

**INFORMATION ARRIVAL AND EFFICIENCY IN BITCOIN MARKET**

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**ABSTRACT**

**Purpose-** Cryptocurrencies gain ground in financial markets. Old theories need to be revisited on these new instruments. How fast is information spread out among investors is of importance since it is related to market efficiency. The purpose of this study is to determine the market efficiency in Bitcoin market through a consideration of two competing theories, i.e., Sequential Information Arrival Hypothesis (SIAH) and Mixture of Distibution Hypothesis (MDH).

**Methodology-** Based on 1-minute, 5-minute and 1-hour futures price and volume data for various contracts from Chicago Mercantile Exchange (CME) and applying an EGARCH model, we examine the intraday lead-lag relationship between volume and volatility. We also run Granger causality tests to assess the long-run relationship between volume and volatility.

**Findings-** At hourly frequency, we find a significantly negative relationship between returns and volatility. However, the significance and the direction of the relationship changes for other frequencies. Volatility is highy asymmetric across good and bad news. Volume and volatility mutually Granger cause each other.

**Conclusion-** The evidence mostly supports the Sequential Information Arrival Hypothesis (SIAH) and indicates that Bitcoin market is not efficient. This has implications for investors.

**Keywords:** Bitcoin, intraday, volume, volatility, EGARCH

**JEL Codes:** G12, G14, C22

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