Zero Theorem Literature Review

"The Economics of Bitcoin Price Formation, P. Ciaian, M. Rajcaniova, D. Kancs, 2016"

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Highlights

- Suggesting a simple and effective conceptual framework that considers the impact of interaction between the factors on BitCoin price.
- Understand the working of conceptual framework by validating it on daily data against a standard Barro model.

Background

With the advancement in technology, wide range of digital currencies shows an impressive development in term of price development and price volatility. Hence, this rising popularity has garnered a lot of attraction that outrage the attempts toward traditional market. However, limited studies have been done in literature that look specifically at BitCoin price determinants but the shortcoming is that those studies don't account for potential structure breaks which can lead towards biased results. Therefore, there is a need to close this gap that previous studies can't answer which only considered the effect of each factor on Bitcoin's price separately but none of the study in this regard considered the impact of the interaction between the three factors on Bitcoin price.

Introduction

To overcome this gap, there is a need to access and identify the BitCoin price formation by considering both factors i.e. determinants of currency price along with digital currency specific factors. In this context, Ciaian et al. (2016) comes up with the study that addresses all three types of BitCoin price determinants. For identifying and accessing the determinants of BitCoin price formation, a conceptual framework is devised that sheds light on the determinants of BitCoin of price in the short and long run. Moreover, Ciaian et al. (2016) extend the

canonical model to capture factors which are specific to digital currencies and formulate testable hypotheses.

Conceptual Framework

For this purpose, to identify and access the determinants of BitCoin price formation along with deriving testable hypothesis, an economically estimable model from the Barro standard model is devised. This model draws the equilibrium between Bitcoin demand and BitCoin supply along with macroeconomic and financial developments. In order to empirically evaluate the demand and supply, the estimable model is written in such a way: $p_t^B = \beta_0 + \beta_1 p_t + \beta_2 y_t + \beta_3 v_t + \beta_4 b_t + \epsilon_t$. Furthermore, to integrate the second factor i.e. Bitcoin's attractiveness for investors the estimable model is extended which is represented in such a way: $p_t^B = \beta_0 + \beta_1 p_t + \beta_2 y_t + \beta_3 v_t + \beta_4 b_t + \beta_5 a_t + \epsilon_t$. And at the end to integrate the third factor estimable model is extended in such a way: $p_t^B = \beta_0 + \beta_1 p_t + \beta_2 y_t + \beta_3 v_t + \beta_4 b_t + \beta_5 a_t + \beta_6 m_t + \epsilon_t$.

Working of Conceptual Framework

Moreover, to validate the proposed conceptual framework, data was extracted from quandl.com that was used for the supply-demand fundamentals. For this purpose, Ciaian et al. (2016) used the volume of daily BitCoin views on Wikipedia as well as the number of new posts and new members to capture the investment attractiveness along with using daily data for five years from the time-period of 2009 to 2015 by applying time series analytical mechanism. To do this an econometric approach was designed which uses vector auto-regressive (VAR) model that is represented in such a way: $Z_t = A_1 Z_{t-1} + \ldots + A_k Z_{t-k} + \varepsilon_t$ which was later on reformulated into a vector error correction model which is represented by: $\Delta Z_t = \sum_{i=1}^{k-1} \Gamma_i \Delta Z_{t-i} + \Pi Z_{t-1} + \varepsilon_t$.

Results and Discussion

In order to evaluate the suggested framework, the models was used to examine supply-demand, investor attractiveness, and macroeconomic aspects singly as well as in combination. From the findings it is clear that supply-demand fundamentals have a considerable impact on Bitcoin price when studied individually and in combination with other factors. The same can be said regarding the appeal of investors. However, the result shows that global macroeconomic and financial trends have an effect on Bitcoin price only when evaluated as a single component; when studied in combination with other factors, it has no statistical relevance.

Conclusion

This led to the conclusion that when applied to daily data, the suggested VAR estimate approach discovers the relationship between Bitcoin's price and its antecedents. The findings show that once investor interest in Bitcoin and supply-demand variables are taken into account, the importance of macroeconomic and financial indicators in influencing Bitcoin's price fades and becomes irrelevant.

References

Ciaian, P., Rajcaniova, M., and Kancs, d. (2016). The economics of BitCoin price formation. *Applied Economics*, 48(19):1799–1815.