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Random Walk in Cryptocurrency Prices

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Abstract

Cryptocurrency refers to a digital currency which manages, regulates and controls its creation through a technology called block chain with the help of cryptographic principles This study looked into the random walk in the prices of four popular cryptocurrencies viz. Bitcoin (BTC), Ethereum (ETH), Ripple (XRP) and Bitcoin Cash (BCH). The daily closing prices (in USD) of the cryptocurrencies for the period from 1st August 2017 to 29 February 2020 (943 observations) were chosen for examination. We applied four tests such as Variance Ratio Test, BDS Test, Runs Test and Breusch–Godfrey LM Test for checking the random walk in their daily returns by dividing the whole sample into three subsamples. It is found that BTC returns are random walk during the whole sample period and also in the three subsample periods. However, none of the altcoins is a random walk during the whole sample period. Thus, the altcoins are still toiling for efficiency in their prices.

JEL Code : G10, G14
Keywords : Random walk, Bitcoin, Ethereum, Ripple, Bitcoin Cash, Cryptocurrency, Price efficiency, Informational Efficiency

I. Introduction

THE JOURNEY OF cryptocurrencies started from the beginning of the 21st century. Cryptocurrency refers to a digital currency which manages, regulates and controls its creation through a technology called block chain with the help of cryptographic principles (Agarwal, Agarwal, Agarwal and Agarwal, 2016, 2018, 2020); Bouri, Gil-Alana, Gupta and Rouband, 2018; Nakamoto, 2008; Rotman, 2014; Wei, 2018). Block chain follows a distributed ledger technology where the involvement of a central controlling authority in the system is eliminated (Bouri, Gil-Alana, Gupta and Rouband, 2018; Gandal, Hamrick, Moore and Oberman, 2018). The techniques of

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