

THE LITHIUM INDUSTRY AND THE ANALYSIS OF THE BETA TERM STRUCTURE OF OIL COMPANIES

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Abstract

Assuming that the transport sector consumes most of the world's liquid fuel (petroleum) and the most important use of lithium is in rechargeable lithium-ion batteries for electric vehicles and hundreds of electronic devices, the goal of this paper is twofold: first, we study the dynamics of the lithium industry and then the beta risk behaviour in time-frequency domain of the six largest oil companies in the world between February 11th 2008 and January 10th 2019. For this, we use an approach based on continuous wavelet transform (CWT). The results indicate that there is a period of dependence between late 2013 and 2016 that occurs in the long run frequencies between 32 and 198 days for all cases, except PetroChina, demonstrating that the beta term is time-varying. We also find evidence to suggest that the beta term reflects and advances the oil companies' responsiveness to movements in the lithium market. Once we have analysed the varying dependence between time series across different frequencies and over time, we will analyse the dynamics of the beta series by using long run dependence approaches. The results indicate that the betas are highly persistent, strongly increasing the value as we reach the end of the sample.

Keywords: Lithium industry; betas; dependence; wavelets; fractional integration

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