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Efficiency, Liquidity and Volatility of Bitcoin Markets

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Extensive Summary

Bitcoin is a virtual money and a new payment system which is not regulated by a central authority. Bitcoin became popular quickly and gained the ability of affecting the real economy. Being used extensively and seen as an investment tool, Bitcoin created its own market, users and investors. However, Bitcoin is still the dark side of financial markets and investors are in desperate need of understanding the Bitcoin market. This study aims to shed light on Bitcoin market. To understand what Bitcoin is, the history of Bitcoin was summarized firstly. Then the Bitcoin system and how the protocol works was explained. The Bitcoin market, the main exchanges, the market shares of these exchanges and the volume of the markets were mentioned.

Bitcoin system was introduced to world by Nakamoto in 2008 and currently Bitcoin protocol can be controlled by all users. Since 2010 Bitcoin can be bought and sold in the exchanges. Since its introduction, the academic literature examined the Bitcoin with regard to many aspects so it is hard to summarize them all in one sentence. However, many researchers agree that Bitcoin market is still risky and the pricing is complicated. Regarding the Bitcoin market, the most important exchanges which are Okcoin, Btcchina, Huobi, Bitfinex, Lakebtc, Bitstamp, Btce, Coinbase and Anxbtc were identified as they own most of the Bitcoin market. In addition to these exchanges, it was noted that Mt.Gox had been the most important exchange till its bankruptcy in 2010. US Dollar and Chinese Yuan are the main currencies used in Bitcoin market while GBP and Euro have lower market share.

After that, several analysis were conducted to understand the Bitcoin market. Bitfinex (USD), Bitstamp (USD), Mt.Gox (USD), Btce (USD), Okcoin (CNY), Kraken (EUR), Anx (JPY), Coinfloor (GBP) were the exchanges examined in this study. Regarding the pricing of Bitcoin, the correlation analysis between BTC (USD) and main

currencies which are Euro, Pound, Japanese Yen, Chinese Yuan, Turkish Lira and Gold were conducted. The results were interesting as BTC (USD) is not correlated with any of these currencies. Based on that, we argued that Bitcoin has weak relations with other currencies and this fact suggests that Bitcoin can be an effective instrument for hedging. Since it was found that Bitcoin is rather independent from other currencies, the relation among the Bitcoin exchanges were analyzed through co-integration and causality analysis. Firstly, unit root tests at the level and first differences for Bitfinex, Bitstamp, Btce and Okcoin, were shared. The results for unit root tests provided that the variables were suitable for co-integration analysis. The co-integration analysis to detect long run relation between Bitfinex, Bitstamp, Btce and Okcoin showed that Bitfinex is co-integrated with Bitstamp and Btce; and Bitstamp is co-integrated with Btce. We concluded that, there is long term relation between Bifinex, Bitstamp and Btce while Okcoin has no long run relation with the other exchanges. The causality test for short run relation revealed that none of the exchanges examined are signaling any price changes for the other exchanges. While these results pick Okcoin as the most independent Bitcoin exchange, the fact that Okcoin was the only analyzed exchange which is not in US Dollar should be kept in mind. Based on the analysis for the liquidity, Mt.Gox was found as the most liquid exchange among the ones in US Dollar till 2013. After the bankruptcy of Mt.Gox, the liquidity of other exchanges improved. And Bitfinex became the most liquid exchange among the ones in US Dollar in 2015. Since 2014, the most liquid exchange has been Okcoin while the exchanges in GBP are the least liquid ones. To understand the volatility of Bitcoin, the standard deviations of BTC, Pound, Euro, Japanese Yen, Chinese Yuan, Turkish Lira and Gold were compared. BTC appeared as the most volatile instrument. Therefore, we argued that Bitcoin is far more risky compared to other currencies and gold. To sum up, despite its rising popularity and extensive usage, Bitcoin is not a mature financial instrument. Therefore, it is too early to categorize it as a safe harbor for investors. The pricing of Bitcoin is too complicated and the Bitcoin market is still vulnerable to many risks.