Linear results:

These are the results of our linear regression model. We use daily change in each market as our dependent variable and these characteristics of earthquakes with the magnitude of 6 and above happening in the period between two consecutive market closes:

1. Number of earthquakes
2. Maximum magnitude of earthquakes
3. If the earthquake caused a Tsunami or not
4. Minimum distance of the earthquake from the town the market is located in.

NSEI, BSESN, and N225 are the only ones that show results. NSEI and BSESN are affected by a tiny amount by the maximum magnitude. N225 is affected by both number of earthquakes and the maximum.

I ran the model with maximum significance too as significance tries to include factors other than magnitude, including some sort of costs. N225 was the only market that showed some results. Number of earthquakes has a significant negative relationship with the change in N225 index, and maximum magnitude of the earthquakes has a tiny positive effect.

I also ran the model, with corrections for missing values on depth and distance, that will be explained in code, but it didn’t change the results in any meaningful way.

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Multinomial Logistic results:

We measure the difference in change of a market compared to the average of all others, and then assign 0, 1, 2, and 3 based on the difference of these two numbers. If the change in one market is bigger than average minus three times the standard deviation of change in other markets, we assign 3. Same goes for 2, 1, and the normal range.

In this way we try to isolate the markets from other factors, as has been done in scholarly research. We check only for number of earthquakes, maximum significance, and the reverse of the closest distance (it already makes for a massive model). We have significant results for 7 markets. Here I present only the coefficients above 0.1:

In IXIC:

The number of earthquakes has a positive relationship with the range change minus 2 standard deviations, meaning more earthquakes, raises the odds of a big negative change in IXIC. There is no days in which effect 3 is assigned to IXIC.

In BESEN:

The number of earthquakes has a negative relationship with effect 1, and positive with effect 2. Distance has the same relationship. Meaning, the closer the distance, and the higher the number of earthquakes, the odds of effect 1 compared to normal situations, goes down but odds of effect 2 go up.

In N225:

The higher the number of earthquakes, the odds of effect 2 go higher.

000001.SS:

Only one that had all three effects significant. With higher maximum significance, odds of effect 1 go down, effect 2 and 3 go up, with effect 2 having the highest odds (though all are small increments)

The closer the distance, the odds of effect 1 goes up, and interestingly, the odds of effect 3 go down too. I cannot explain that.

N100:

The higher the number of earthquakes, the odds of effect 1 and 2 are higher than normal situation.

Same goes for maximum significance.

But interestingly the closer the distance gets, the odds of effect 1 and 2 are lower.

DIJ and GSPC:

The higher the number of earthquakes, the lower are the odds of effect 1 happening

The higher the maximum significance, the higher are the odds of effect 1 happening

And again, interestingly, closer distances lower the odds of effect 1.