

ABSTRACT

Bitcoin's success as a cryptocurrency has driven a lot of other cryptocurrencies to emerge, which are called as altcoins. Bitcoin itself has a high price volatility, where one's price could fluctuate easily. Being the cryptocurrency pioneer, high price volatility that affects Bitcoin has a large chance to affect directly or has a contagion effect, usually called spillover, towards altcoins' price volatility. Some goes for the other way round, the constant increase of altcoins' price keeps creating opportunities for altcoins to affect Bitcoin's price.

This study's aim is to gather more about the occurrence of volatility spillover between Bitcoin and four other biggest altcoins with the highest market capitalization, starting with Ethereum, Ripple, Bitcoin Cash, and EOS, with their own volatility pattern. This study will also discover the movement of volatility between Bitcoin and the other altcoins if volatility spillover presents.

The data that are used are time series of daily closing price data for Bitcoin and the other four altcoins taken from a Cryptocurrency Market Capitalization website. Furthermore, the methods that are being used are Augmented Dickey-Fuller test, GARCH test and Granger Causality test.

The result of the analysis shows that Ethereum, Bitcoin Cash, and EOS. Are stationary during first difference by changing the closing price to return. Even so, closing price data of Ripple has been stationary in level without changing the closing price data to return, so that ripple has been excluded from analysis. Then, return data of Bitcoin with Ethereum and Bitcoin with Bitcoin Cash have experienced heteroscedasticity problem so that it can be analysed using GARCH method. Meanwhile return data of Bitcoin with EOS doesn't show heteroscedasticity; excluding it from the analysis because it cannot be analysed using GARCH.

The result from using GARCH shows that there exist volatility spillover among bitcoin and Ethereum, and Bitcoin with Bitcoin Cash. Then, Granger Causality shows that volatility spillover between Bitcoin and Ethereum is a one-way causality from Bitcoin to Ethereum. While between Bitcoin and Bitcoin Cash is a two-way causality (bilateral).

Keywords: volatility spillover, Bitcoin, altcoin, GARCH, Granger Causality