Risk Premiums in the Bitcoin Market

Maria Grith*[1], Caio Almedia[2], Ratmir Miftachov[3], and Zijin Wang[4]

[1]Erasmus University Rotterdam – Netherlands
[2]Princeton University – United States
[3]Humboldt University of Berlin – Germany
[4]Southwestern University of Finance and Economics – China

Abstract

We adopt options and realized returns to analyze risk premiums in the Bitcoin market. By decomposing the index risk premium into different parts of the return space, we find that negative returns explain one-third of the total Bitcoin equity premium (EP). This is not only in contrast to results for the S&P 500 market, for which moderately negative returns explain 70% of the EP (Beason and Schreindorfer, 2022), but also challenges conventional macro-finance models based on habit, disasters and long-run risk explanations. To further verify if risk premium is time-varying and dependent on market conditions, we identify clusters of data based on the sequence of risk-neutral densities estimated from option prices. The risk-neutral variance arises as the main state variable characterizing these clusters. On low-volatility market states, investors are mainly concerned with variance risk, out-of-the-money options (both puts and calls) are used for insurance purposes and the pricing kernel is steep and U-shaped. On high volatility states, investors are primarily concerned with downside risk.

Keywords: Risk Premium, Equity Premium, Variance Risk Premium, Pricing Kernel, Nonparametric Statistics, Cryptocurrency, Bitcoin, Option Returns, Clustering

*Speaker