

## Cryptocurrencies and Market Efficiency

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*The exponential growth and volatility of cryptocurrencies have led to a global interest in crypto assets and their distribution as digital wealth. Currently, cryptocurrencies and tokenised gold are the two popular digital wealth. While tokenised gold has the backing of un-mined physical gold, crypto has the support of an ideology-driven trust with the patronage of a mining process using supercomputing power that rewards coins. Thus, the acceptance of cryptocurrency as a reliable digital wealth depends to a large extent on its price consistency and the related independence. Many researchers tested the price efficiency of Bitcoin for different time periods up to 2017. In most cases, inefficiencies of the coins were inferred by them. Furthermore, many studies focused on the long-run and short-run volatility dynamics of Bitcoins leaving the altcoins almost unexamined. Therefore, a fresh look at the price efficiency and the inter-relationships of Bitcoin and the three altcoins, which altogether have a market capitalization of nearly 80 per cent, is attempted here. In all, six rigorous tests for independence or random walk are applied on the daily returns of the coins. Bitcoin returns showed a random walk in four out of the six tests, Ethereum and Ripple in three tests, and Bitcoin Cash only in two tests. The strong symptoms of weak form of efficiency found at least in the case of Bitcoin can be considered as its acceptance as a digital wealth. While the daily returns of all the four cryptos have a long-run equilibrium, the daily prices of Bitcoin, Ethereum and Bitcoin Cash excluding Ripple showed cointegration among themselves. Nearly 88 per cent of the short-run fluctuations in Bitcoin returns are adjusted on a daily basis. Bitcoin Granger Cause Ethereum and Ripple, a bidirectional Granger Causality is found between Ripple and Ethereum. Thus, the acceptance of cryptos, especially Bitcoin, as a digital wealth option can increase in the future.*

### I Introduction

One of the Fintech innovations that received vital attention during the last decade was cryptocurrencies. They came into existence in 2009 with the introduction of Bitcoin by Satoshi Nakamoto. Since its inception, it is subjected to several debates and criticisms on many grounds, especially regarding its characteristic related dimensions (Corbeta, Lucey, Urquhart and Yarovaya 2019, Gandal, Hamrick, Moore and Oberman 2018, Nakamoto 2008, Shen, Urquhart and Wang 2019). The questions, whether cryptocurrencies are full-fledged currencies like fiat currencies

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