

RETURNS AND VOLATILITY OF EUROZONE ENERGY STOCKS

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(1) Overview

The recent years have been marked by massive price movements at the resource markets. Especially oil prices at the international energy exchanges have been rising strongly, and record high prices for oil and gas have been accompanied by non-negligible volatility. Resource price, but also resource price volatility hikes have been shown to be economically detrimental. As far as stock market effects are concerned, energy stocks seem to be an exemption to this rule: According to previous research, energy corporations are gaining from resource price increases. The role of resource price volatility has not yet been explored in this context.

Stock market developments of corporations of the energy branch are a very interesting case. In the light of possible interactions between the stock market and other financial markets such as the resource markets, it is surprising that there is relatively little research on stock performance of energy corporations. Especially, there is no literature available that deals with European energy stocks. Moreover, the existing research exclusively relates to determinants of stock returns, while the return volatility of energy stocks is widely unexplored. Both energy stock returns and volatility may not only be driven by price changes at other financial markets, but also by the respective volatility and especially by energy market volatility. This has not been analyzed, yet.

In this respect, the contribution of this paper is twofold: Firstly, we conduct a first analysis on the determinants of stock returns and volatility of energy corporations from the Eurozone. In this respect, we examine two different portfolios of energy stocks: One portfolio consisting of oil and gas corporations' and one portfolio comprising utilities' stocks. Most importantly, within our empirical approach, we tackle the issue of relationships between energy market volatility and energy corporations' stocks. Secondly, making use of a generalized autoregressive conditional heteroskedasticity (GARCH) approach, we assess determinants not only of the energy portfolio returns, but also link the respective return volatility to resource price volatility.

(2) Methods

For the returns of the two portfolios of European energy corporations, we estimate a model containing those explanatory macro variables that have shown to influence Canadian energy stock returns: Additionally to the market return, we add the price changes of oil, of the term premium, of the Euro to U.S. Dollar exchange rate, and of gas (Sadorsky, 2001, and Boyer and Filion, 2007). Additionally to the models established in the existing literature, we then add the volatilities of the changes in the oil price and in the gas price to the estimation equation. In order to generate "volatility surprises", these volatility variables are calculated as error terms from ARMA models of the squared oil and gas price change, respectively.

In a further step, we additionally base our analysis on a Generalized Autoregressive Conditional Heteroskedasticity (GARCH) application, addressing the phenomenon of so-called volatility clustering. We finally augment such GARCH approach with return volatilities in the mean equation by including resource volatility variables into the variance equation. Doing this, we allow the conditional variance of the portfolios not only being determined by its own dynamics, but also by “external” – energy market – factors.

(3) Results

Our results suggest that stock returns of European energy corporations are not only determined by their relationship in systematic risk to the overall stock market. An appreciation of the Euro against the U.S. Dollar, reflecting an increase in purchasing power of the European corporations on international markets, leads to positive stock market reactions for both oil and gas businesses and utilities. Moreover, Eurozone utilities on average suffer from negative stock market responses to oil price rises, while oil and gas related businesses are upvalued in such setting. The effect of oil market developments on the stock market is not, in the oil and gas portfolio case, restricted to a simple relationship between price changes at both markets: While, subsequently to a structural break from 2004 in this relationship, the oil price change positively impacts oil and gas stock returns, oil market volatility has a negative effect on the returns of these stock. In contrast, energy stock volatility is not related to volatility of the resource market, but only driven by its own dynamics. Generally, there is no indication for the gas market playing a role for Eurozone energy corporations’ stocks.

(4) Conclusions

Interestingly, and in contrast to the Canadian experience where there is a stock return sensitivity to a variation in gas prices (although smaller than to oil prices; Boyer and Filion, 2007), the gas market does not at all seem to play a role for Eurozone energy corporations’ stocks. This is especially surprising in the case of electric utilities given the fact that oil, in contrast to gas, is barely used for energy generation in Europe. One reason behind this finding could be the fact that a large part of the gas sold in Europe is based on long-term contracts at a price that is determined by a formula that links gas to oil prices in order to prevent from any incentive for fuel switching. In this respect, it seems plausible that stock market participants use the oil price as the main indicator for resource price developments as a whole. Another explanation would be that, consistent with the findings of Haushalter (2000), energy companies hedge more strongly against gas than against oil price risks.

Given the findings in this paper, it is not surprising that during the last years, investments in European oil and gas stock corporations have been very profitable. Besides the generally good market situation, the rise of the Euro against the U.S. Dollar and especially the strong increase of oil prices have promoted this development. In the light of beta coefficients smaller than one as not only found in this analysis, but also in investigations for extra-European energy stocks, investments in oil and gas stocks have also been considered as relatively “conservative”. However, as suggested by the results of our empirical approach, at least European oil and gas stocks may offer a relatively weak performance in times of high oil price volatility.

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