Oil Price Dynamics and Returns of Renewable Energy Companies

Stefan Trück [a]

[a] *Department of Economics*
Macquarie University Sydney, Australia

Abstract

We investigate the effects of changes in the crude oil price on stock returns of renewable energy companies. Our analysis involves more than 30 companies from different industries with focus on renewable energy sectors like fuel cells, photovoltaics, biomass etc. that are listed either in the NASDAQ or NYSE. Hereby, the time period considered includes data from January 2001 to August 2006 and can be split into two sub-samples: from January 2001 to December 2003 when the oil price remained relatively constant around a level of 30 USD and the period from 2004 to 2006 when a steady increase in crude oil prices from 33 up to more than 70 USD could be observed. The thesis we would like to investigate is whether an increase in oil prices leads to more investments in renewable energy sectos, yielding higher or abnormal returns for such companies on the stock market.

In a first step, using an approach based on the capital asset pricing model (CAPM), we analyse the systematic risk for the renewable energy companies relative to the overall market that is measured by a stock's beta-factor. We find that for the two sub-periods significant differences can be observed in terms of the estimated beta-factors for the firms. In particular, for most of the companies listed in the NASDAQ, during the second period when the crude oil price was rising, the beta risk is significantly higher in comparison to the first period. This indicates that for the period 2004-2006 renewable energy firms showed an increase in both systematic risk and returns with respect to the returns of the overall market portfolio.

Further investigating the issue, we estimate a multiple regression model that next to market returns also includes the change in the crude oil price and the riskless interest rate as explanatory factors. In this model, for most of the considered firms, the influence of the market on individual stock returns remains significant. However, for the first sub-period only a small number of companies seems to be affected by changes in the crude oil price. For the second sub-period our results indicate a positive influence of the change in the oil price on individual stock returns of the considered companies. Also the significance of the coefficients in the estimated models has substantially increased.

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We conclude that for measuring the influence of changes in the crude oil price on stock returns of renewable energy companies, there seems to be a significant difference depending on whether the oil price fluctuates around a constant price level or shows a period of substantial increase. During the period from 2001-2003 with a rather stable oil price, the estimated systematic risk for such companies as well as the influence of the oil price on their stock returns is low. On the other hand, both systematic risk, returns and the influence of the oil price on the stock returns increases significantly during the second period from 2004-2006 when the oil price shows a steady rise. Our results partially confirm other studies on the issue, for example work by Boyer and Filion (2004), Faff and Brailsford (1999) or Sadorsky (2001). However, it provides new contributions to the literature in two perspectives: firstly, we provide the first analysis concentrating on stock returns of renewable energy companies. Further, our results emphasize the importance of a distinction between different phases of oil price behavior when investigating the influence on stock returns of energy companies.

Email address: strueck@efs.mq.edu.au (Stefan Trück).