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Abstract

We provide an extreme value analysis of the returns of Bitcoin. A particular focus is on the tail risk characteristics and we will provide an in-depth univariate extreme value analysis. Those properties will be compared to the traditional exchange rates of the G10 currencies versus the US dollar. For investors, especially institutional ones, an understanding of the risk characteristics is of utmost importance. So for Bitcoin to become a mainstream investable asset class, studying these properties is necessary. Our findings show that the bitcoin return distribution not only exhibits higher volatility than traditional G10 currencies, but also stronger non-normal characteristics and heavier tails. This has implications for risk management, financial engineering (such as bitcoin derivatives) — both from an investor's as well as from a regulator's point of view. To our knowledge, this is the first detailed study looking at the extreme value behavior of the cryptocurrency Bitcoin.

Keywords: Bitcoin ▪ digital currencies ▪ extreme value theory ▪ tail events ▪ risk management

JEL: C00, C1, E4, E5, G1, G2

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