

Network of Trust in OTC Bitcoin

Gwendolyn Thompson



Introduction

- Are there “hubs” of trust in the network?
- How does trust evolve over time in a market like OTC bitcoin?
 - Are there patterns/cycles in the building or erosion of trust?
- Are there anomalies or unusual patterns in the trust rating that might indicate fraudulent behavior or coordinated trust manipulation?

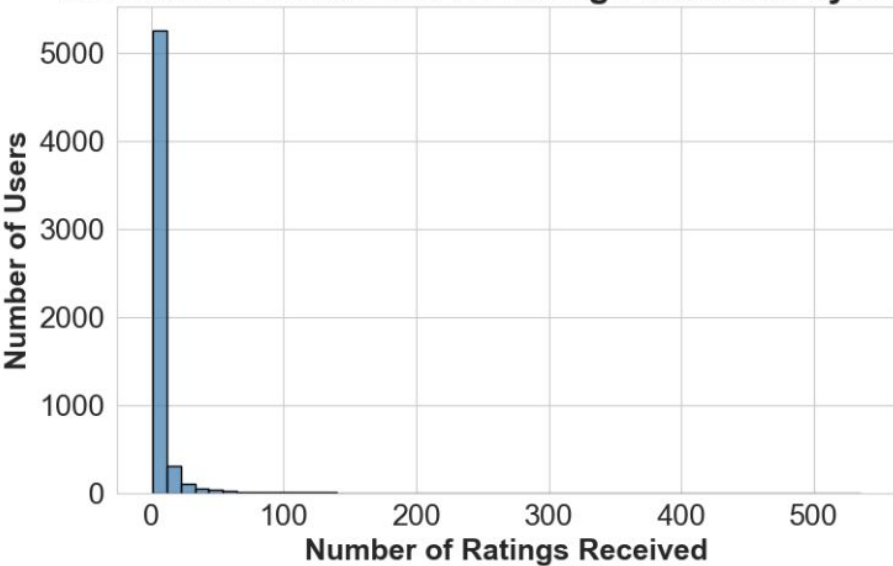
The Data

Network of trust of people who trade Bitcoin on Bitcoin Alpha

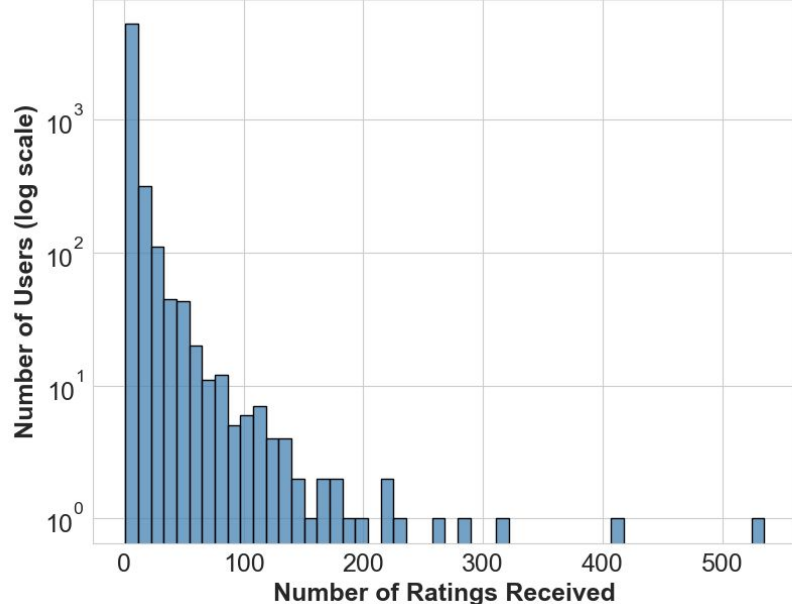
	source	target	rating	time
0	6	2	4	2010-11-08 18:45:11.728359936
1	6	5	2	2010-11-08 18:45:41.533780224
2	1	15	1	2010-11-08 19:05:40.390490112
3	4	3	7	2010-11-08 19:41:17.369750016
4	13	16	8	2010-11-08 22:10:54.447459840

The graph displays a dense network of 35 nodes, each represented by a blue circle with a white number. The nodes are interconnected by a multitude of thin black lines (edges), forming a complex web. The layout is roughly circular, with nodes distributed across the frame. The central area is particularly dense with connections, while the outer nodes have fewer edges. The overall structure suggests a highly interconnected system, possibly representing a social network, a biological pathway, or a complex organizational structure.

Distribution of Number of Ratings Received by Users

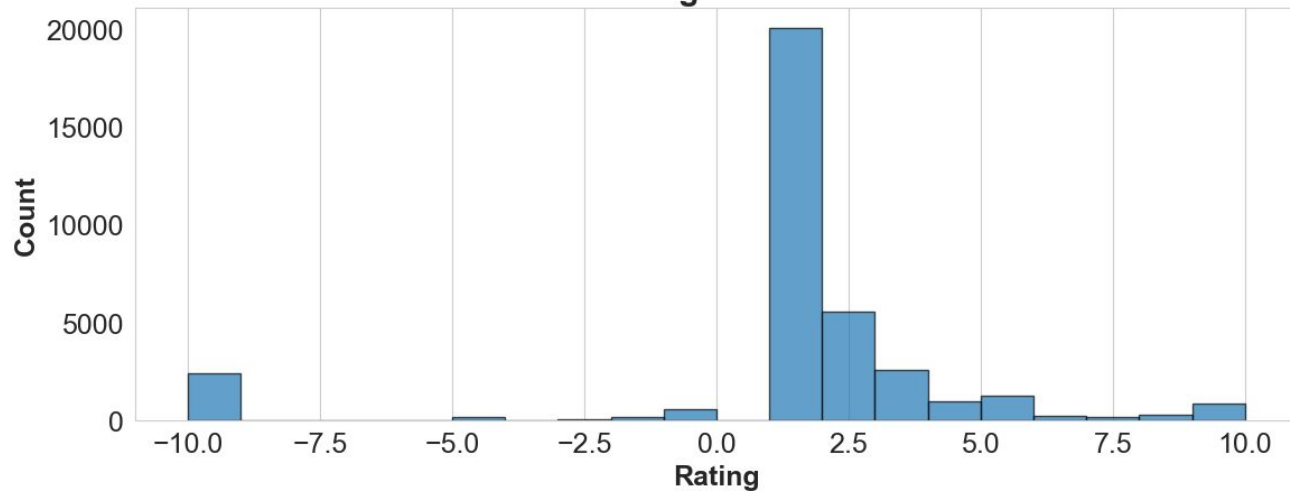


Log-Scale Distribution of Number of Ratings Received by Users

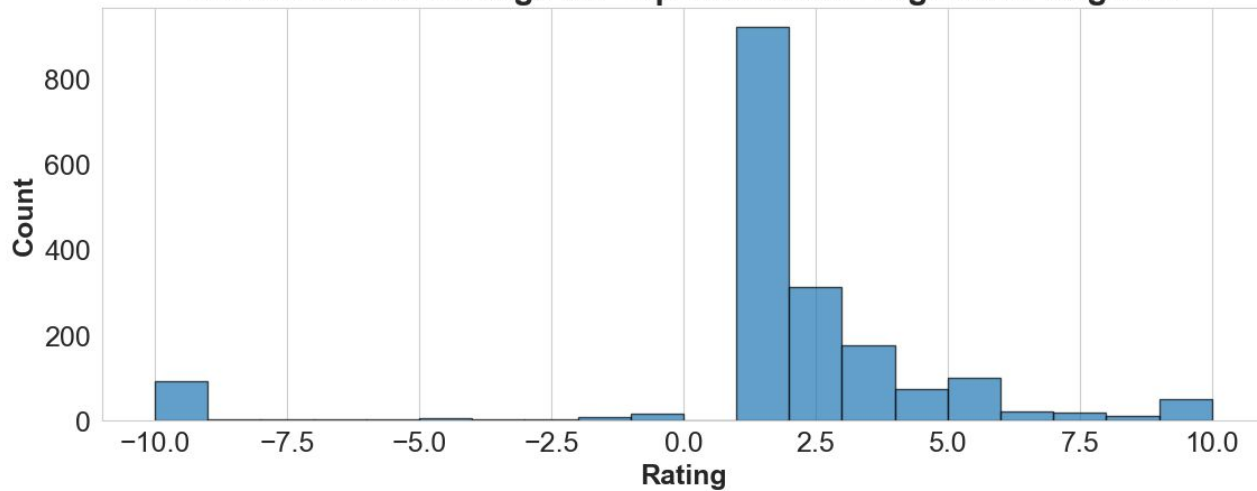


Very skewed number of ratings

Distribution of Ratings for the Entire Network

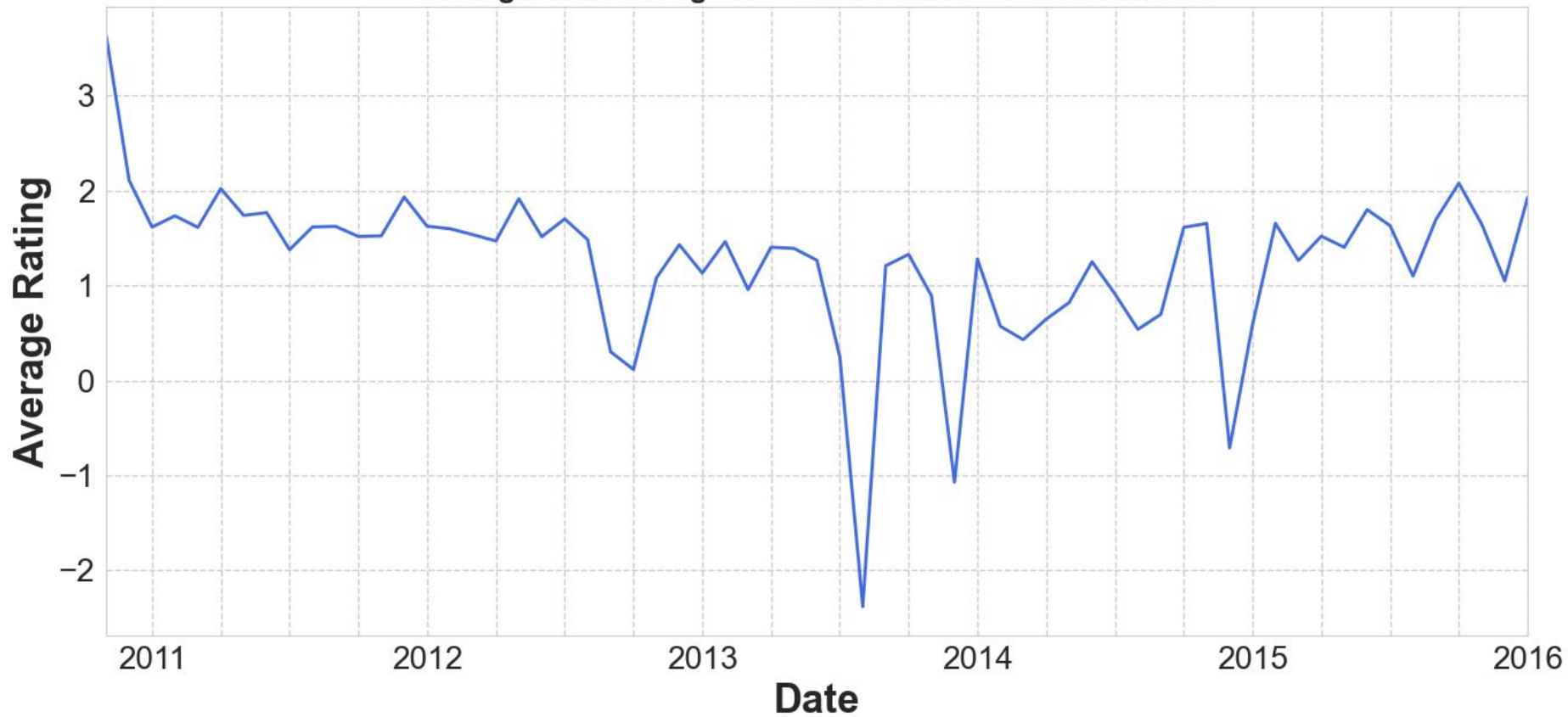


Distribution of Ratings for Top Nodes with Highest In-degrees

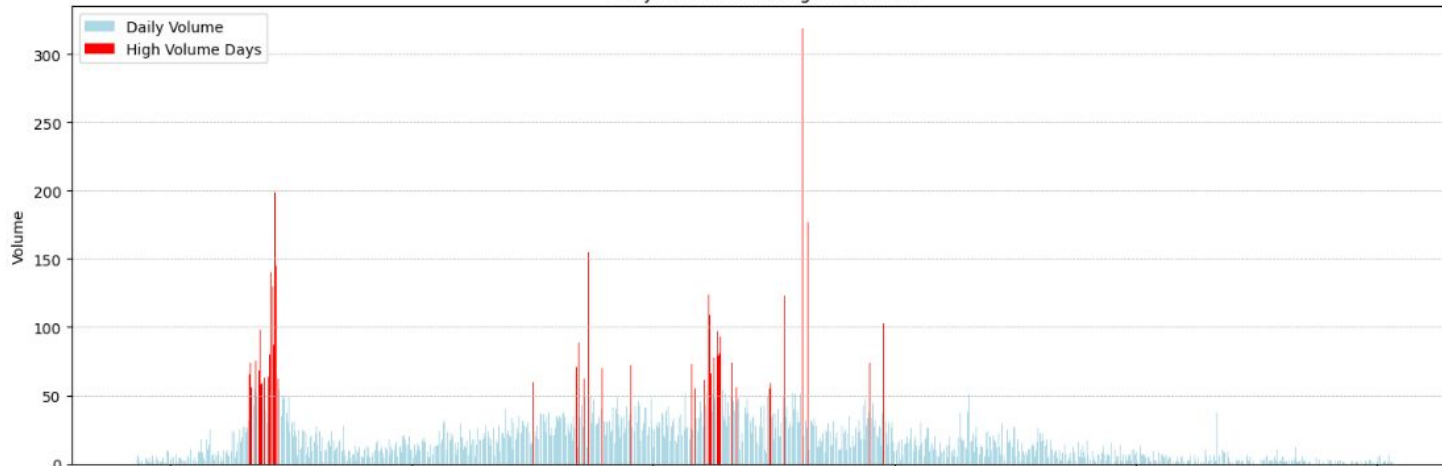


Identical
distributions!

Average Trust Rating Over Time in the Bitcoin OTC Market

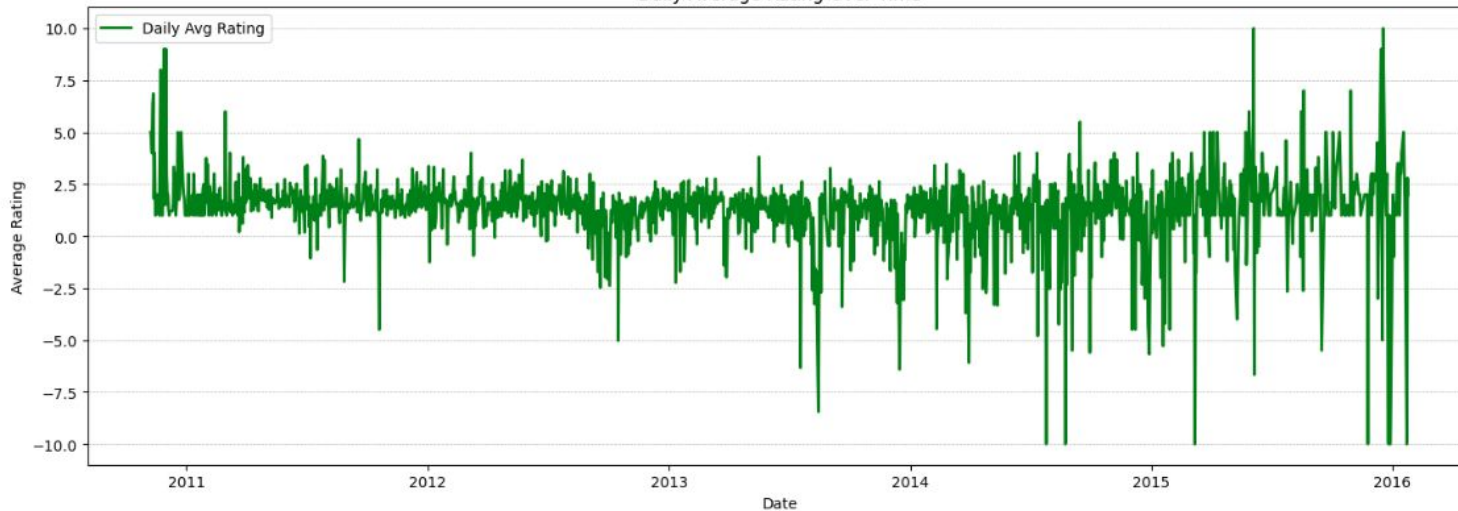


Daily Volume of Ratings Over Time



Red bars could be days to look at more.

Daily Average Rating Over Time



No noticeable patterns with the average rating

Takeaways

- Hubs exist
 - But don't seem to affect anything
 - May just be more active in the market
- Trust overall has dramatic falls but so far has been steady
- Impossible to detect fraud from this data
 - More data?
 - Getting data where fraud was confirmed