

# RESERVES REPLACEMENT AND OIL AND GAS COMPANY SHAREHOLDER RETURNS

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## Overview

Oil and gas reserves are clearly the most important assets that oil and gas companies have. The main objective of holding petroleum reserves is to generate future cash flows when they are extracted from oil and gas reservoirs and subsequently monetized. Replacing reserves as they are produced is crucial for the sustainability of their business model, and therefore an aspect of the industry that is followed closely by financial markets. Oil companies can pursue two main strategies for reserves replacement. They can either engage in risky exploration activities or purchase reserves from other agents. An interesting research question is how additions from organic growth through discoveries compare to reserve replacement through acquisition activities in terms of effects on security returns. On a risk adjusted basis, an investor should be indifferent between organic growth and acquisitions. In this study we address this issue and empirically examine if this is the case.

This paper examines how oil and gas companies' reserves growth affects their share price returns. In particular we examine three issues affecting the relation between reserves changes and oil and gas firm returns. First, we examine if investors value reserves replacement as a result of exploration activities differently to reserves growth through acquisitions. In the second analysis we test if reserves replacement of oil reserves impacts stock returns differently than changes in gas reserves do. Third, we examine the impact of the Shale gas revolution and the subsequent oil and gas price divergence on the association between returns and replacement of oil versus gas reserves.

## Methods

The study applies panel data econometrics using annual data for oil and gas companies, 1993-2013. The variables include total oil and gas reserve amounts, as well as disaggregated reserves (purchases, sales, exploration, production, improvements, extensions).

## Result

The results suggest that investors seem to be indifferent to reserves replacement strategy (exploration or acquisition). However, we find that changes in oil reserves impact oil and gas company returns differently than changes in gas reserves does. Moreover, we find that there has been a structural shift in the relation between returns and changes in gas reserves (but not changes in oil reserves) after 2008, coinciding with the Shale gas revolution and the break in the oil-gas price link. This latter result can be relevant for understanding the impact of the recent fall in oil prices on investor valuation of oil and gas reserves.

## Conclusions

Our results suggest that changes in total oil and gas reserves impact the risk-adjusted total shareholder returns of oil and gas companies. The results also suggest that investors do not find additional information from disaggregating the reserves into their subcomponents. Finally, the relative importance of changes in oil versus gas reserves seem to change over time.