The effect of symmetric and asymmetric information on volatility structure of crypto-currency markets A case study of bitcoin currency

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Abstract

Purpose This paper aims to examine whether the crypto-currencies' market returns are symmetric or asymmetric informative, through analysing the daily logarithmic returns of bitcoin currency over the period of 2011-2017. Design/methodology/approach In doing so, the symmetric informative analysis is estimated by applying the generalised auto-regressive conditional heteroscedasticity (GARCH) (1,1) model, whereas asymmetric informative or leverage effects analysis is estimated by exponential GARCH (1,1), asymmetric power ARCH (1,1) and threshold GARCH (1,1) models. In addition, the generalized autoregressive conditional heteroskedasticity in mean (GARCH-M (1,1)) was applied to examine whether the risk-return trade-off phenomenon was persistent in crypto-currencies market. Findings The main findings indicate that bitcoin market return or volatility is symmetric informative and has a long memory to persist in the future. Furthermore, the sympatric volatility is found to be more sensitive to its past values (lagged) than to the new shock of the market values. However, asymmetric informative response of volatility to the negative and the positive shocks do not exist in the bitcoin market or, in other words, there is no leverage effect. This suggests that the bitcoin market is in harmony with the efficient market hypothesis (EMH) with respect to the asymmetric information and violated the EMH with regard to the symmetric information. Hence, the market price or return of bitcoin currency could not be predicted by simply exercising such past market information in the short-run investment. In addition, the estimated coefficient of conditional variance or risk premium (lambda) in the mean equation of CHARCH-M (1,1) model is positive however, statistically insignificant. This indicates the absence of risk-return trade-off, in which case the higher market risk will not essentially lead to higher market returns. This paper has proposed that an investment in the crypto-currency market is more appropriate for risk-averse investors than risk takers. Originality/value The findings of the study will provide investors with necessary information about the bitcoin market price efficiency, hedging effectiveness and risk management.

Keywords

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KeyWords Plus: MAXIMUM LIKELIHOOD ESTIMATOR; TIME-SERIES; MODEL; NORMALITY; RATES

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