

# Exploratory Research - Investing in Cryptocurrencies

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## **Target Audience**

Individuals interested in introduction to investing in cryptocurrencies

# Questions

## **Seasonality**

Is there noticeable seasonality in crypto markets, where certain months show consistently higher returns?

## **Correlation**

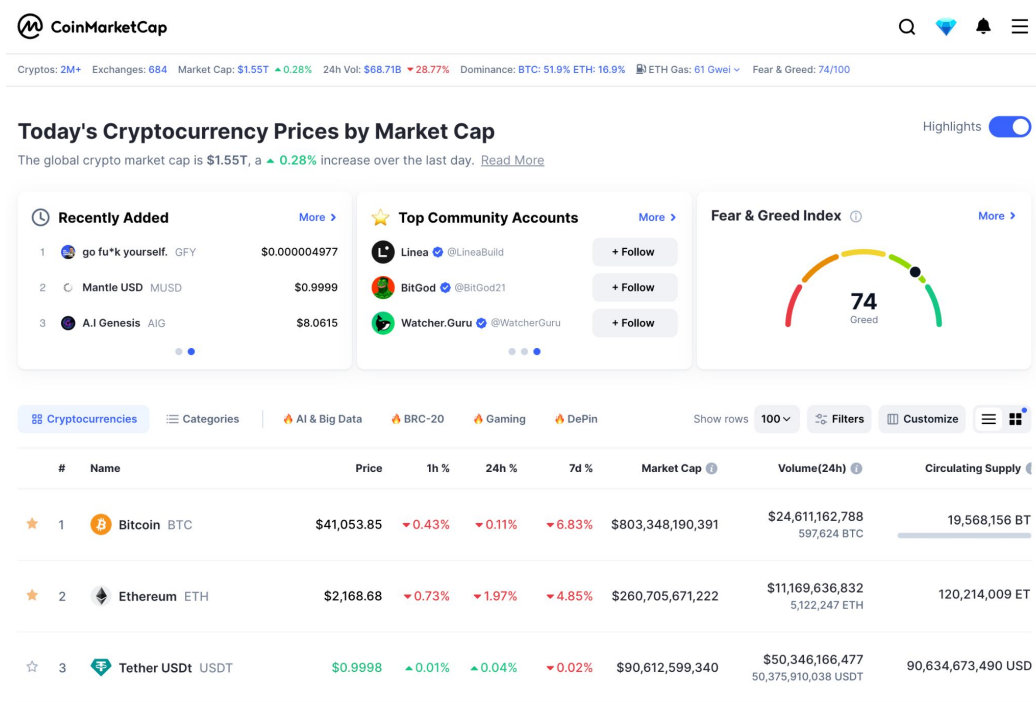
Is there correlation between Bitcoin, Ethereum, and Dogecoin pricing in the market?

## **Investment Horizon**

Which investment horizon ( long term, mid term, short term ) tends to be more predictable and profitable in crypto investing?

Note: The topic is not on day-trading. That is an interesting topic for potential future research due to its complexity.

# Crypto 101



Learning: Cryptocurrency is an emerging market with \$1.55 Trillions market capitalization.

# 1. Data Exploration & Wrangling

## Data Source

- Crypto prices ( Yahoo )
  - BTC
  - ETH
  - DOGE
- Tech Stock Prices ( Nasdaq )
  - Amazon
  - Apple
  - Tesla

## Data Quality Checks

To ensure a solid foundation for our analysis, we performed several critical checks:

- **Column Consistency**
- **Data Scope and Availability**
- **Chronological Sequence**

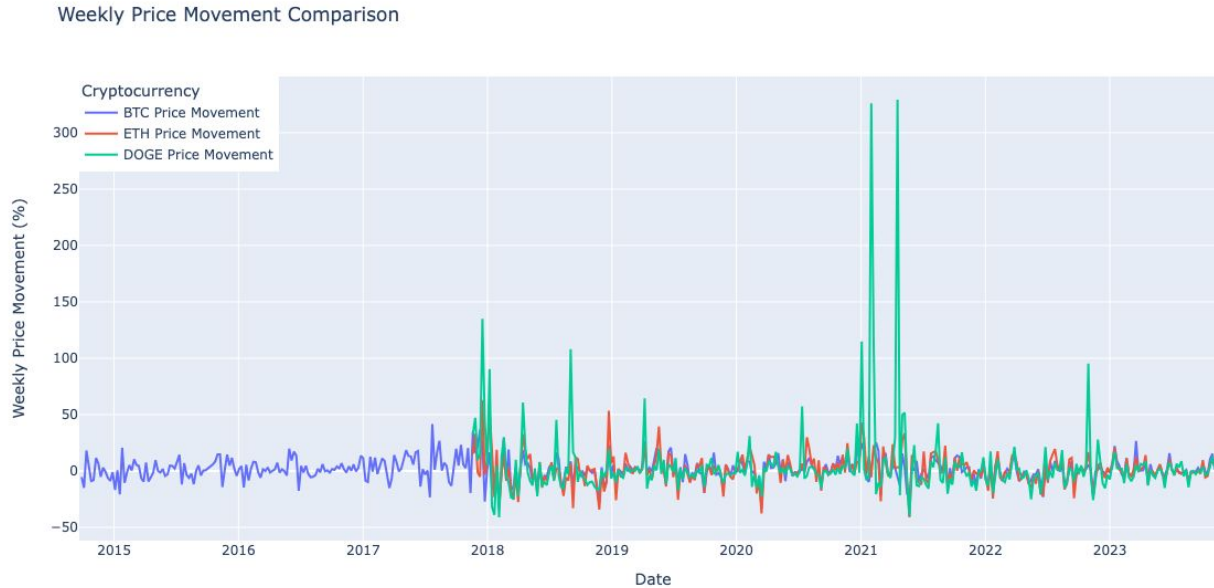
## Data Standardization

We standardized data format between two different sources:

- **Reordering Time Series**
- **Standardization Functions**

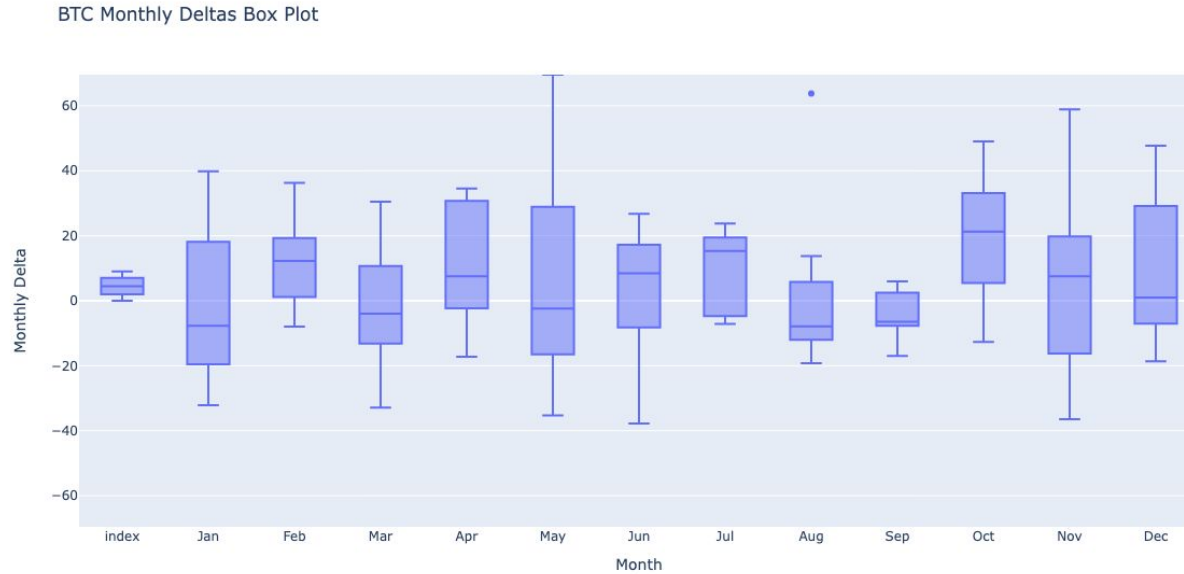
Learning: Data standardization was necessary to reproduce same analysis to different set of data.

## 2. Volatility Analysis



Learning: Crypto is a highly-volatile market that is challenging to predict price movement in short term.

## 2. Seasonality Analysis



Learning: There is some patterns in monthly seasonality, but no reliable due to limited # of data points.

## 2. Correlation Analysis



Learning: 0.77 Correlation between BTC and ETH. Lower positive correlation for DOGE.

### 3. Potential Returns - 5 to 10 years horizon



Learning: The earlier the investment, the higher the return in parallel to tech stock IPOs.



### 3. Potential Returns - 1 to 5 years horizon



Learning: There is still healthy return potential of 10x as early 5+ years after initial launch.

### 3. Potential Returns - Less than 1 year horizon



Learning: For short term investment of less than 1 year, there is still high potential returns of - 0.4x to 2.5X with high volatility, if investors can time the local tops and bottoms on a monthly basis.

### 3. Potential Return - Dollar Cost Averaging



Learning: Dollar cost averaging ( investing a dollar each day ) yield 500% to 3000% returns and produces more predictable return on investment, without the need to time the market.

# Key Learning

- **Seasonality in Cryptocurrencies:** Bitcoin, Ethereum, and Dogecoin exhibit seasonal patterns, with certain months consistently showing higher returns, though this varies across different cryptocurrencies.
- **Correlation Among Major Cryptos:** Strong positive correlation exists between Bitcoin and Ethereum, with moderate correlations between Bitcoin-Dogecoin and Ethereum-Dogecoin, indicating both shared and independent price influences.
- **Investment Horizons:** Long-term investments (5-10 years) offer the highest returns, especially for early Bitcoin adopters. Mid-term investments (1-5 years) show good potential, particularly for newer cryptos like Dogecoin, while short-term investments are highly volatile but potentially rewarding.
- **Dollar-Cost Averaging (DCA) Strategy:** Consistent, long-term DCA investment in cryptocurrencies yields high returns, effectively reducing volatility impact and eliminating the need for precise market timing.
- **Crypto vs. Traditional Investments:** Cryptocurrencies generally offer higher potential returns compared to traditional investments like tech stocks, albeit with greater risk and volatility. Early crypto investments lead to significant gains, but as the market matures, this growth potential tends to decrease.

# Future Potential Research

## **Evaluation and Participation of 'Pump and Dump' Schemes:**

This research area would combine psychological analysis with advanced machine learning techniques to understand and predict 'pump and dump' events. By examining the tactics of major players, spikes in trading volumes, and social media activity, it aims to identify early indicators of market manipulation. The development of predictive models would then assist in forecasting these events, enabling investors to make more informed decisions regarding market entry and exit points based on the identified patterns and movements.

# References

## Cryptocurrency historical data

- <https://finance.yahoo.com/quote/BTC-USD/history?p=BTC-USD>
- <https://finance.yahoo.com/quote/ETH-USD/history?p=ETH-USD>
- <https://finance.yahoo.com/quote/DOGE-USD/history?p=DOGE-USD>

## Tech stock historical data

- <https://www.nasdaq.com/market-activity/stocks/amzn/historical>
- <https://www.nasdaq.com/market-activity/stocks/tsla/historical>
- <https://www.nasdaq.com/market-activity/stocks/aapl/historical>

## Cryptocurrency market context

- <https://coinmarketcap.com/>
- <https://www.swanbitcoin.com/bitcoin-halving-dates/>