**Bitcoin stock-to-flow model (Why is it a bad model?)**

**Introduction**

Satoshi Nakamoto published the bitcoin white paper 31/Oct 2008 [1], created the bitcoin genesis block 03/Jan 2009, and released the bitcoin code 08/Jan 2009. So begins a journey that leads to a $70bn bitcoin (BTC) market today.

Bitcoin is the first scarce digital object the world has ever seen. It is scarce like silver & gold, and can be sent over the internet, radio, satellite etc.

**Model**

Bitcoin Stock-to-Flow model was published March 2019

The original Bitcoin Stock-to-Flow model is a formula based on monthly Stock-to-Flow and price data. Since the data points are indexed in time order, it is a time series model. This model has activated quantitative analysts around the world. Many have verified the non-spurious relationship between Stock-to-Flow and Bitcoin price.

The Bitcoin Stock-to-Flow model essentially treats Bitcoins comparably to scarce commodities such as gold or silver. These scarce commodities gold or silver, are often referred to as *store of values* resources. They, in theory should retain their values over the long term due to their relative scarcity and low flow. Furthermore, it would be very difficult to significantly increase their supply within a short period of time.

According to the advocates of the Stock to Flow model, [Bitcoin](https://academy.binance.com/blockchain/what-is-bitcoin) is a similar resource. It’s scarce, relatively costly to produce, and its [maximum supply](https://academy.binance.com/glossary/maximum-supply) is capped at 21 million coins. Also, Bitcoin’s supply issuance is defined on the protocol level, which makes the flow completely predictable. You also might have heard about the [Bitcoin halving](https://academy.binance.com/halving), where the amount of new supply entering the system is halved every 210,000 blocks (roughly four years).

A first scatter plot of SF vs market value shows that it is better to use logarithmic values or axis for market value, because it spans 8 orders of magnitude (from $10,000 to $100bn). Using logarithmic values or axis for SF as well reveals a nice linear relationship between ln(SF) and ln(market value).

According to the proponents of this model, these properties combined create a scarce digital resource with profoundly compelling characteristics to retain value over the long-term. In addition, they assume that there’s a statistically significant relationship between Stock to Flow and market value. According to the model’s projections, Bitcoin’s price should see a significant increase over time due to its continually reduced Stock to Flow ratio.

Amongst others, applying the Stock to Flow model to Bitcoin is often attributed to Plan-B and his article [Modeling Bitcoin’s Value with Scarcity](https://medium.com/@100trillionUSD/modeling-bitcoins-value-with-scarcity-91fa0fc03e25).

**Why it’s a bad model**

There are several deficiencies within the paper, both in its theoretical proposition and its empirical foundation.

From a theoretical point of view, the model is based on the rather strong assertion that the USD market capitalization of a monetary good (e.g. gold and silver) is derived directly from their rate of new supply. No evidence or research is provided to support this idea, other than the singular data points selected to chart gold and silver’s market capitalization against bitcoin’s trajectory.