



CAPPED STOCK TO FLOW MODEL

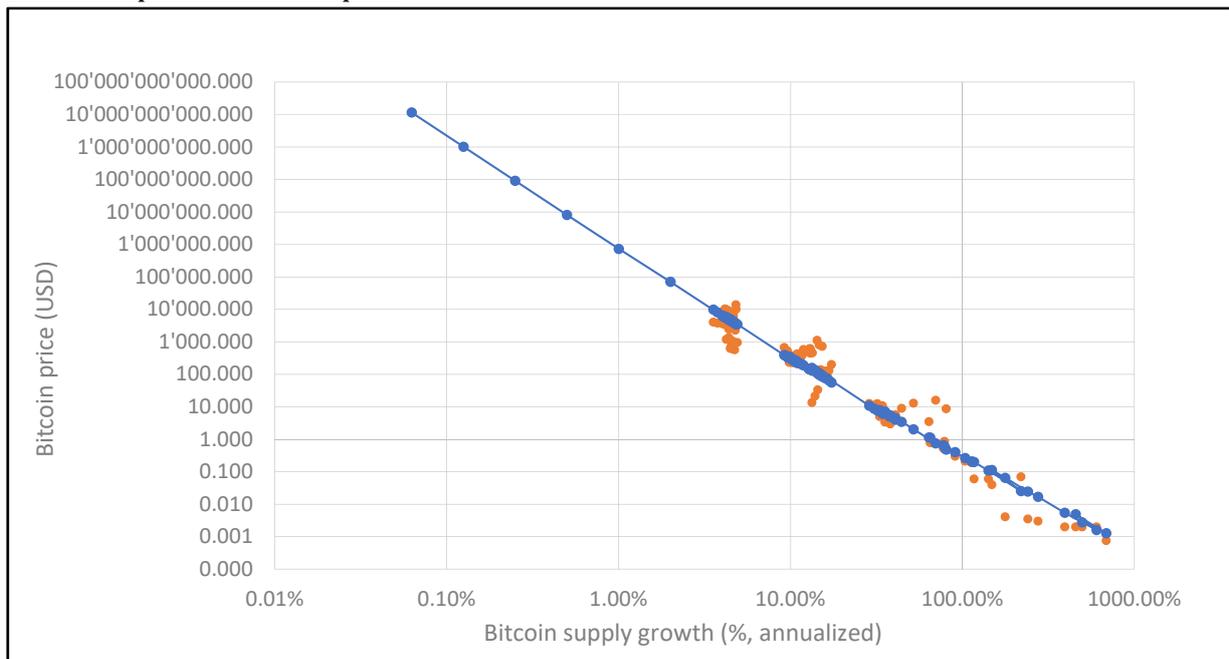
Crypto Research #7, October 2019

The Stock to Flow Model is currently very popular in social media. In our view, it is often misinterpreted and we try to give a better understanding of it.

The Stock to Flow Model by Pseudonym PlanB¹

PlanB became very popular after having published a number of articles and charts on Twitter and Medium. His regression or Stock to Flow analysis is summarized in the chart below.² The data and the regression have been made available by PlanB on Github. **This Stock to Flow Model says that the price of Bitcoin solely depends on the Bitcoin supply growth.** In the chart below, orange dots represent actual Bitcoin prices and the blue line predicted prices based on the stock to flow regression.

Actual and predicted Bitcoin price



Source : <https://github.com/100trillionUSD/bitcoin>, Swissrex

¹ <https://medium.com/@100trillionUSD/modeling-bitcoins-value-with-scarcity-91fa0fc03e25>

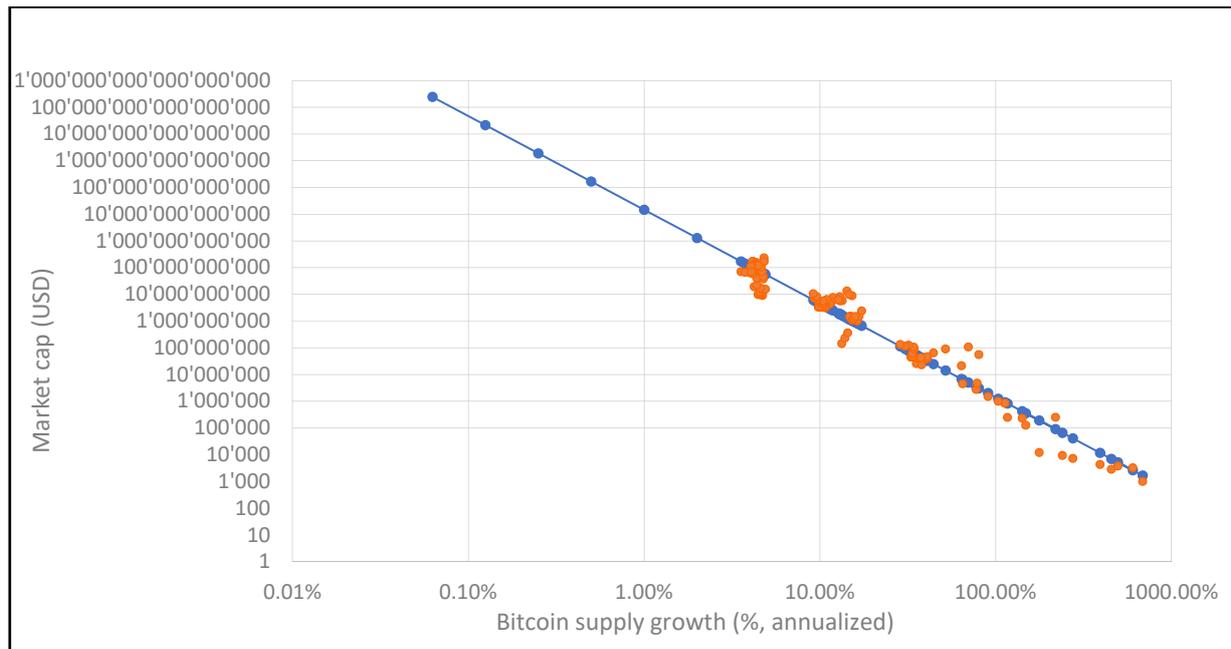
² We use supply growth, which is the inverse of the stock to flow ratio. Supply growth is defined as mining reward divided by circulating supply.



The Stock to Flow Model predicts a Bitcoin price of around 10 billion USD in the year 2040, when Bitcoin supply growth reaches 0.065%. Currently, the Bitcoin price is at around 8'000 USD and supply growth at 3.8%.

Similar can be shown for the Bitcoin market cap:

Actual and predicted Bitcoin market cap



Source : <https://github.com/100trillionUSD/bitcoin>, Swissrex

The Stock to Flow Model predicts a Bitcoin market cap of more than 200'000 trillion USD around the year 2040, when Bitcoin supply growth reaches 0.065%. This compares with the current global money supply of around 100 trillion USD.³ Thus, over the next two decades a hyperinflation is needed for the model not to be falsified.

Apart from that, the **global money supply is not even an explaining factor in the model**. As the **Bitcoin supply growth is deterministically coded into the Bitcoin blockchain**, no indirect impact is possible. Whatever amount of money is printed by the central banks, it has no effect on the Bitcoin supply growth and thus the Bitcoin price predicted by the Stock to Flow Model.

³ <http://money.visualcapitalist.com/worlds-money-markets-one-visualization-2017/>



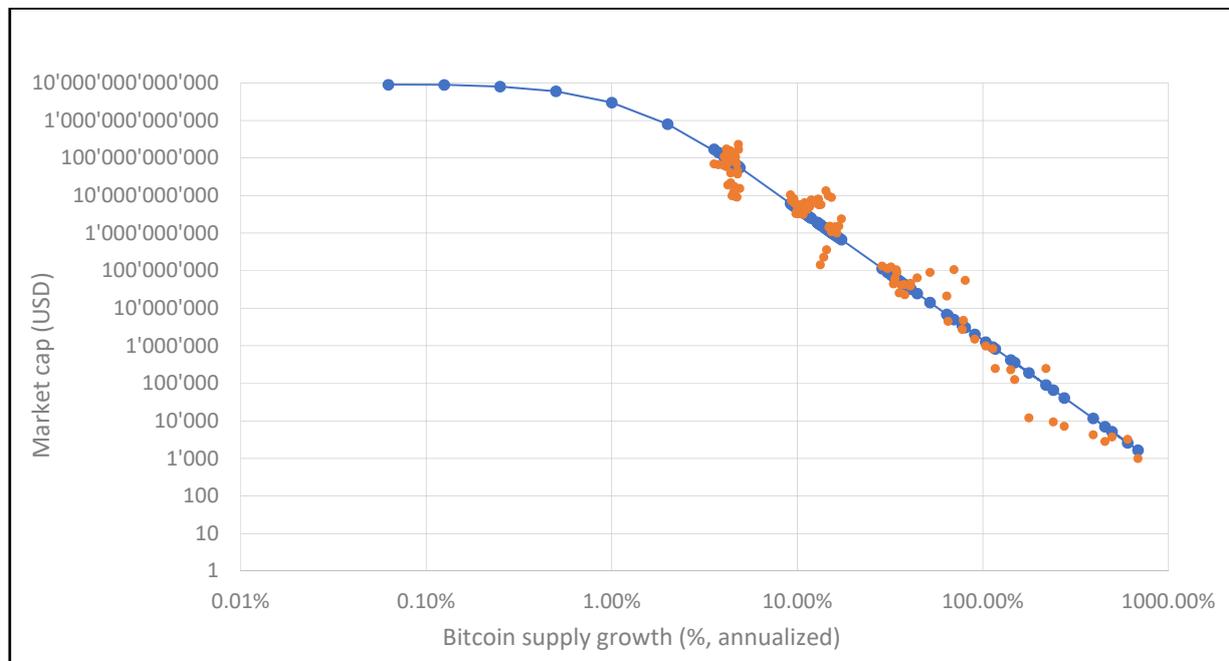
Interpretation of the Stock to Flow Model

We interpret that model as follows: **the stock to flow explains the portfolio allocation of investors between stores of value** such as gold, silver, diamonds, platinum, palladium or Bitcoin. The lower the supply growth of a hard asset, the lower its dilution and the more is allocated to that asset.⁴

Capped stock to flow model

As there is a limited amount of 100% that can be substituted from other stores of value, the model needs a cap as shown schematically in the following charts. Please refer to Crypto Research #8 for the full specification of the SwissRex Model and a regression analysis.

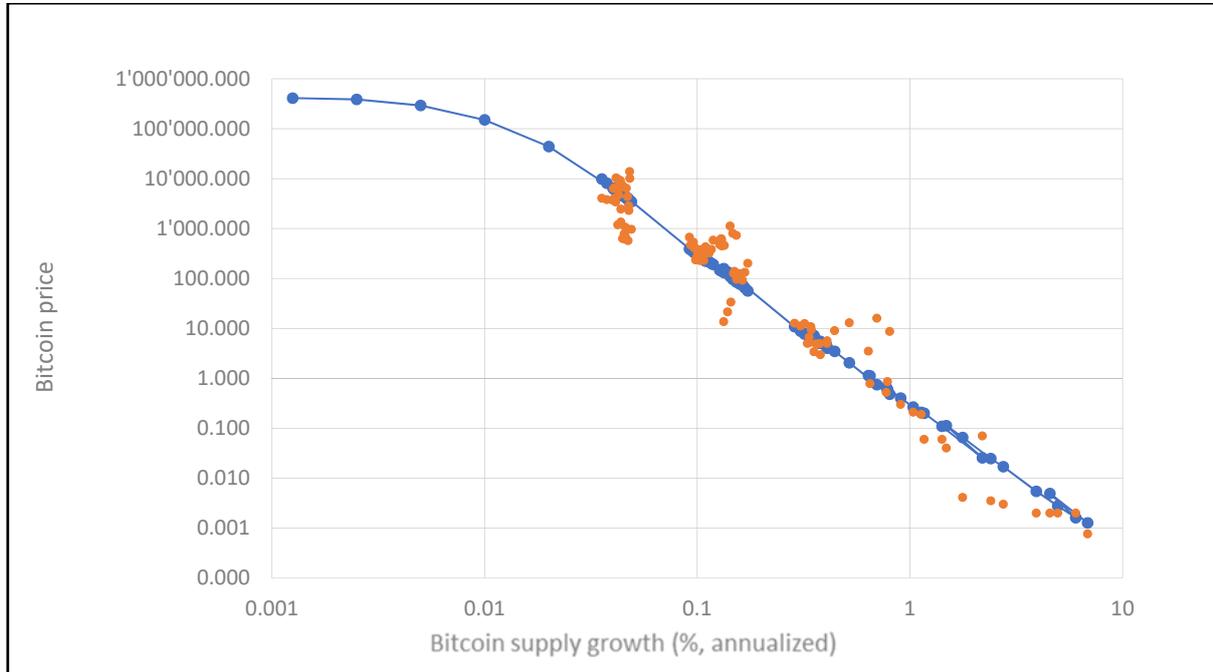
Capped Stock to Flow Model: Bitcoin market capitalization



⁴ Actually, the relative supply growth compared to other stores of value is relevant.



Capped Stock to Flow Model: Bitcoin price



The Capped Stock to Flow Model shows that, due to saturation, it will become more and more difficult for Bitcoin to substitute further value from other stores of value due. The marginal impact on price of a lower Bitcoin supply growth rate will diminish over time and disappear by the year 2140, when no new Bitcoins will be produced anymore.

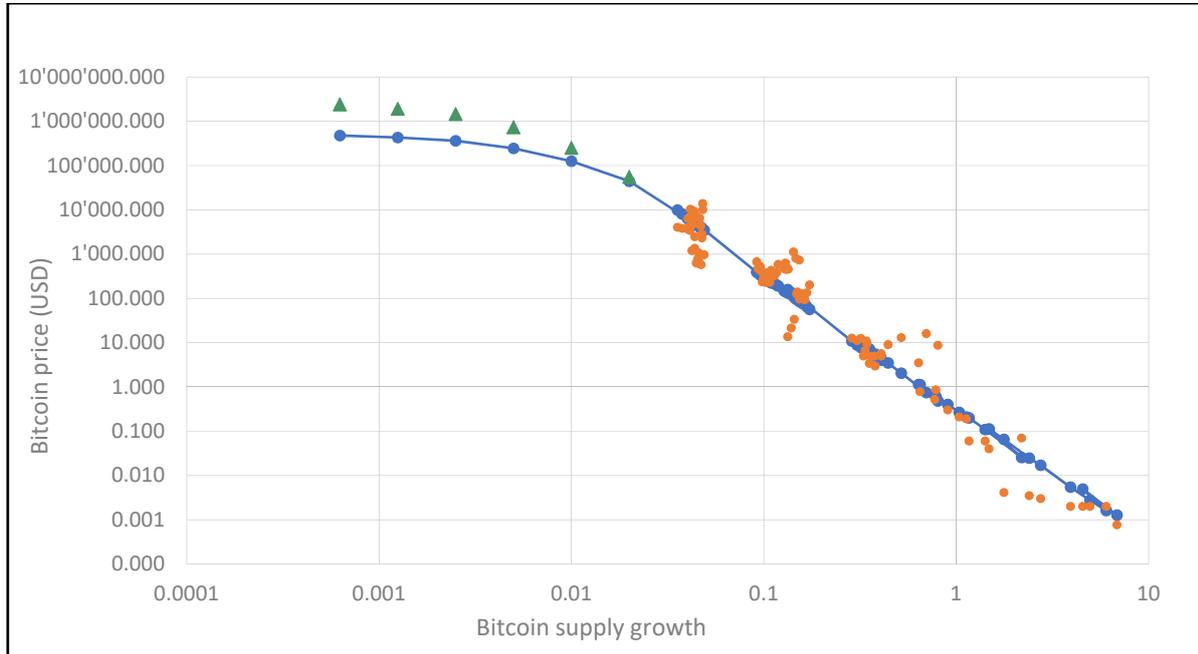
Impact of Institutions such as Central Banks and Governments

In PlanB's Model institutions are neglected. No matter how much money is printed by central banks or how high government spending is, it has no influence on the Bitcoin price. In our view, variables such as global broad money supply and the velocity of money should be explicitly modelled. A change in these factors would signify a **shift of the curve** as schematically shown in the chart below.

The **SwissRex Model** for the valuation of Bitcoin, which will be explained in Crypto Research #8, will also take into account changes in global broad money supply and Bitcoin velocity.



Capped Stock to Flow Model: shifting factors such as money growth or velocity of money



Conclusion

PlanB made a great contribution to the crypto community by introducing the **Stock to Flow Model** and loading the data to Github. The simple model has tracked the Bitcoin price pretty well. But, the Stock to Flow Model is all about substituting value from other stores of value, and therefore, the predicted price needs to be **capped**.

As the Stock to Flow Model states, past Bitcoin performance has been mainly driven by substituting gold and other stores of value. As this substitution gets harder due to saturation, the main drivers will become money printing and investors fleeing into stores of value to protect their wealth from inflationary confiscation or negative interest rates. Factors such as increased global broad money supply or Bitcoin velocity could lift the cap, but are not explained by the model. The **SwissRex Model** for the valuation of Bitcoin, which will be explained in Crypto Research #8, adds changes in global broad money supply and Bitcoin velocity to the Capped Stock to Flow Model.

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