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ЭМПИРИЧЕСКАЯ ОЦЕНКА ВОЛАТИЛЬНОСТИ КРИПТОВАЛЮТ В СООТНОШЕНИИ С ЭНЕРГОНОСИТЕЛЯМИ И ЗОЛОТОМ НА ФИНАНСОВЫХ РЫНКАХ

Фредерик Аннинг

Студент международной магистерской программы «Banking»

Сибирский федеральный университет

Красноярск, Россия

Аннотация

Существуют различные мнения относительно использования криптовалют, большинство исследователей оценивают их положительные и отрицательные стороны, каковыми бы они ни были; но для лучшего понимания криптовалюты как товара, мы сравниваем ее с двумя товарами – золотом и энергоносителями (сырая нефть) и оцениваем соотношение между этими двумя товарами.

Ключевые слова: криптовалюты (криптос), энергоносители, золото, финансовые рынки

AN EMPIRICAL ASSESSMENT OF THE MILDNESS OF CRYPTOCURRENCIES IN CORRELATION WITH COMMODITIES, I.E. ENERGY AND GOLD IN FINANCIAL MARKETS

Frederick Anning

Graduate Student

Siberian Federal University

School of Economics Management & Environmental Studies

Krasnoyarsk, Russia

Abstract

There have been several opinions of the use of cryptocurrencies, most researchers have assessed the positives and negatives in however way they can; but to better understand its correlation with respect to commodities, we take a look at two commodities, Gold and Energy product (Crude) and assess the correlation that exist between these two commodities.

Keywords: Cryptocurrencies (Cryptos), Energy, Gold, financial markets

Introduction

It is worthy to assess how consistent the idea of cryptocurrencies could be correlated with financial markets in quite a mild way, thus refuting the established idea that suggests that cryptocurrencies in this case referred to as crypto's could be a tool for hedging internationally. However, this assertion is quite speculative and as such we will try to do an empirical review on the simultaneous linkages by way of employing a panel regression framework.

We begin by making;

$X_t = (x_{1t} \dots, x_{Kt})'$ represent the K-dimensional vector of descriptive variables whereas y_{it} will be our response variable with an ith group at a period of time t. In our model of random-coefficient regression, our intercept as well as our marginal effect of the descriptive variables thus vary across the groups, i.e., specific cryptocurrencies,

$$y_{it} = (\alpha + \alpha_{0i}) + (\beta + \beta_{o1})'^{X_t} + \epsilon_{it}, \quad i = 1, \dots, N, \;\; t = 1, \dots, T, \qquad (1)$$

Further our equation;

$$\epsilon_{it} \sim N(0, \sigma^2), \alpha_{0i} \sim N\,(0, \tau^2)\; and\; \beta_{0i} \sim N(0, \Sigma)$$

are our collective-specific regression parameters that depicts how our intercept as well as our betas deviate from our population mean values α and β, individually. Our covariance structure of our stochastic individual effects is however left unstructured in a way that an estimation of our random-coefficient model indicated above as equation (1) by employing the Generalized Least Squares; the GLS is thus the weighted average of our collective-specific Ordinary Least Square (OLS) estimate;

$$(\hat{\alpha}, \hat{\beta}') = \sum_{i=1}^{N} W_i b_i$$

$\mathbf{b}_i$ however represents our OLS group-specific estimates of our intercept as well as our slope parameters, and our weights are thus described as;

$$W_i = (\sum_{i=1}^{N} (\Omega + \hat{V}_i)^{-1})^{-1} \ (\Omega + V_i) \qquad where \ \Omega = \begin{bmatrix} \tau^2 & \delta^2 \\ \delta & \Sigma \end{bmatrix}$$

and $\hat{V}_i$ our covariance matrix of our OLS betas assessments [1].

We then realize:

$$Cov\left(\alpha_{i0,}\, \beta'_{i0}\right) = \delta'$$

Where $(\boldsymbol{\beta} + \boldsymbol{\beta_{0i}})'$ denotes the combination of our systematic effect of our descriptive variables in respect of our response, β, and our random component that summarizes how the effects vary across the groups β_{0i} and our variance Σ thus describes the type of variation.

It is noteworthy that in our model of standard random-effect, only the total level of the response taken into account by our intercept is the ones that could vary randomly across the groups. The works of [2] suggested that under an erroneous postulate of a fixed slope the parameters across the groups may have biased estimates i.e., the postulates testing results could be deceptive; and because of that, the

evaluation of the parameters of the slope achieved in a homogeneous model however tends to meet along the cross-sectional average of the exact coefficients of the slope, and in the event the average is near zero we may wrongly conclude by saying there is no relationship that exist between the response as well as the descriptive variables. On another breadth when there is robustness, there are instances where we could realize results for restricted random-intercept panel regression descriptions where the parameters of the slope may be fixed across groups.

In trying to ascertain whether or not commodities such as precious minerals i.e. gold as well as energy products thus have systematic correlation with cryptocurrencies an assessment was done which proved a spillover effect in returns of Gold and Energy and thus remain quite significant after monitoring simultaneous for lagged returns on different classes of assets. In doing so we made a postulation that all the parameters within our slope would be within a constant group i.e.;

$H_0 : \hat{\beta}_1 = \hat{\beta}_1 = \cdots = \hat{\beta}_N$, is rejected for the complete regression specification with a chi-square statistic equal to $X^2_{(K(N-1))} = 154.9\ (p - value = 0.000)$.

There is however limited research on the subject matter we quite realize a substantial relationship that exist between returns on commodities and cryptocurrencies which are consistent with existing empirical proof.[3] employed a classic asymmetric GARCH modeling framework which proved that there were several similarities that existed between gold and bitcoins by demonstrating that the latter could be useful for investors who are kind of risk averse as a way hedge their level exposure on other classes of assets; [3] further reiterated that rationale that bitcoins could be used as a hedging technique in lieu of negative shocks within the stock trading market.

Our assertion on the basis as to why gold and cryptos tend to both share a value of storage is quite intuitive in that these cryptos and gold have limited growth in

supply and their prices are quite dependent on aggregate demand. It is worthy to know that a percentage of between 1% to 2% has been added to the stock of existing gold within the last century and the rate of inflation with regards to cryptos are falling progressively. Thus, market prices are dependent largely on demand pressures and the fact that both products are scarce commodities.

The energy market on the other hand is quite different in that there tend to have a negative and or substantial relationship between the energy markets in view of its return on cryptos; this stems from the fact that price of crude oil is correlated positively with macroeconomic conditions [4], price increases within the energy industry are due to increase in demand of which are often associated to improvement in aggregate economic conditions; also as the marginal benefit derived from locked in resources within a volatile asset such as cryptos may be less rigorous in economies with strong signals .

Conclusion

Notwithstanding the fact that there tend to be similarities that exist amongst cyrptos and gold, it is worthy to note that both classes of assets tend to have limitations in supply and as such could be highly volatile as an alternative for risk averse investors in fiat currencies as well as monetary policy which are in no way based on same premise. Investment in cryptos cannot be necessarily a safe investment option but however it is a stake on its fundamental block chain technology.

References

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