

TRUMP VS. PARIS: THE IMPACT OF CLIMATE POLICY AND CLIMATE RISK ON U.S. LISTED OIL AND GAS FIRM VALUATION

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Overview

The two most important climate policy events of the second half of this decade are the signing of the Paris Agreement and the election of Donald Trump. The former being particularly important globally, as 174 nations laid out their efforts to combat climate change through their Intended Nationally Determined Contributions (INDC) commitment. Critically, the U.S. was part of the Paris Agreement. This was particularly important since the U.S. had not been part of the Kyoto Protocol and, as such, its involvement represented a clear signal that it was moving towards an accelerated energy transition with concomitant implications for listed U.S. oil and gas firm valuation. However, the election of Donald Trump appeared to reverse this. President Trump has been a staunch supporter of the U.S. oil and gas industry during and after his presidential campaign. President Trump's supportive policy towards the oil and gas sector (which includes his announced withdrawal from the Paris Agreement in June 2017) coupled with technological advances in fracking have seen a remarkable expansion in U.S. oil and gas production that is set to make the U.S. a net energy exporter by 2020. This noted, a counter reaction to President Trump's climate unfriendly policies has spread across the U.S. through movements such as "We are still in" and United States Climate Alliance. These groups represent about half the U.S. population and GDP and commit a range of states, companies and cities within the U.S. to emissions reductions targets that are consistent with the Paris Agreement.

The above discussion posits the question; which has been more value relevant to the oil and gas sector, the Paris Agreement or the election of Donald Trump? Therefore, this paper investigates how policy induced transition risk is affecting the value of U.S. listed oil and gas firms in recent years. More specifically, our analysis explores the stock market and option implied volatility impact of the following four events

- the Paris Agreement (12 December, 2015)
- the ratification of the Paris Agreement by China and the U.S. (3 September, 2016)
- the election of Donald Trump (8 November 2016)
- the announced withdrawal of the U.S. from the Paris Agreement. (1 June 2017)

In doing so, we contribute to the literature on the valuation of oil and gas firms generally (Badia et al., 2019; Ewing and Thompson, 2016; Misund et al., 2014; Kaiser, 2010; Howard and Harp, 2009; Osmundsen et al., 2006). More specifically, we contribute to the emerging literature on how climate risk might affect these oil and gas firms (Mukanjari & Sterner, 2018; Griffin et al., 2015; Heede et al., 2016; Meinshausen et al., 2009). Of these only Mukanjari & Sterner (2018) look at more recent years and include an examination of both the Paris Agreement and the Trump election. In this sense, their study is very close to ours but our conclusion differs markedly since they concentrate their analysis on ETFs and conclude that the Paris and Trump election had only moderate effects. We confirm their result using ETFs; however, when we construct equally weighted portfolios of the whole sector, subsectors and splitting by nationality (U.S. and non-U.S.) we find that the results are markedly different.

Methods

Event Study of Portfolio Stock Returns

To examine the price impact of the four events we follow a portfolio event study approach with an estimation period of 200 trading days (Chou, Tian, & Yin, 2015; DellaVigna & Pollet, 2009; O'hara & Shaw, 1990). The estimation window is $t=-225$ to $t=-26$. We allow a gap of 20 trading days between the end of the estimation period and the beginning of the event window, to avoid the problem of including information that is leaked long before the events in our estimation window. We adopt a relatively long $[-5,+5]$ event window, to account for the uncertainty of the actual timing of news leakage, and the possibility of market under-reaction.

Implied Volatility Event Study

We are also interested in testing how traders of options on integrated oil and gas companies as well as the XLE ETF reacted to the events. Options traders are often more sophisticated than equity traders and information from option markets provides a different perspective to that of equity markets. From option prices we can extract the implied volatility. This metric can be thought of as the option markets expectation of volatility over the life of the option contract. Therefore, it is of interest to investigate if option traders' expectations about future volatility are affected by and/or react to each of the four events. To examine the effect of the events on the implied volatility of oil and gas companies we employ the event study framework of Chen & Clements (2007), who study the effect of monetary policy announcements on S&P 500 implied volatility.

Results & Conclusions

Our results show that the signing of the Paris Agreement had a large negative impact for the whole sector (CAAR -8.4%) with Oil & Gas Exploration and Production (CAAR -12.1%) and Oil & Gas Drilling (CAAR -10.5%) most severely affected. In general, the Paris Agreement had a much stronger impact on firms that had U.S. focused operations as distinct to U.S. listed firms with international operations. We find that the ratification of the Paris Agreement by China and the U.S. had limited impact. Contrary to expectations, the election of Donald Trump and the announced withdrawal of the U.S. from the Paris Agreement did not have positive effects on the sector, in fact, they negatively affected some sub-sectors (transport and integrated). We attribute this to Trump's policies supporting domestic production benefitting domestic unlisted independent producers at the expense of listed competitors with import and international assets. Overall, however, the impact of Paris would seem to have trumped Trump.

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