Crypto Currency Trading and The Impact On Global Digital Finance

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Abstract
The research work examined the impact of cryptocurrencies on the global financial market between 2005 to 2021 respectively. Global financial market was proxy by international liquidity whereas, cryptocurrencies was proxy by Bitcoin, Ethereum, Tither and Binance coin. Questionnaire were distributed to investors in cryptocurrencies and global financial market within the sample size of 1500. The raw data obtained were scaled using the linkel method to produce acceptable data for econometric analysis. In analyzing the data, the researcher employed econometric techniques such as Box Jenkin Q Statistic and EGARCH model to examine the linear dependency and volatility rate of cryptocurrencies in the global financial market. The test result revealed the absence of linear dependency and increase in exponential volatility rate in the currencies.
Keyword; Box Jenkin Q Statistic, EGARCH model, Cryptocurrencies, international liquidity

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1.0 Background to the Study

According to Bartoletti, Carta, Cimoli, & Saia, (2017) the universal financial system is absolutely embracing the current evolution from physical currency to almost virtual currencies through the medium of technology. However, there have been many attempts at producing a digital currency during the 90s tech boom (Bech, 2017). Bitcoin was introduced in early 2009 by a group of programmers under the alias Satoshi Nakamoto. Cryptocurrency is described as a digital recordkeeping device that uses balances to keep track of trading obligations, which is publicly known to all traders. Some of the forms of crypto currencies include Ethereum, Bitcoin etc. However, since the introduction of Bitcoin in 2009, several private cryptocurrencies have been introduced, but Bitcoin has been generally adjudged as the most successful one. According to Gilbert &Loi (2018), cryptocurrencies are mainly designed to function without independent regulation and are protected from being exposed to government authorities for control. Moreover,

many central banks begin to discover the adoption of blockchain technologies and cryptocurrency for retail and large-value payments. (Bartoletti et al., 2017)

Admission of cryptocurrency into the Nigerian financial sector is gaining wide popularity but with fears and doubt about its functionality since no regulatory framework from the apex bank exists. But there is a broad call for Central Bank of Nigeria to begin a proper regulatory action. Nevertheless, it is appropriate to note that the Central Bank of Nigeria financial policy restrictions on foreign exchange have steered Nigerians to modernize bitcoin to access foreign exchange. Hence, eliminating the currency would be seen as unreasonable and unworthy of a country that seeks to promote domestic innovation. Thus, it may be found significant if they join several other countries to accept its operation in Nigeria. Therefore, the problem confronting this study is determining cryptocurrency's effect on the Nigerian economy.

1.2 Statement of Problem

Cryptocurrencies, and particularly Bitcoin, have been recently a subject of many studies and analyses mainly in terms of their economic properties. The analyses, such as of Pattison (2011), Hamacher and Katzenbeisser (2011), Britto and Castillo (2013) or Combs and Mitsoff (2014) are usually focused on very narrow range of functions of cryptocurrencies, and lack the broader context. The study shall focus on the impact of cryptocurrencies trading on the global digital finance using the event study to generate data and subsequently applying econometric tools to reach at a reliable conclusion.

1.3 Hypotheses

- Bitcoin trading does not impact on the global financial market
- Ethereum trading is not volatile in the global financial market.
- Tether trading does not impact positively and significantly on the global financial market.
- Binance Coin volatility trading does not impact significantly on the global financial market

1.4 Significant of the Study

The research study will be significant to financial investors who probably intend to invest in financial securities through the use of digital finance, this will further expose the relevancy of digital finance to policy holders in the economy. Digital finance can also be applied to other field in finance such as investing in portfolio of assets rooted in cryptocurrencies.

Conceptual Review

Cryptocurrencies is designed to serve as a medium of exchange. The "crypto" prefix comes from the fact that cryptocurrencies use cryptography to secure and verify transactions as well as create new currency units (coins). Cryptography makes it easy to encode something that is easy to decipher with a key and difficult to decipher without a key, which means that coins can be difficult to create, but transactions can be easy to verify.

At their core, cryptocurrencies are entries in an immutable and pseudo-anonymous database—known as a "blockchain"—that no one can change (except under extreme circumstances when direct edits are made). The blockchain is a public record that is verified by many different nodes, which makes counterfeiting coins extremely difficult or impossible. It also makes it easy to trace any specific transaction between anonymous individual accounts or wallets.

Cryptocurrencies offer an easy-to-use, digital alternative to fiat currencies. Consumers from the United States or European Union may view cryptocurrencies as a novelty, but there are many countries with mismanaged domestic currencies. For example, Venezuela's authoritarian regime has become infamous for its skyrocketing inflation, which has led to plummeting living conditions for millions of citizens without access to external currencies.

Other countries have strict capital controls in place to control the flow of money and/or charge high taxes. Cryptocurrencies can be used to circumvent these capital controls and taxes—legal or not—which has led to increased demand on the part of consumers and businesses. For this reason, many countries have started cracking down on the illegal uses of cryptocurrencies for tax evasion or illegal purchases or sales abroad.

The official response to cryptocurrencies has been lukewarm at best across central banks and financial institutions. While there are some organizations that have been supportive of them, many central banks remain cautious given the market's extreme volatility. Issues with tax evasion and capital controls also have led to some widespread concerns.

- **United States Federal Reserve:** U.S. Federal Reserve Chairman Jerome Powell believes that technical issues remain, and governance and risk management will be crucial before cryptocurrencies become part of mainstream society.
- **European Central Bank:** Former European Central Bank Vice President VitorConstancio called Bitcoin a "tulip" in reference to the 17th-century bubble in the Netherlands, and many other governors have expressed similar skepticism.
- **People's Bank of China:** The People's Bank of China believes that conditions are "ripe" to embrace cryptocurrencies, but the central bank wants full control, and authorities are cracking down on the cryptocurrency ecosystem in the country.
- **Bank of Japan:** The Bank of Japan doesn't see a market for cryptocurrencies.

- **Bank of England:** Former Bank of England Governor Mark Carney called cryptocurrencies part of a "revolution" in finance, making the central bank one of the few governmental proponents of the technology. The Venezuelan government, facing capital restrictions of its own, launched its own cryptocurrency in 2018—called the "petro"—that's allegedly backed by barrels of crude oil. While official sources indicate that the country raised billions of dollars, many analysts are skeptical of these figures and the United States has outlawed U.S. citizens from purchasing the cryptocurrency.

Impact on Global Investments

Cryptocurrencies have many benefits when it comes to frictionless transactions and inflation control, but many investors are adding these currencies as assets to their diversified portfolios. In particular, the noncorrelated nature of the market makes cryptocurrencies a potential hedge against risk, similar to precious metals like gold. Many cryptocurrency exchange-traded products (ETFs and ETNs) have arisen for this very reason. On the other hand, some experts fear that a cryptocurrency crash could have an adverse impact on the wider market, similar to how mortgage-backed securities sparked a wider global financial crisis. It's worth noting that the total market capitalization of all cryptocurrencies, which is between one and two trillion dollars as of now, is still less than that of some large public companies, such as Meta (formerly Facebook) or

Amazon.[2] Yet, cryptocurrencies as an asset class is a new and dynamic prospect that can go in either direction. In the end, many investors view cryptocurrencies as either a vehicle for speculation or a hedge against inflation, but the size of the market doesn't represent a systemic risk as of 2021.

Benefits of cryptocurrencies

Cryptocurrencies have the potential to enable social and economic growth throughout the world, including in developing countries, by offering easier access to capital and financial services.

1.A Beneficial Rise in Economic Activities

There is already an entire industry built around cryptocurrencies and it's held by institutions dedicated to supervising all the digital coin exchanges taking place throughout the world. The rate at which the cryptocurrency industry is growing is earth-shattering and this can be confirmed by early adopters that became rich overnight and found opportunities to grow financially. Bitcoin, the most famous of these cryptocurrencies, has already permitted many people and companies to develop and flourish, while many also rely on trading as their source of income. The economy is slowly shifting to adapt to these needs and cryptocurrencies have a great potential in satisfying them.

2. Great Opportunities for Poorly Banked Countries

More than a third of the world population does not have access to basic banking services that can help them out in case of a personal financial crisis - loans, checking accounts and the list can go on. These people that in most cases are already financially disadvantaged typically resort to doubtful and dangerous lending practices. The interest rate of these practices is anything but fair, which consequently leads to more instability among the people who requested the loan. This is where cryptocurrencies come in with their high volatility and ease-of-use.

There are now many apps and programs that facilitate the use of cryptocurrencies and bring them closer to the wider audience. An added benefit of cryptocurrency use is that it's completely decentralized, so trading can be done freely across borders. The use of technology will facilitate a financial revolution that will leave everyone more financially connected, empowered and enabled.

3. Low Transaction Costs

Because cryptocurrencies and blockchain don't need an actual brick-and-mortar building to exist, the costs associated with their transactioning are minimal. There is no need for employee wages, utility bills or rent to be paid, so these savings naturally morph into low transaction fees. This in turn encourages more and more people to trust these new financial tools and start transactioning, allowing for the global economy to be more closely intertwined. And depending on the broker you choose, you can even trade with no minimum deposit requirements - as offered by CryptoRocket, for example.

4. Increased Transparency of Transactions

Since all blockchain and cryptocurrencies

transactions are automated and digitized, they are all tracked in a distributed ledger. The best part about it is that it cannot be manipulated by either people or companies, which greatly diminishes the risk of fraud and corruption. This means that underdeveloped countries also have a greater chance of entering the financial transactions game and boost their own economy and social prospects. What's more, citizens will be able to keep track of where state funds will be oriented and will thus have a say within their own political climate.

5. More Power to Entrepreneurs

There is never been a more prosperous time to do business than it is now, in the sense that blockchain technology and cryptocurrencies can help entrepreneurs receive payments in more currencies. BitPesa is one such company that helps business owners in Africa make financial transactions with European, American and Asian companies. The aim is to help small and medium business everywhere get better financial coverage and a liberated financial connection with the rest of the world. By using BitPesa and TenX's digital wallet, entrepreneurs are able to quickly convert altcoins into fiat currencies that they can later redirect to business investments, purchases and payments.

The world is changing and it's changing quickly. The speed at which cryptocurrencies are taking over is a clear indicator that traditional financial institutions can no longer hold the fort so well and that other financial needs are arising and need to be addressed. Similarly, the world is facing a growing need to tear down borders, in search of a complete social and financial inclusion - this blockchain technology has everything it needs to address such issues.

It will only be a matter of time until these cryptocurrencies definitively find a way into our lives, shaping them for the better, with economic growth and inclusion in mind. Millions of people will now have the opportunity to invest, send money across borders, save money and start a business thanks to the amazing possibilities that cryptocurrencies bring to the table.

2.0 Finance theories on Cryptocurrencies
Mises Regression Theorem

The regression theorem assumes that all money must ultimately derive their purchasing power from a historical tie to a commodity that was valued in a state of barter. The theory of the value

of money is able to trace the objective exchange value of money only to that point where it is no longer the value of money but just the value of a commodity (Jeffrey, 2014). In this way one can continually go further and further back and must eventually get to a point where one can longer find any component in the objective exchange value of money which emanates from valuations based on the function of money as a medium of exchange. At this point, the value of money is nothing other than the value of an object that is useful in some other way than as money. Mises solved this circularity through the regression theorem. Mises further identified that people expect future purchasing power based upon current and previously observed purchasing powers. For the regression theorem to work, a medium of exchange must already have the attributes necessary for a medium of exchange, having a price and be accepted on the market.

Charles Dow Theory

According to the Dow theory, the importance of these upward and downward movements is their position in relation to previous fluctuations. This method teaches investors to read a trading chartand to better understand what is happening with any asset at any given moment. With this simple analysis, even the most inexperienced can identify the context in which a financial instrument is evolving. Furthermore, Charles Dow supported the common belief among all traders and technical analysts that an asset price and its resulting movements on a trading chart already have all necessary information already available and forecasted in order to make accurate predictions.

Dow theory trading strategy

Most trading strategies used today hinge on one key concept, the "trend". This was a novel idea when Charles H. Dow published his writings at the end of the 19th century. However, more than a century later, the Dow Jones Industrial Average market index, created by the American journalist to illustrate his theory, is probably now the most followed index on the planet.

Methodology

The researcher seek to use the event study to capture the volatility of trades on the global financial market and that of cryptocurrencies trading. However, the study shall attempt also to introduce the expo facto design which depends on

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after the fact probability. The researcher use international liquidity as a proxy to global financial market while Bitcoin, Ethereum, tether and Binance coin are proxy of cryptocurrencies. Primary data is obtained from investors across the globe such as; investors in cryptocurrencies and international market within a sample size of 1500. The primary data obtained is scaled using the Linkel scaling method to arrive at acceptable data :

$$Q^* = T (T+2) \sum_{L=1}^{N} A^{JI2}l \, x^2N \, T-L$$

Where:
Q^* = Computed statistic for the Box Jenkin
T= the sample size
N = maximum lag length
L= the lag operator
$A^{JI}l$ = Autocorrelation coefficient at a given length which is given as:

$$= \frac{\sum_{i=1}^{n-1} (X_I - E(X)) (X_{I+L}-E(X))}{\sum_{I=1}^{N} (X_I - E(X))^2}$$

Where:
X_I = the series under investigation
$E(X)$ = the expected value or mean of the series.

EGARCH Model.
EGARCH model was credited to Nelson (1991); the conditional equation is given by:
$$In(\sigma^2_t) = w + \beta in(\sigma^2_{t-1}) + y \frac{\mu t-1}{\sqrt{\sigma^2_{t-1}}} + \infty \left[\frac{u_{t-1}}{\sqrt{\sigma^2_{t-1}}} -\sqrt{2} \right]$$

Where:
Log (σ^2) is the conditional variance of volatility and return.

Test of Hypotheses
The hypotheses estimated above to test the impact of cryptocurrencies trading on the global financial market will be examine with the model designed by the researcher to capture the relative impact of each cryptocurrencies on the global financial market.
$$ITL = F [BC^2, ET^2, TER^{1/2}, BIC^{1/2}]$$
$$ITL= \sum A + BC^2 + ET^2 + TER^{1/2} + BIC^{1/2} + \beta$$
Where,
ITL = International Liquidity
$\sum A$ = Exponential Constant
BC^2= BitCoin Trades
ET^2= Ethereum Trades
$TER^{1/2}$= Tether Trades
$BIC^{1/2}$= Binance Trades.

$BC^2 + ET^2$ explains the rate of volatility resolving within such currencies while $TER^{1/2}$ and $BIC^{1/2}$ shows the exponential sluggishness by investors in using them for trading, theses further relates to the speed and volatility resolving such currencies is half of its counterpart like Bitcoin and Ethereum.

use for econometric analysis. The econometric techniques apply on the data include,
Box Jenkin Q Statistic
BJ Statistic was postulated by Box and Pierce (1970), Ljung and Box (1978) as a test for linear dependency and auto correlation in time series data, symbolically.
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Econometric Analysis
Testing for linear dependency

Linear dependency is a valid claim of serial-correlation and absence of random walk behaviour of currencies which can make prediction of future prices using past prices possible thereby allowing for inefficiency in the market; we employed Box Jekin Q statistic (BJ) to determine serial correlation in the movement of currencies in global financial market. The output of the BJ test are produced in table 1.1 below;

Included observations: 20

Autocorrelation	Partial Correlatio		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	0.023	0.023	0.0134	0.908
. | . |	. | . |	2	0.032	0.031	0.0400	0.980
. *| . |	. *| . |	3	-0.081	-0.082	0.2210	0.974
. |* . |	. |* . |	4	0.100	0.103	0.5128	0.972
. | . |	. | . |	5	-0.014	-0.015	0.5192	0.991
. | . |	. | . |	6	0.002	-0.011	0.5193	0.998
. | . |	. |* . |	7	0.068	0.088	0.6827	0.998
. | . |	. | . |	8	0.038	0.020	0.7365	0.999
. *| . |	. *| . |	9	-0.077	-0.084	0.9785	0.999
. *| . |	. *| . |	10	-0.133	-0.119	1.7582	0.998
. *| . |	. **| . |	11	-0.201	-0.209	3.6949	0.978
. | . |	. | . |	12	-0.044	-0.052	3.7964	0.987

Note that as a rule of thumb, the upper and lower band is given as
$+(1.96*1/T^{1/2})$ where T is the number of observation (20); in our case, the upper and lower band is +0.4 and -0.4, it is therefore considered to be significance if the first and second coefficient of the autocorrelation and partial autocorrelation falls outside the band.

Table 1.1 shows the result of the BJ test, it is discovered that the first and second coefficients of the autocorrelation and partial autocorrelation falls within the band. Therefore, in line with the rule of thumb, the coefficients of the autocorrelation and partial autocorrelation are insignificance which indicates acceptance of the null hypothesis of no autocorrelation at 99% level of confidence. Therefore, the BJ test revealed the absence of linear dependency in the global financial market.

Volatility testing

We employed EGARCH model to examine the conditional variance of volatility and return. The presence of volatility clustering indicates absence of random walk hypothesis in currencies. The output is shown in table 1.2 below:

EGARCH result of volatility and return

Variable	Coefficient	Std. Error	z-Statistic	Prob.
SECOND	2.119780	0.000188	11275.34	0.0000
THIRD	-1.073003	1.9E-104	-5.6E+103	0.0000

Variance Equation				
C(3)	2.547057	0.379199	6.716939	0.0000
C(4)	-2.226822	0.267618	-8.320907	0.0000
C(5)	-0.014369	0.227252	-0.063230	0.9496
C(6)	0.285477	0.141858	2.012409	0.0442

The result shows that the coefficient of the conditional variance is not actually persistent and that the negative coefficient indicates that volatility of the present period cannot influence returns of the next period. Therefore, the result shows the absence of volatility clustering and concludes that random walk hypothesis is actively presence in the behaviour of currencies in the financial global market which actively influence the market performance.

Conclusion and Recommendations

The research study examined the impact of cryptocurrencies trading on the financial global market. Financial global market was proxy by international liquidity while cryptocurrencies was proxy by Bitcoin, Ethereum, Tither and Binace coin. The result shows the international financial market depend on cryptocurrencies trading. The researcher therefore recommend the followings;

1. Cryptocurrencies trading in the financial global market should be modify to suit different investor needs, as these will further improve the liquidity obtained from the global financial market.

2. Cryptocurrencies trading should be given a proper place in the financial market so that trades can be harmonize to meet the need of the financial market.

3. Policies should be all inclusive where currencies can be traded within the world without limits.

References

Akinyemi, B., Okoye, A.E., &Izedonmi, F. (2015). History and development of accounting in perspective.

Baron, J., O'Mahony, A., Manheim, D., &DionSchwarz, C. (2015). National security implications of virtual currency examining the potential for non-state actor deployment. Library of Congress cataloguing-in-publication Data.

Bartoletti, M., Carta, S., Cimoli, T., & Saia, R. (2017). Dissecting Ponzi schemes on Ethereum: identification, analysis, and impact. Retrieved from: https://arxiv.org

Bech M, R Garratt (2017) 'Central Bank Cryptocurrencies', BIS Quarterly Review September 2017, Bank for International settlements.

Belomyttseva, O.S. (2015). Conceptual framework for the definition and regulation of virtual currencies. International and Russian Practices, 61(5), 32-39.

Benavides, & Verme. (2014). Virtual currencies, micropayments and monetary policy: Where are we coming from and where does the industry stand? Journal of Virtual Worlds Research, 7(3).

Bhosale, J., &Mavale, S. (2018). Volatility of select crypto-currencies: A comparison of Bitcoin, Ethereum and Litecoin. Annual Research Journal of Symbiosis Centre for Management Studies, 6, 132-141.

BIS (2018) Cryptocurrencies: looking beyond the hype, BIS Annual Economic Report, Bank for International Settlements.

Bruck, T., &Wickstrom, B. (2004).The economic consequences of Terror: Guest editor's introduction. The European Journal of Political Economy, 20, 293-300.

Carlisle, D (2017). Virtual currencies and financial crime challenges and opportunities. RUSI Occasional Paper.

Chaum, D., Fiat, A., &Naor, M., (1988). Untraceable electronic cash. CRYPTO 88