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Effect of Cryptocurrency Trade on Select Real Currency and Commodity Trading

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Abstract

The present research was aimed to map the impact of cryptocurrency trade on real currencies and commodities like gold and silver. For this, data of prices of ten of the most traded cryptocurrencies of last one year is considered. The impact of these cryptocurrencies was analysed on those countries' currencies in which they were mostly traded. To broaden the spectrum, the impact of these cryptocurrencies was also analysed on commodities like gold and silver. The results of the study indicate that there is a significant positive impact of crypto currencies on real currencies. Also, the cryptocurrency has a strong impact on commodities like gold and silver.

Keywords: Cryptocurrency, Real Currency, Bitcoin, Gold, Silver

INTRODUCTION

Cryptocurrency marked its presence with the inception of bitcoin in the year 2009. Bitcoin was created as a medium for peer to peer exchange. Cryptocurrency can be defined as money in digital form which can be used for exchange of goods and services. The cryptocurrency was designed to discover a type of currency which is not government regulated or in simpler terms currency whose demand and supply cannot be regulated by authorities. Cryptocurrency use cryptography to generate and allocate currency. The process of cryptography requires different verification of transactions without involving any king of centralized authority. To verify that no currency unit is spent twice, transaction verification authenticates the amount of transaction as well as the ownership of the currency. This step by step process is known as mining. The transaction record of cryptocurrency is stored in a ledger called blockchain. Blockchain can be defined as a distributed ledger which forms the basis for cryptocurrency market but its implication is not restricted to only cryptocurrency, blockchain technology can be used in financial services, supply chain management, government documentation. Mining algorithms in most of the cryptocurrency are public. Cryptocurrency presence was not felt only because of its concept but the controversies associated with it like the money laundering and terrorism activities being funded through its mechanism. The cryptocurrency market has shown turbulent with significant growth as well as downfalls. Since the main purpose of cryptocurrency was to replace real currency the question arises whether it has been able to impact the value of real currency in any significant way or not. This research aims at studying the correlation between cryptocurrencies namely Bitcoin, Bitcoin Cash, Neo, Ripple, Ethereum, Tron, Litecoin, Dash, Monero, IOTA and real currencies namely Australian dollar, Canadian dollar, Euro, Pound sterling, Japanese yen, Chinese yuan and commodities namely gold, silver keeping united states dollar as base for all conversions.

2. REVIEW OF LITERATURE

Cryptocurrency is a relatively new concept in the financial market. Although a few researchers and practitioners have researched the area but there is still much research that can be conducted in this field in the near future.

Kim YB, Kim JG, Kim W, Im JH, Kim TH, Kang SJ, Kim CH [1] researched to predict the fluctuations in Cryptocurrency transactions based on user's comments and replies. The analysis was done on the comments of different individuals at various online platforms about the price fluctuation of different cryptocurrencies. The results of their study indicated that individual behaviour and sentiments affect the market price. Also, views of own on online platform had an impact on the rate of currencies as well as the number of transaction associated with it.

Elbahrawy, Alessandretti, Kandler, Satorras, Baronchelli [2] researched to understand the evolutionary dynamics of cryptocurrency market; the study revealed that market capitalization of cryptocurrency is aggressively growing. The relative advancement of Bitcoin and adversary digital forms of money is disorderly, numerous factual properties of the market are steady.

Seetharaman, Saravanan, Patwa and Mehta [3] conducted a study on the impact of bitcoin as a world currency. In their research they observed Bitcoin has a colossal potential, however it can't in its current frame, influence the USD however it can impact it significantly. Regulatory obstacles are the major hurdle that Bitcoin is confronting, which won't enable it to build, how it would have expanded on the off chance that it had Regulators' help.

Pirjan, Petrosanu, Huth and Negoita [4] conducted research to identify the issues about bitcoins and other alternative coins and digital currencies. They concluded that different cryptocurrencies do not impose any kind of negative impact on each other's market share on the contrary moves in the same direction. Since bitcoin was the first cryptocurrency, it enjoys the first-mover advantage and has the largest market share. As the world is moving towards internet of things, cryptocurrency might have a greater impact in the future.

Dostov and Shust [5] construed that Cryptocurrencies face a unique challenge to the AML/CFT regulators. On analysing the nature of cryptocurrencies it was concluded that cryptocurrencies are peculiar as well as different as compared to the existing monetary system. The phenomenon of invisibility has been supported with respect to privacy protection but anonymity may cause trouble to individuals regarding accessing their legal rights.

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Yemrack [6] conducted a study to understand whether bitcoin is a real currency or not. The study concluded that bitcoin emerged as a real currency but its nature needs to be more stable, which can serve as a medium of exchange in different commercial markets. Bitcoin's current behaviour show that it is of volatile nature and thus it is more of a speculative investment than a real currency.

3. The rationale of the Study

The cryptocurrency was introduced in the market with a view to eliminating the government interventions, limit the usage of real currency and have free currency trade. This research aims to identify the impact of cryptocurrency trade on real currency valuation and valuation of commodities like gold and silver.

4. RESEARCH METHODOLOGY

4.1 Objectives of the study

To understand the relationship of cryptocurrencies with select real currencies.
To understand the relationship of cryptocurrencies with select commodities.
To study the impact of cryptocurrencies on select real currencies.
To study the impact of cryptocurrencies on select commodities.

4.2 Sample

There are a number of cryptocurrencies which are available and traded in the market at a time. Ten most traded cryptocurrencies of last one year that is, 14th November 2017 to 15th October 2018 according to www.investing.com were taken into consideration. These were: Neo, Tron, Dash, Ripple, Bitcoin, Bitcoin Cash, Litecoin, IOTA, Ethereum and Monero. The price of each of these cryptocurrencies, in terms of US Dollars, was collected. These selected cryptocurrencies had maximum trading in six different countries. These were: Australia, Canada, Europe, United Kingdom, Japan and China. The price of real currencies of these six countries was also collected in terms of US Dollars during the above-mentioned timeframe. Similarly, the prices of Gold and Silver, in terms of US Dollar, in the commodities market were also taken into consideration. The data collected was subjected to statistical analysis using SPSS.

5. RESULTS AND DISCUSSIONS

Pearson's correlation was applied to understand the relationship between cryptocurrency trading and trading of real currencies and commodities like gold and silver. Table 1 shows the correlation coefficients between ten cryptocurrencies and six real currencies and two commodities. Australian dollar has a significant positive relationship with Ripple, Neo, Litecoin, Bitcoin, Bitcoin Cash, IOTA, Ethereum, Dash and Monero. Canadian dollar, Chinese Yuan, Euro and Pound sterling have a significant positive relationship with Ripple, Neo, Litecoin, Bitcoin, Bitcoin Cash, IOTA, Ethereum, Dash, Monero except for Tron with which it has significant negative relationship. Japanese Yen has a significant negative relationship with IOTA, Dash, Bitcoin and Bitcoin Cash

The correlation results reveal that cryptocurrency trading is significantly related to real currencies and commodities trading. Therefore, they may impact the trading of real currency and commodity trading.

Stepwise regression analysis was applied to see the impact of cryptocurrency trading on trading of real currency and their prices and on trading of commodities and its prices. The prices of cryptocurrency were first regressed on prices of Australian Dollar. The results indicate that Litecoin, Ripple, Neo, Tron, Ethereum, Bitcoin, Bitcoin Cash and IOTA significantly impacts Australian Dollar. The total of 53.6 per cent variation in the price of Australian dollar is attributable to cryptocurrency (Table 2). On regressing the prices of cryptocurrency with Canadian dollar. The results revealed that Dash, Ripple, Litecoin, IOTA, Bitcoin and Bitcoin Cash significantly impacts Canadian Dollar. The total of 61.2 percent variation in the price of Canadian dollar is attributable to cryptocurrency (Table 3). By regressing the prices of cryptocurrency with Chinese Yuan. The results showed that Dash, Ripple, Litecoin, IOTA, Neo, Tron, Bitcoin and Bitcoin Cash significantly impacts Chinese Yuan. The total of 54.7 percent variation in the price of Chinese Yuan is attributable to cryptocurrency (Table 4). Regression analysis conducted in case of Euro. The results indicate that Dash, Neo, Tron, Litecoin, IOTA, Ethereum and Bitcoin Cash significantly impacts Euro. The total of 72.7 percent variation in the price of Euro is attributable to cryptocurrency (Table 5). The prices of cryptocurrency were regressed with Pound sterling. The results indicate that Dash, Ripple, Litecoin, IOTA, Neo, Tron, Monero, Bitcoin and Bitcoin Cash significantly impacts Pound sterling. The total of 64.6 percent variation in the price of Pound sterling is attributable to cryptocurrency (Table 6). Then prices of cryptocurrency were regressed with Japanese yen. The results indicate that Dash, Ripple, Litecoin, Neo, Tron, Ethereum and Bitcoin Cash significantly impacts Japanese Yen. The total of 44.8 percent variation in the price of Japanese Yen is attributable to cryptocurrency (Table 7). Then prices of crypto currency were regressed with Gold prices in USD. The results indicate that Dash, Ripple, Litecoin, IOTA, Neo, Monero, Bitcoin and Bitcoin Cash significantly impacts prices of gold. The total of 52.5 percent variation in the price of Gold is attributable to cryptocurrency (Table 8). Then prices of cryptocurrency were regressed with Silver prices in USD. The results indicate that Dash, Ripple, Litecoin, Tron, Ethereum and Bitcoin Cash significantly impact price of silver. The total of 52.5 percent variation in the price of Silver is attributable to cryptocurrency (Table 9). As rightly pointed out by Seetharaman, Saravanan, Patwa and Mehta [3] cryptocurrency has the potential to substitute the real currency but in the current set of scenario it has only been able to significantly impact the prices of real currencies of the countries in which it has been traded the most.

6. Conclusion

It is clearly evident from the results of the study that cryptocurrency trade had a significant effect on the prices and trade of the real currency in which these cryptocurrencies were traded the most. Also, it is shown that cryptocurrency trade not only has an influence on real currency traded but also on commodity trade. More than fifty percent variation in the prices of gold and silver are explained by cryptocurrency trade. Thus, we can say that although cryptocurrency trade is increasing and impacting the business of real currency still there is long way for cryptocurrency to be used in place of real currency and one main reason which attributes to this is that it is not Government regulated. Therefore, cryptocurrency trade is more of speculative trade.

7. Limitation of the study

The study is limited to only ten most traded cryptocurrencies during 14th November 2017 to 15th October 2018 according to www.investing.com. Thus, the result of the study is limited to these cryptocurrencies only and their relationship with the real currencies of only six countries in which they are mostly traded. Also, only two commodities were taken into consideration for this study. Therefore, the results of the study are not universally applicable for all types of cryptocurrencies, all real currencies and all commodities.

Table 1: Pearson's correlation of Cryptocurrency with real currencies and commodities

		Ripple	Tron	Neo	Litecoin	IOTA	Ethereum	Dash	Bitcoin	Bitcoin Cash	Monero
AUD	Pearson Correlation	.284**	-.036	.459**	.589**	.532**	.447**	.612**	.561**	.570**	.566**
CAD	Pearson Correlation	.402**	-.419**	.421**	.656**	.598**	.452**	.586**	.728**	.612**	.622**
CNY	Pearson Correlation	.294**	-.414**	.474**	.452**	.394**	.463**	.211**	.290**	.346**	.421**
EUR	Pearson Correlation	.430**	-.716**	.440**	.459**	.447**	.455**	.198**	.410**	.413**	.451**
GBP	Pearson Correlation	.296**	-.433**	.425**	.430**	.287**	.386**	.126*	.200**	.286**	.383**
JPY	Pearson Correlation	-.096	.012	.065	-.073	-.168**	-.042	-.305**	-.226**	-.207**	-.083

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Gold	Pearson Correlation	.368**	-.212**	.475**	.519**	.490**	.484**	.373**	.320**	.443**	.451**
Silver	Pearson Correlation	.222**	.266**	.399**	.433**	.391**	.428**	.485**	.355**	.426**	.397**

Table 2: Regression analysis of cryptocurrency on price of Australian Dollar

Types of Cryptocurrency	F *(sig)*	R^2	Adjusted R^2	Un standardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Litecoin	59.163	0.546	0.536	.000	.000	.469	5.003	.000
Ripple				-.032	.004	-.576	-8.756	.000
Neo				.000	.000	.610	5.724	.000
Tron				.001	.000	.211	5.472	.000
Ethereum				-3.825E-5	.000	-.394	-3.136	.002
Bitcoin				2.717E-6	.000	.327	3.122	.002
Bitcoin Cash				2.204E-5	.000	.526	6.092	.000
IOTA				-.007	.002	-.274	-2.636	.009

Table 3: Regression analysis of cryptocurrency on price of Canadian Dollar

Types of Cryptocurrency	F *(sig)*	R^2	Adjusted R^2	Un standardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Litecoin	106.766	0.618	0.612	.000	.000	.415	5.235	.000
Ripple				-.010	.002	-.222	-4.731	.000
Dash				-2.882E-5	.000	-.383	-4.133	.000
Bitcoin				7.338E-6	.000	1.109	12.043	.000
Bitcoin Cash				1.287E-5	.000	.386	4.135	.000
IOTA				-.012	.002	-.641	-6.766	.000

Table 4: Regression analysis of cryptocurrency on price of Chinese Yuan

Types of Cryptocurrency	F *(sig)*	R^2	Adjusted R^2	Un standardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Neo	61.734	.556	.547	7.572E-5	.000	.507	7.833	.000
Tron				-4.522E-5	.000	-.099	-1.970	.050
Ripple				-.004	.001	-.417	-6.495	.000
Litecoin				5.202E-5	.000	.758	8.168	.000
Dash				-2.072E-5	.000	-1.172	-8.751	.000
Bitcoin Cash				4.450E-6	.000	.567	5.077	.000
IOTA				.003	.000	.639	6.218	.000
Bitcoin				-7.856E-7	.000	-.505	-4.486	.000

Table 5: Regression analysis of cryptocurrency on price of Euro

Types of Cryptocurrency	F *(sig)*	R^2	Adjusted R^2	Un standardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Tron	153.706	.731	.727	-.001	.000	-.328	-9.195	.000
Neo				.001	.000	.504	6.223	.000
Dash				.000	.000	-1.444	-15.084	.000
IOTA				.018	.003	.456	6.639	.000
Bitcoin Cash				5.239E-5	.000	.735	8.420	.000
Litecoin				.000	.000	.451	6.355	.000
Ethereum				-5.562E-5	.000	-.336	-3.538	.000

Table 6: Regression analysis of cryptocurrency on price of Great Britain Pound

Types of Cryptocurrency	F *(sig)*	R^2	Adjusted R^2	Un standardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Neo	82.579	.654	.646	.001	.000	.583	5.586	.000
Dash				.000	.000	-1.689	-18.357	.000
Litecoin				.001	.000	1.130	11.750	.000
Bitcoin Cash				6.319E-5	.000	.934	10.190	.000
Ethereum				-9.988E-5	.000	-.636	-5.789	.000
Bitcoin				-9.359E-5	.000	-.697	-7.213	.000
IOTA				.012	.003	.323	3.552	.000
Monero				.000	.000	.578	4.019	.000
Ripple				-.019	.005	-.211	-3.621	.000

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Table 7: Regression analysis of cryptocurrency on price of Japanese Yen

Types of Cryptocurrency	F *(sig)*	R^2	Adjusted R^2	Un standardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Dash	41.771	.459	.448	-1.457E-6	.000	-2.090	-14.052	.000
Monero				1.782E-6	.000	.867	4.732	.000
Tron				7.084E-6	.000	.394	7.140	.000
Bitcoin Cash				2.483E-7	.000	.803	6.544	.000
Litecoin				1.539E-6	.000	.569	4.893	.000
Ripple				-6.820E-5	.000	-.168	-2.305	.022
Neo				4.524E-6	.000	.769	6.035	.000
Ethereum				-5.428E-7	.000	-.757	-5.512	.000

Table 8: Regression analysis of cryptocurrency on price of Gold

Types of Cryptocurrency	F *(sig)*	R^2	Adjusted R^2	Un standardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Litecoin	56.435	.534	.525	.656	.072	.988	9.048	.000
Bitcoin				-.016	.002	-1.094	-9.768	.000
IOTA				43.436	4.526	1.009	9.597	.000
Dash				-.080	.018	-.467	-4.417	.000
Bitcoin Cash				.032	.008	.421	4.066	.000
Ripple				-20.114	6.630	-.202	-3.034	.003
Neo				.413	.120	.286	3.450	.001
Monero				-.221	.084	-.439	-2.632	.009

Table 9: Regression analysis of cryptocurrency on price of Silver

Types of Cryptocurrency	F *(sig)*	R^2	Adjusted R^2	Un standardized Coefficients		Standardized Coefficients	t	Sig.
				B	Std. Error	Beta		
Dash	75.062	.532	.525	-.001	.000	-.280	-2.299	.022
Tron				.052	.004	.585	12.585	.000
Ethereum				.002	.000	.527	7.031	.000
Ripple				-.965	.131	-.485	-7.360	.000
Bitcoin Cash				.001	.000	.557	4.977	.000
Litecoin				.005	.001	.363	4.127	.000

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