FINANCE

Why Bitcoin stock – to – flow model is a bad model?

The Bitcoin stock – to – flow model aims at quantifying the relationship between the market value of Bitcoin and its scarcity. The model treats Bitcoin as a commodity like gold, silver which derive their value from scarcity. Here, scarcity is measured by a Stock – to – flow ratio.

The model was put forward by Plan B who ran a linear regression using natural logarithm of Bitcoin’s stock to flow metric (SF) as the independent variable and the USD market capitalization as the dependant variable. He quantified scarcity using a metric called Stock – to –flow (SF) which is the ratio between current supply (stock) and new supply (flow) that is Current supply divided by New Supply.

The linear regression was given as follows:



Plan B’s paper concluded that there is a statistically significant relationship between USD market capitalization and SF values which resulted in an strong coefficient of determinant (R2) of 0.947 (94.7%)

However, the model is based on the assumption that USD capitalization of a monetary good is derived from their rate of supply. There was no empirical evidence to support this claimother than singular points selected to chart gold’s and sliver’s market capitalization against Bitcoin line.

Also, the model is based on the fallacious assumption that there is no uncertainty about any asset’s return whereas there is always uncertainty in asset return.

Furthermore, from a statistical view, a high R2 of 94.7% may mislead us into thinking that the model fits well when we could be looking at spurious regressive relationship.

In conclusion, though a glaring linear relationship exists between these variables, further research into the model reveals that the residuals are positively auto correlated (Durbin Watson test: 0.395). Hence, the underlying assumption of Ordinary Least Square method of no autocorrelation is violated. Therefore, it would be difficult to properly interpret the relationship between the variables. The model seems to be unstable and unable to predict long run relationship. The stock – to – flow model is a flawed model but it has some conceptual value and need to be revised for it to properly predict the relationship between the variables.

BLACK – SCHOLES CALL PRICE

YARA INC

Stock price (S0): $40

Strike price (K): $45

Time to expiration (T): 4 months (121/365 days) = 0.3315

Annual continuously compounded Risk free rate (r): 0.03

Standard Deviation of stock return: 0.40

No dividend



Solving for d1





Estimating d2



Using the normal distribution table

Nd1=N-0.3530= 0.3620

Nd2 = N-0.5833 = 0.2798

Obtaining the call option price





C = $2.01