

COST OVERRUNS ON THE NCS: HOW BAD IS IT?

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Overview

The oil and gas sector is crucial for the Norwegian economy. An abnormally long boom lasting more than a decade has resulted in a sharp rise in petroleum-industry costs, in Norway as in other producer countries. Combined with a slump in oil prices, this has presented the industry and producer countries with big economic challenges. That has in turn focused greater attention on the cost side. Examples of projects with substantial cost overruns are not hard to find. What factors underlie these overruns? Based on media coverage, the impression could easily be gained that Norway's oil and gas sector suffers from a lack of ability and competence in planning and executing projects in line with budgeted costs. Is this reputation well deserved? Does Norway's oil sector do worse than in other producer countries or compared with other industries?

Methods

Our dataset consists of cost overruns for 158 different projects executed on the NCS from 1970 to 2013. Data from 2000 to 2013 was extracted from the Norwegian national budget, and figures on cost overruns for the NCS before 2000 are taken from reports written by the Investment Committee, the NPD and the Office of the Auditor General among others. Based on the data, we analyse the distribution of cost overruns on the NCS and compare it against the distribution of other industries. Cross sectional regression with ordinary least square estimation and quantile regressions with least absolute deviation estimation is utilized to investigate the empirical relationship between cost overruns and variables such as geographical area experience and project investment size.

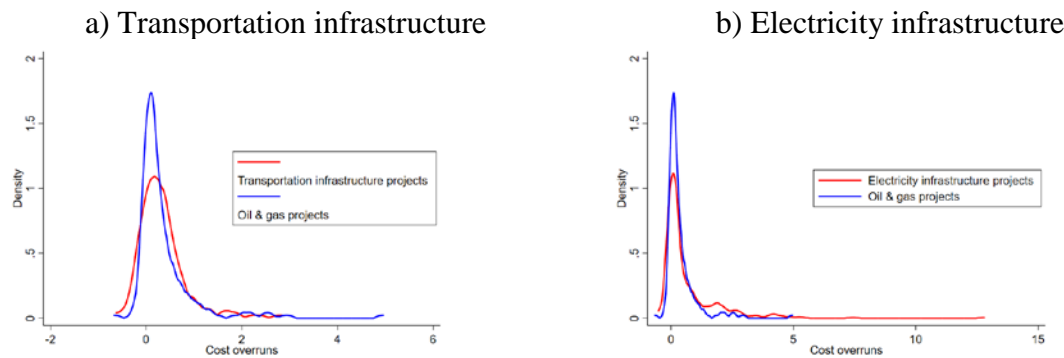
Results

Analysis of the statistical moments of the cost overruns distribution indicates that overspending the budget is a prevalent problem. For instance, the mean cost overrun in the data set is considerably higher than zero (36 per cent). The lowest and highest observations are -67 per cent and 495 per cent respectively. Furthermore, the standard deviation (64 percentage points), positive skewness (3.74) and leptokurtosis (22.22) appear to be substantial. Temporal investigation of the cost overruns shows that they have not significantly changed since 1985. Utilizing the theoretical framework of Flyvbjerg et al (2002), we can infer the root cause of the cost overruns based on the statistical moments. Specifically, with temporally stable positive mean and skewness, strategic misreporting is a probable contributor to the overruns. While overruns appear to be frequent and severe on the NCS, the Norwegian oil and gas industry does not appear to be significantly worse than other industries. For instance, based on numbers presented in Merrow (2011), encompassing 130 oil and gas projects between 1995 and 2015 from several countries, there is no significant difference in the frequency and extent of the overruns. Statistics from EY (2013) further supports this notion. Further, in Figure 1 we compare Norwegian oil and gas projects with the transportation infrastructure projects using data from Flyvbjerg et al (2002) and electricity infrastructure projects with data from Sovacool et al (2014). As illustrated, the distributions appear to predominantly coincide, which suggest that the Norwegian oil and gas industry is not significantly worse.

Our econometric analysis provides significant results. Area experience, proxied as the number of completed projects in the region, is found to exhibit a negative and significant effect.

Projects investment size, which can be considered as a proxy for project complexity, yields a positive and significant coefficient when LAD estimation is used. In other words, regression results suggest that cost overruns tend to decrease as experience is accumulated and that larger and more complex projects tend to incur more overruns. Analysis of additional explanatory variables can be found in Dahl et al (2017) and Lorentzen et al (2017).

Figure 1: Distribution of cost overruns in oil & gas industry on the NCS compared to other industries



Sources: Norwegian National Budget, Norwegian Petroleum Directorate, NOU 1999:11, Sovacool et al (2014), Flyvbjerg et al (2002), Office of the Auditor General.

Conclusions

Cost-overrun studies in other producer countries provide no grounds for saying that the NCS stands out in a negative way. Nor do overruns in other countries differ from global surveys of cost performance in transport and electricity infrastructure projects. The analysis indicates that overruns tend to decrease as experience is built up. That applies to accumulated experience in different areas of the NCS and experience acquired by different operator companies. Our analysis provides an empirical indication that overruns tend to be bigger for large projects. The article reveals that project size and lack of experience are explanatory factors for overruns. Identification of problem areas can be useful information for suppliers and oil companies when producing cost estimates and following up projects. Overruns related to project size could also influence the optimal choice of concept for developments and favour sequential development. However, this must be balanced against the loss of economies of scale, possible reductions in overall produced volume and deferred revenues. Our results could also have policy implications for governments, particularly with regard to experience and learning. These findings support the current policy of gradual sequential opening of geographical areas to oil operations in order to benefit from experience acquired along the way.

References

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