESULT INTERPRETATION

To identify the relationship between the Bitcoin and the economic factors, I estimated the model using the traditional panel data method for 9 countries in the sample between January 2015 and December 2019. Then, the result of the estimation is presented in the following table:

The table below shows that there is a long-term elasticity between the different variables of the model from the FMOLS estimate. In fact, the obtained results showed that there is a strong positive correlation between the variables EXRATE, CPI, INF and TRADE and the Bitcoin. Then, the correlation coefficients confirm the existence of a long-term relationship while the co-integration coefficient of the CPI variable confirms the finding of Zhu et al., (2018), who showed that the Bitcoin price has the same curve as the CPI one. Therefore, this result is consistent with McWharter's (2018) hypothesis, which states that the Bitcoin should have a positive coefficient because when the value of a currency decreases, investors should be more willing to invest in alternative currencies, such as the Bitcoin. However, the complexities and costs associated with international trade of goods led a growing number of companies and governments to examine how the block chain could be used to reduce the red tape and improve the processes related to the export of goods and trade finance in the hope of moving towards truly paperless and cost-free trade. On the other hand, the Bitcoin is seen as a new opportunity to further facilitate and digitize international trade transactions while enhancing security. In

fact, with this new technology, there is a growing trend towards sourcing and marketing as it provides customers with safer and faster solutions and promotes international purchasing. This could help increase the number of customers and boost online sales. An example of this is the supply chain finance platform launched by IBM in cooperation with a Kenyan technology research laboratory and Twiga Foods, a business-to-business logistics platform that helps farmers distribute bananas, tomatoes, onions and potatoes to 2,600 outlets across Kenya in 2017. For all these reasons, the regression result shows a positive coefficient of the variable (TRADE).

At the same time, the Bitcoin blockchain is a major consumer of resources, especially energy. Today, the Bitcoin's electricity consumption is equivalent to the electricity consumption of more than 159 countries operating about 80 transactions per minute (Laguerre, 2020).

On the other hand, the inflation variable (INF) has a positive coefficient with the Bitcoin. Thus, I can say that when the consumer price index rises, the growth of the Bitcoin transaction volume increases. Therefore, inflation favors the use of the Bitcoin, suggesting that it may have a safe haven role that can help investors to hedge against inflation because the creation of this crypto-currency is limited (Maitreau, 2020). This is the case of Argentina which, in order to avoid devaluation of its currency, chose to invest in the Bitcoin (Moreno, 2016 and D'Annoville, 2020). Contrary to the studies of Bouoiyour and Selmi (2016) and Erdas and Caglar (2018), there is no correlation between the interest rates and the Bitcoin.

According to the work of Georgoula et al., (2015), the result of the regression shows that the Bitcoin prices are positively affected by the exchange rates of the dollar with the Euro. For their part, Bolt and Oordt (2016) arrived at the same result about the simulations of theoretical models, showing that in the long run, the exchange rate risks should not hinder the large-scale use of private digital currencies, such as the Bitcoin, for the reason that these risks would be mitigated as private digital currencies and become established in the financial landscape. On the other hand, the volatility of the Dollar-Euro exchange rate, which was particularly high in 2017, has validated several empirical studies that have shown that the daily exchange rate of the Bitcoin against the US Dollar virtually showed no correlation with the Dollar exchange rates expressed in terms of other important currencies, such as the Euro, the Yen, the Swiss Franc or the Pound (Dai and Sidiropoulos, 2018).

CONCLUSION

To conclude, I can say that the phenomenon of the Bitcoin is developing at a high rate from day to day. Due to a growing market share and a rapidly increasing price of the Bitcoin, it appeared essential to study its real impact on the monetary and financial systems. In fact, using monthly data over the period January 2015-December 2019 for a sample of ten largest countries in the number of the Bitcoin transactions, I found a strong correlation between the Bitcoin and the variables EXRATE, CPI, INF and TRADE. I could conclude that there is a long-run relationship between the Bitcoin price and the different variables. Therefore, the Bitcoin is seen as a new opportunity that further facilitates and digitizes international trade transactions while enhancing security. Moreover, with this new technology, there is a growing trend towards sourcing and marketing as it provides customers with safer and faster solutions and promotes international purchasing, which could help increase the number of customers and boost online sales.

On the other hand, the Bitcoin prices have an important impact on the exchange rate of the Dollar with the Euro. However, in the long run, the exchange rate risks should not hinder the large-scale use of private digital currencies, such as the Bitcoin, for the reason that these risks would be mitigated as private digital currencies become established in the financial landscape. In fact, inflation favors the use of the Bitcoin. In contrast to previous studies (Bouoiyour and Selmi, 2016), the presence of a causality relationship between the Bitcoin price and the interest cannot be determined.

ACKNOWLEDGEMENT

This research was supported and funded by the research sector, Arab Open University – Kuwait Branch under decision number “22052”.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

REFERENCES

Abdel Ennabati (2019), Bitcoin : The Bitcoin Alternative: An Institutionalist Perspective Ebooks Kindle (2019).

Andrikopoulos, A., ROBERT, H., SAEED, A. & DARIUS, S. (2018), Cryptocurrencies Meet Inflation Theory. Available at SSRN: https://ssrn.com/abstract=3243459 or http://dx.doi.org/10.2139/ssrn.3243459.

Astuti, R & Fazira N, (2018), The Effect of Cryptocurrency on Exchange Rate of China: Case Study of Bitcoin. MPRA Paper from University Library of Munich, Germany

Atik, M., Köse, Y., YILMAZ, B., & SAĞLAM, F. (2015). Kripto Para: Bitcoin ve Döviz Kurları Üzerine Etkileri. Bartın Üniversitesi İİ BF Dergisi, 6(11), 247-262.

Berrdear A R., J., CLEWS, R., & SOUTHGATE, J. (2014). The economics of digital currencies. Bank of England Quarterly Bulletin, 54(3), 276–286.

Birch David, (2017), Before Babylon, Beyond Bitcoin: From Money That We Understand to Money That Understands Us, Londres, London Publishing Partnership.

Bouoiyour, J., SELMI, R., TIWARI, A-K. AND OLAYENI, O-R., (2016). What drives Bitcoin price? Economics Bulletin 36(2): 843-850.

Bolt, W & Oordt, M, (2016), On the Value of Virtual Currencies. Bank of Canada Working Paper No. 2016-42.

Breitung, J. (2000), “The Local Power of Some Unit Root Tests for Panel Data”, in B. Baltagi (ed.), Nonstationary Panels, Panel Cointegration, and Dynamic Panels, Advances in Econometrics, 15, 161-178, Elsevier Science.

Brière, M., OOSTERLINCK, K., SZAFARZ, A., (2015). Virtual currency, tangible return: Portfolio diversification with bitcoin. Journal of Asset Management, 16(6), pp.365-373.

Conrad, C., CUSTOVIC, A., & GHYSELS, E. (2018). Long-and Short-Term Cryptocurrency Volatility Components: A GARCH-MIDAS Analysis. Journal of Risk and Financial Management, 11 , 1–12. doi:10.3390/jrfm11020023.

Chen, Y.W. & VIVEK, K.P.(2014). The value of Bitcoin in Enhancing the Efficiency of an Investor’s Portfolio. Journal of Financial Planning, 27(9), pp.44–52.

D'annoville, L M. (2020), “En Argentine, le Bitcoin, une alternative au dollar”. Le Figaro. Economie. (2020).

Dai, M & SIDIROPOULOS M.. (2018), Le bitcoin est-il une monnaie? Bulletin de l'Observatoire des politiques ´economiques en Europe, 37(1) :5–12.

Decker C and Wattenhofer R. (2014), Information propagation in the bitcoin network. In IEEE International Conference on Peer-to-Peer Computing (P2P), Trento, Italy, September 2013.

Decker C. ET Wattenhofer R., (2013), « Information Propagation in the Bitcoin Network », Conference IEEE P2P 2013 Proceedings.

Demertzis, M & WOLFF, G B. (2018), "The economic potential and risks of crypto assets: is a regulatory framework needed?" Bruegel Policy Contribution Issue n˚14 | September 2018.

Erdas, M. L. & Caglar, A. E. (2018). Analysis of the relationships between bitcoin and exchange rate, commodities and global indexes by asymmetric causality test. Eastern Journal of European Studies, 9(2), pp. 27-45.

Figuet, J. M. (2016). Bitcoin et blockchain: quelles opportunités? Revue d'économie financière, (3), 325-338.

Georg, C-P., Dube, Q. (2017). Bitcoin is a highly speculative investment. Why caution is required. The conversation, Academic rigour, journalistic flair. December 5, 2017.

Georgoula, I.; Pournarakis, D.; BILANAKOS, C.; SOTIROPOULOS, D. & GIAGLIS, G. M. (2015). Using timeseries and sentiment analysis to detect the determinants of bitcoin prices. Available at SSRN 2607167.

Girisha, M.C, (2018), A Conceptual Study on the Impact of Bit Coins On the Indian Economy. International Journal of Business and Management Invention (IJBMI). Volume 7 Issue 3 Ver. IV. March. 2018. PP:20-26

Grinberg. R (2011), "Bitcoin: An Innovative Alternative Digital Currency," Hastings Science & Technology Law Journal 4 (2011): 159–208.

Gruber, S. (2013). Trust, Identity, and Disclosure: Are Bitcoin Exc hanges the Next Virtual 10 Havens for Money Laundering and Tax Evasion?. Quinnipiac Law Review, 32, 1.

Herry V. & PECASTAING J. (2014), « Les Bitcoins, nouvelle monnaie virtuelle : quels enjeux? » Revue Sorbonne OFIS – Octobre 2014.

Herlin, P. (2014), « Les monnaies complémentaires et le bitcoin » rapport moral sur l'argent dans le monde 2014.pp : 341-349.

IM, K.S., Pesaran, M.H. ET SHIN, Y. (2003), Testing for Unit Roots in Heterogeneous Panelsî, Journal of Econometrics, 115, 1, 53-74.

Kancs, A Ciaian, P & RAJCANIOVA M, (2019), « The Price of BitCoin: GARCH Evidence from High Frequency Data. Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-79-98570-6.

Karlstrom, H. (2014). Do libertarians dream of electronic coin s? The material embedness of bitcoin. Scandinavian Journal of Social Theory, Vol. 15, No. 1, 23-36.

Krugman. P, (2013) "Bitcoin is Evil," [online], Paul Krugman's Blog NY Times.

Kristoufek L, (2015), "BitCoin meets Google Trends and Wikipedia: Quantifying the relationship between phenomena of the Internet era". Scientific Reports.

Laguerre, L O. (2020), Monnaie et immortalité : une autre histoire du Bitcoin. OpenEdition Journals, pp: 145-154.

Laguerre L.O. & Desmedt L. (2015), "L'alternative monétaire Bitcoin : une perspective institutionnaliste", Revue de la Régulation.

Levin, A., LIN, C.F., & CHU, C. (2002). Unit root tests in panel data: Asymptotic and finite sample properties. Journal of Econometrics, 108(1), 1-24.

LO, Stepahanie and J. Christina WANG. (2014),"Bitcoin as Money?," Federal Reserve Bank of Boston, Current Pllicy Perspectives No 14-4, 2014.

Maddala, G.S. & S. WU. (1999). A Comparative study of unit root tests with panel data and a new simple test. Oxford Bulletin of Economics and Statistics, 61(4), 631- 652.

Maeso-fernandez, F., Osbat, C., & Schnatz, B. (2006). Towards the estimation of equilibrium exchange rates for transition economies: Methodological issues and a panel cointegration perspective. Journal of Comparative Economics, 34(3), 499– 517.

Maitreau CH. L, (2020), "Bitcoin, une protection contre l'inflation en 2020 ?" https://www.journaldunet.com/economie/finance.

Makoto, N. (2016), The Enigma of Money. Gold, Central Banknotes, and Bitcoin, New York, Springer.

Mark, N., & SUL, D. (2003), "Cointegration Vector Estimation by Panel DOLS and Long-run Money Demand*." Oxford Bulletin of Economics and Statistics 65.5 (2003): 655-680.

MC Wharter, N. (2018). Bitcoin and volatility: Does the media play a role? (Economics Student Theses and Capstone Projects).

Moreno, E. (2016). Bitcoin in Argentina: inflation, currency restrictions, and the rise of cryptocurrenty. Law School International Immersion Program Papers, 14.

Nakamoto, S., (2008). Bitcoin: A Peer-to-Peer Electronic Cash System. [online] Available at: https://bitcoin.org/bitcoin.pdf.

Pedroni, P., (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors. Oxford Bulletin of Economic and Statistics 61, 653–678.

Pedroni, P., (2000). Fully modified OLS for the heterogeneous cointegrated panels. Advances in Econometrics 15, 93–130.

Pedroni, P. (2004), "Panel Cointegration: Asymptotic and Finite Sample Properties of Pooled Time Series Tests with an Application to the PPP Hypothesis", Econometric Theory 20, 579-625.

Sansonetti R. (2014), Le bitcoin : opportunités et risques d'une monnaie virtuelle, La Vie économique Revue de politique économique 9-2014.

Stevens, A, (2017), « Digital currencies: threats and opportunities for monetary policy », National Bank of Belgium, Economic Review.

Wijk, V.D. (2013), What can be expected from the BitCoin? Working Paper No. 345986, Erasmus Rotterdam Universiteit.

Vigna, P. & CASEY, M.J. (2015) Cryptocurrency: How Bitcoin and Digital Money are Challenging the Global Economic Order, London, The Bodley Head.

Yermack, D., (2013). Is Bitcoin a Real Currency? An Economic Appraisal. National Bureau of Economic Research WP No.w19747.

Yermack, D. (2016). Is Bitcoin a Real Currency? In David K.C. Lee ed. The Handbook of Digital Currency (Elsevier, 2015), 31-44.

Zhu, YECHEN, DAVID DICKINSON, AND JIANJUN LI. (2018). Analysis on the Influence Factors of Bitcoin's Price Based on VEC Model. Financial Innovation 3: 3.

Received: Apr 19, 2022 Revised: Apr 20, 2022 Accepted: June 07, 2022