Discussion:

Risk Premia in the Bitcoin Market

Caio Almeida Maria Grith Rafit Miftachov Zijin Wang

Discussant: Raul Riva

Encontro Brasileiro de Finanças - Curitiba, Brazil

July 5th, 2024

Overview

Three main targeted questions:

1. What is the risk premium associated to holding Bitcoin $(\mu_{\mathbb{P}} - \mu_{\mathbb{Q}})$?
2. Is there a variance risk premium $(\sigma_{\mathbb{Q}} - \sigma_{\mathbb{P}})$? How much is it?
3. What is the implied pricing kernel? (Or its projection into the Bitcoin return space?)

Overview

Three main targeted questions:

1. What is the risk premium associated to holding Bitcoin $(\mu_{\mathbb{P}} - \mu_{\mathbb{Q}})$?
2. Is there a variance risk premium $(\sigma_{\mathbb{Q}} - \sigma_{\mathbb{P}})$? How much is it?
3. What is the implied pricing kernel? (Or its projection into the Bitcoin return space?)

My general feeling:

- Vast literature asking similar questions about the aggregate stock market;
- But the Bitcoin market is probably very different: well worth exploring!
- Technically involved, but no way around it: characterizing probability measures is hard;
- Cool paper, with many possible extensions! 👍

Room for Improvement 🤔

Risk Premium:

- It's huge: $\approx 66\%$ per year $\implies$ much higher than SP500... that makes sense, right?
- How does that compare to a simple CAPM back-of-the-envelope computation?
- This is super hard to estimate. Why do we only get point estimates?

Room for Improvement 🤔

Risk Premium:

- It's huge: $\approx 66\%$ per year $\implies$ much higher than SP500... that makes sense, right?
- How does that compare to a simple CAPM back-of-the-envelope computation?
- This is super hard to estimate. Why do we only get point estimates?

Variance Risk Premium:

- Not that large: $7 - 14\%$; Intuition for large RP but lower VRP?
- Many connections with literature on SP500... but is the underlying process similar?
- What if the Bitcoin market is "jumpier"? What are we really identifying?
- For SP500: evidence that large negative jumps carry much larger premium;
- What would estimates look like if you were to truncate the index?
- See Mancini (2009) and Bollerslev and Todorov (2011);

Room for Improvement 🤔 🤔

Characterizing Regimes:

- Low-vol and high-vol regimes based on clustering of "distance measure" $D(i, j)$;
- Why this one and not something like Total Variation? KL divergence?
- Any information criteria to motivate 2 clusters? What a third one looks like?
- When $D(i, j) \approx D(i', j')$, is it because they are close on the r domain? τ domain?

Room for Improvement 🤔 🤔

Characterizing Regimes:

- Low-vol and high-vol regimes based on clustering of "distance measure" $D(i,j)$;
- Why this one and not something like Total Variation? KL divergence?
- Any information criteria to motivate 2 clusters? What a third one looks like?
- When $D(i,j) \approx D(i',j')$, is it because they are close on the r domain? τ domain?

Underlying Economics:

- Asset pricing models usually connect returns to wealth to welfare and marginal utility;
- High r in SP500 = good state. Is that true for Bitcoin? Who is trading these options?
- Almeida and Freire (2022): can we map back the findings and answer the question: Are Bitcoin traders more/less risk averse? Media coverage is quite vocal here!

References I

Almeida, C. and Freire, G. (2022). Pricing of index options in incomplete markets. *Journal of Financial Economics*, 144(1):174–205.

Bollerslev, T. and Todorov, V. (2011). Tails, fears, and risk premia. *The Journal of Finance*, 66(6):2165–2211.

Mancini, C. (2009). Non-parametric threshold estimation for models with stochastic diffusion coefficient and jumps. *Scandinavian Journal of Statistics*, 36(2):270–296.