Question 4

Here we apply an event-driven study. The market event is defined as the price of both BTC and ETH dropped 10% in the same day, and we want to analyze how the cryptocurrency reacts to such market event. The Alphalens package is used to do event-driven study.

The very first thing is to allocates the event days. I calculated the daily return of BTC and ETH each day, then find the same day they dropped over 10% as our event day. The graph below shows the histogram of how many events happened in a time period.

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Then, I calculate the returns of 1, 2, 3, 4, 5, 7, 9, 10 and 13 days after the event day. The graph below shows the distribution of cumulative return of each time period. It shows that the first day after event day has an average of 8% return, which is significantly larger than other days. It reveals a short-period abnormal cumulative return 1 day after event day. It tells us that if we buy cryptocurrency assets immediately after event happened, and hold for one days, we are expected to get an average return of 8%. The violin graph shows the distribution of cumulative return for each time interval. The 1 day returns mostly located above 0, which shows an abnormal return. Other returns distribution are not significantly deviate from 0.

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Next, we will exam how the return varies after normal day and event day. The blue line shows how the cumulative return changes before and after event day. The green line is the cumulative returns before and after non-event day. The red line is the cumulative returns before and after a normal day. The graph shows that there is a significant increase in cumulative return after event day, which normal days have not such trend.

图片包含 地图, 滑雪, 游戏机, 男人

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I also exam the variance of cumulative return before and after key event day. The graph shows that there is a significant increase at 1 day after event day, and 1 day after event day have the minimum variance, with variance increase as time goes by.

图片包含 物体, 游戏机

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Question 5

Strategy: Buying cryptocurrency assets right after event happened, hold for one day and then sold.

Market event: Negative returns for at least 5 trading days for both ETH and BTC. This is a market event because bot ETH and BTC are cryptocurrency with highest market value. Their drop down at the same time shows that maybe the entire cryptocurrency is experiencing a decrease. Hence our event-drive strategy may not work at such situation.

It is possible to make money with my strategy. My analysis above shows that is a significant abnormal return of average 8% for 1 day after event day. I would allocate the same amount of BTC and ETH, hold one day and sell. It is not a risky strategy because we only buy one share of BTC and ETH, holding for one day and sell no matter what. We are expected to make an 8% return for our positions. The very first graph shows that there are 80 times of trading opportunity in a year. To reduce the risk, one possible way is to set a loss limit line. If any positions drop below such loss limit line, we would sell it no matter what. It helps to reduce the risk of some larger draw back.

I create a backtest environment and evaluate my strategy. Below graph shows how the portfolio value change over the time.

地图的截图

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