

# Petroleum taxation contingent on counter-factual investment behaviour

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## **Executive summary**

This paper originated in an observation that there is a discrepancy between assumptions made in some areas of tax theory and the actual investment analyses conducted by the companies, in particular how tax deductions are to be treated in investment analysis.

Through investment analysis on a model field, we analyse the implications for tax design of counter-factual assumptions on investment behavior. Norwegian petroleum tax is used as a case. The Norwegian government's approach is on a theoretical basis to presume that oil companies treat the tax deductions as risk free in project valuations, whereas empirical surveys show that the companies apply their standard discount rate.

The key issue is how the required rate of return for the residual discounted cash flow should be adjusted when presumed secure tax deductions are removed. Risk has now increased for the residual flow, and an adjustment must be made for this. The Ministry appears to argue against such an adjustment, but comes into conflict here with capital asset pricing and value additivity – that the sum of the weighted average of the various betas of the partial discounted cash flows must equal the net after tax cash flow beta. An unrealistic and undocumented assumption is that companies regard the tax deductions as wholly secure, and that Norwegian tax deductions are valued in a completely different way than in other producer countries. On the other hand, the Ministry (2013) makes a correction for increased risk in the residual discounted cash flow – but not in the way the companies would do it. No formula permits a simple calculation of the necessary discount rate for the residual discounted cash flow, which precisely represents one reason why this method is not used. Unlike the NPV method, the textbooks do not provide a procedure.

The article provides three arguments against the Norwegian government's approach of treating the tax deductions as risk free in project valuations. First, they are not risk free, due to political risk and the risk of the size of the investment cost. Political risk has been particularly relevant in the UK, but is now also the case in Norway when the government claims that the uplift should be reduced further. Transitional arrangements of fixed duration do not adequately address this. Second, tax design must be contingent on actual company behaviour. The oil companies do not apply a partial cash flow method that the government presumes, and hence the tax policy may lead to underinvestment. Third, if the oil companies actually were willing to use this method, we demonstrate that it cannot be implemented for realistic projects. A fourth argument, not addressed in this article, is how this is perceived by shareholders. Tax carry-forwards can be perceived as a low-risk loan from the companies to the government. Oil companies are normally not in the business of providing low-risk loans. Their shareholders would not thank them for this unless they were compensated. Oil companies have targets for the average return on capital employed (RoACE) that they communicate to the market, and analysts benchmark oil companies on this indicator. Provision of low-risk loans would reduce RoACE. An indication of oil companies' unwillingness to hold low return assets is their recent sale of ownership in gas pipelines in Norway that held a regulated return of 7%.