INFORMATION ARRIVAL AND EFFICIENCY IN BITCOIN MARKET

Unsal Kiran[1], Cumhur Ekinci[2]
[1]Istanbul Technical University, Faculty of Management, Istanbul, Turkey.
 kiranu20@itu.edu.tr , ORCID: 0000-0003-1813-8748
[2]Istanbul Technical University, Faculty of Management, Istanbul, Turkey.
 ekincicu@itu.edu.tr, ORCID: 0000-0002-0475-2272

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

REFERENCES

Balcilar, M., Bouri, E., Gupta, R., Roubaud, D. (2017). Can volume predict Bitcoin returns and volatility? A quantiles-based approach, *Economic* Modelling, 64, 74–81.

Bariviera, A.F. (2017). The inefficiency of Bitcoin revisited: A dynamic approach, *Economics Letters, 161*, 1–4.

Clark, P. (1973). A subordinated stochastic process model with finite variance for speculative prices. *Econometrica, 41*, 135–155.

Copeland, T., 1976. A model of asset trading under the assumption of sequential information arrival. *Journal of Finance, 31*, 1149–116

Fama, E.F. (1970). Efficient capital markets: A review of theory and empirical work, *The Journal of Finance, 25*, 383–417.

Fama, E.F., (1997). Market Efficiency, Long-Term Returns, and Behavioral Finance, *Journal of Financial Economics, 49*, 283–306.

Grossman, S.J., Stiglitz, J.E. (1980). On the impossibility of informationally efficient markets, *The American Economic Review, 70*, 393–408.

Jennings, R., Starks, L., Fellingham, J. (1981). An equilibrium model of asset trading with sequential information arrival. *Journal of Finance, 36*, 143–161.

Kutan, A. M., Aksoy, T. (2003). Public information arrival and the Fisher effect in emerging market: Evidence from stock and bond market in Turkey. *Journal of Financial Services Research, 23*(3), 225–239.

Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system, Working Paper.

Smirlock, M., Starks, L. (1985). A further examination of stock price changes and transaction volume. *Journal of Financial Research, 8*, 217–225

Urquhart, A. (2016). The Inefficiency of Bitcoin, *Economics Letters, 148*, 80–82.