

加密貨幣崩盤之研究

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比特幣市場為甚麼崩盤是一個廣受討論的問題。本研究試圖回答這些問題。本研究首先依據價格水位偏離程度的大小(CMAX)定義出比特幣市場崩盤，並觀察崩盤事件之跌幅、期間與速度等三個構面。研究期間為 2013/04/28 ~ 2022/07/31。3380 天中，共計有 43 起大崩盤事件與 146 起小崩盤事件，持續期間最長分別為 56 天與 29 天，最大跌幅分別為 51.28% 和 50.39%，最大下跌速度則分別是每日 8.72% 和 12.88%。

本研究透過主成分分析萃取出投資人行為面、市場微結構面、籌碼面、網絡面及總體經濟面等五個構面，剖析造成比特幣崩盤的關鍵因素為何，以及影響崩盤的因素。值得一提的是，投資者結構因素包括捕捉所有權集中和大型錢包地址交易方向信息的錢包信息，這是加密貨幣文獻中的首次嘗試。研究發現投資人行為面是預測比特幣崩盤的最重要因素。投資者越恐慌或關注，其後崩盤的可能性就越大。高波動性導致崩盤的可能性更高。當大戶錢包餘額的比例增加時，其後崩盤的可能性也更高。最後，對網絡參數的分析顯示，當市場報酬率聯動更集中(低模組化)時，可能會出現更大的崩盤。

關鍵詞：比特幣市場崩盤、行為面與投資人結構、比特幣錢包、市場結構、模組化。

「政策與管理意涵」

本研究以區塊鏈上不可竄改紀錄(地址交易資訊)，區分比特幣市場大小戶。藉由所有權集中和大型錢包地址交易方向信息來捕捉市場結構與大戶交易行為，發現大戶錢包餘額的比例增加，其後崩盤的可能性更高。本研究幫助了解比特幣市場結構，為日後研究加密貨幣市場提供了新的道路，也對監管機構提供市場波動參考。

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An Analysis of Crash Risks in Cryptocurrency Markets

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Why bitcoin market crashes is a much debated question. This study attempts to answer the questions. This study first defines bitcoin market crashes using the CMAX method. Each crash is then measured by three dimensions: magnitude, duration and speed. During 2013 and 2022, there are 43 larger crashes and 146 smaller crashes. Longest durations are 56 days and 29 days, respectively, maximum drawdowns are about 50% and maximum speed 8.7% and 12.88% per day.

Using the principle component approach, we perform detailed analysis of crashes from five factors: behavioral, market microstructure, investor structure, network and macroeconomic factors. It is worth mentioning that the investor structure factor consists of wallet information that captures the ownership concentration and large wallet address trade direction information, which is the first such attempt in the cryptocurrency literature. We find that the investor behavioral factor is the most significant factor in predicting bitcoin crashes. The more panic or concerned is the investor, the more likely crashes followed. High volatility leads to higher possibility of crashes. When the proportion of large wallet balance increases, there is higher possibility of crashes. Finally, the analysis of network parameter shows when market movement is more concentrated(low modularity), larger crashes may followed.

Key Words: bitcoin market crash, behavioral and investor structure, bitcoin wallet, market microstructure, modularity.