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Abstract

Title:

Bitcoin and Ethereum

- Hedging Capability and Potential for Bona Fide Money -

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A cryptocurrency is a form of a digital asset which gained the public attention with the rise of Bitcoin in late 2013. Bitcoin was first mentioned in 2008 by an anonymous cryptographer or a group of cryptographers who goes by the name Satoshi Nakamoto. There are three features that most of the cryptocurrencies share (CPMI, 2015): the intrinsic worthlessness as an asset, a peer-to-peer (P2P) network using a distributed ledger, and a lack of institutional arrangement thanks to the computer protocol.

There are two perspectives to define this new financial asset. The first way is to look at it as an investment target that yields a return. The second point of view regards a cryptocurrency as a new monetary system of innovation. This innovativeness comes mostly from its use of the distributed ledger to allow for the P2P transaction without intermediaries, hence working as a currency and a payment scheme at the same time. This paper analyzes the properties of the digital money both from an investment point of view and money perspective.

To identify the position of a cryptocurrency as an investment vehicle, this paper implements an AR(1) model with some macroeconomic data as explanatory variables. The analysis aims to reveal the correlation between the cryptocurrency price and the macroeconomic variables of major economies. The variables are selected based on the previous studies regarding Gold and Bitcoin. The study of gold is useful because of the shared characteristics of gold with Bitcoin. They include SP500, STOXX50, NIKKEI225, exchange rates of USD/EUR and USD/JPY, Federal Fund Rate and Gold price in London Bullion market.

Another model implemented is the GARCH(1,1) to analyze of the historical volatility of the digital asset. This focus into the volatility is based on the previous studies about Bitcoin such as Cermak (2017) and Yermack (2013). They pointed out the big fluctuation as one of the greatest challenges for Bitcoin to work as money alongside traditional fiat currencies.

Two cryptocurrencies are the focus of the analysis in this paper. Bitcoin and Ethereum are two of the most famous digital money with the market cap of around 70%. Two currencies share essential characteristics such as the three features mentioned above but differ in the primary purpose of their protocol. While Bitcoin was initially designed as money, Ethereum is an application platform for a smart contract, thus

possessing broader development opportunities. They also differ in their pace of supply, the speed and scalability of transactions and so on.

The result of the AR(1) model revealed that there is no or little correlation of macroeconomic variables to Bitcoin and Ethereum. This indicates that they serve as investments with a certain hedging capability, defined as negative- or non-correlation with another asset or portfolio on average. Therefore it is recommended to include cryptocurrencies in the portfolio to prepare for the market risk from the investment point of view.

The GARCH(1,1) analysis, on the other hand, shows that the volatility is shrinking over time. This trend is more significant in Bitcoin than in Ethereum, which indicates that Bitcoin's high potential for a bona fide currency. However, in the absolute terms, both Bitcoin and Ethereum have huge degrees of fluctuation, compared to fiat currencies or gold. Since the volatility is a key factor to meet the criteria of money, it needs more time for Bitcoin to become a new monetary system and even more time for Ethereum.

There has been no literature that investigated the relationship between macroeconomic variables and the price of Ethereum, or its historical volatility of it to assess the hedging capability or the potential for money of Ethereum. Nor has it been the one that looked into the differences of the two biggest digital currencies to make a comparison within the cryptocurrencies. However, Ethereum has been attracting a lot of attention, and its market share has surged rapidly since the second quarter of 2017. Therefore, it is of importance to examine the properties of Ethereum. This paper can be positioned as an extension of the previous researches to satisfy the gap of knowledge regarding Ethereum and the comparison with Bitcoin.