

Bitcoin Market Drivers: A Predictive Analysis

CIS 519

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13 October 2017

Background

More and more often, Bitcoin is being globally recognized as a key player in financial markets. As of today, its current value tops the charts at just over a staggering \$5,600. Despite its obvious importance, the true interactions between Bitcoin and financial markets are not completely understood. Many current Bitcoin analyses are limited in scope and financial drivers have not yet been fully identified.

A thorough analysis of Bitcoin drivers is vital to its future performance in our global economy. Such an endeavor could open up future analytics and encourage others to explore the vast and fascinating world of cryptocurrencies and may be a topic of great interest to hedge funds, financial analysts, and investors.

Objectives

1. Identify key drivers of Bitcoin in global financial markets.
2. Model fluctuations in Bitcoin valuations and predict future pricing.

Methods

We will first employ supervised learning algorithms with training data whose input attributes are what we believe may serve as key financial drivers and market activities and the result will be -1 or 1 if these data resulted in a decrease or increase in Bitcoin's valuation, respectively.

We will then fine-tune our datasets and prune the training data appropriately in preparation for the second part. Here, we will utilize the narrowed-down set of attributes in an attempt to predict real-valued Bitcoin prices. This process can make use of regression techniques, but we anticipate making use of additional techniques as they are made known to us over the remainder of our time in this course.

Data

This project was inspired by a dataset on historical bitcoin prices.¹ The dataset includes prices gathered from various exchanges at the minute-level, ranging from 2012 to 2017. Bitcoin pricing is the focal point of this project, but a number of other financial datasets will be vital to the model as a whole. We anticipate making use of the following:

- S&P 500 Index²: Daily closing prices
- VIX (CBOE Volatility Index)²: Daily closing prices
- FX (Forex) Top Currency Trading Cypots³: China (CNY), Japan (JYP), Euro, and British Pound (benchmarked against USD)
- Interest Rates³: Federal rate, treasury short- and long-term, BBB corporate bond
- Treasury Prices³

¹Historical Bitcoin Data, <https://www.kaggle.com/mczielinski/bitcoin-historical-data/data>

²Sourced from Bloomberg Desktop API

³Provided by Wharton Research Data Services, <https://wrds-web.wharton.upenn.edu/wrds/>