How do investors value cash flows vs. Earnings

Bård Misund

UiS Business School

University of Stavanger

uis.no

31/07/2017

University of Stavanger

Research

Broader topic

- This research addresses the topic of Oil&gas company reported earnings (Financial reports), and the relevance of this information for investors

Specific topic

- Effect on value-relevance of competing methods for accounting for oil&gas exploration activities
  - Full cost versus Successful efforts

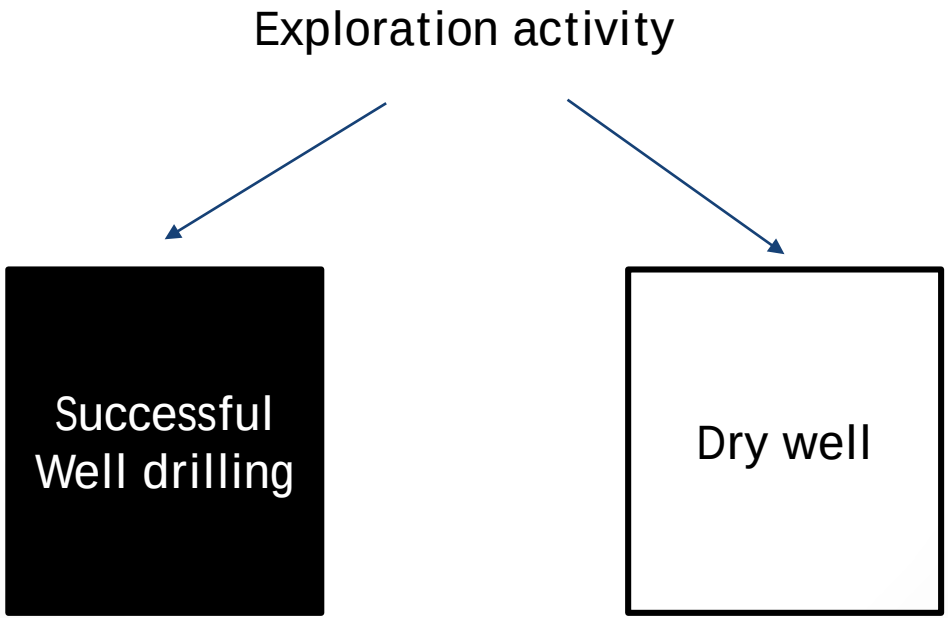
University of Stavanger

Background

- For more than 40 years, oil&gas companies have been able to choose between 2 competing methods for accounting for oil&gas exploration expenses
- A result of intense lobbying by oil&gas companies
- Full Cost Method
- Successful Efforts Method

University of Stavanger

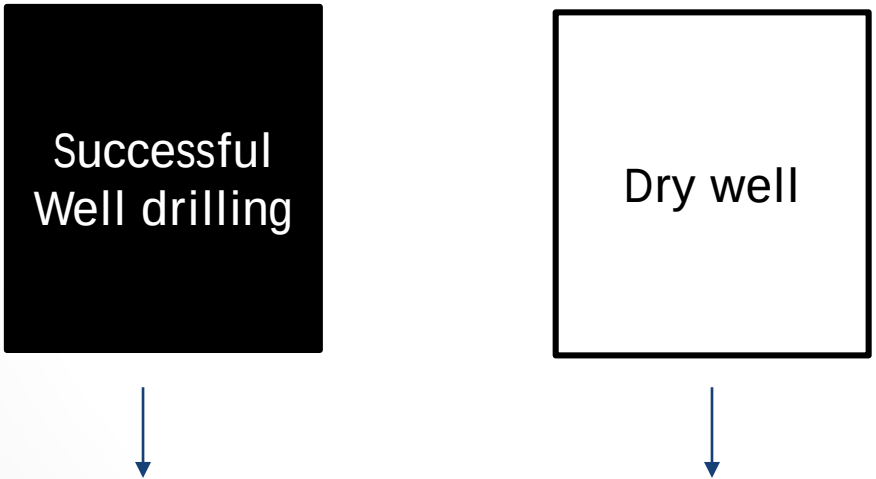
Full cost vs. Successful efforts



University of Stavanger

Successful efforts

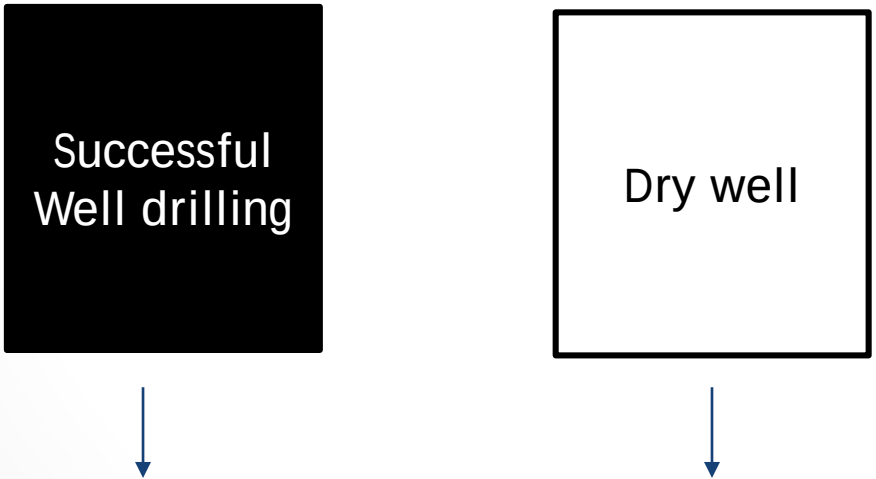
Only expenses incurred from successful wells are capitalized



University of Stavanger

Full cost

All expenses incurred from successful wells are capitalized



University of Stavanger

Successful efforts vs. Full cost

Volatile earnings

(largest o&g companies)

Smoother earnings

(smaller o&g cmopanies)

University of Stavanger

Issue

- Companies are allowed to choose between these two methods
- This choice affects earnings
- Two identical firms will report two separate earnings figures under the two methods
- Can confuse investors

University of Stavanger

Research question

- Hypothesis:
- Accounting method choice will confuse investors, who will have reduced confidence in accounting earnings
- Investors will rely more on non-accrual accounting numbers (i.e. cash flows instead of accounting earnings)

University of Stavanger

Previous research

- Previous research suggests a link between performance measures and valuation in the oil and gas sector (Boyer and Filion (2007); Misund, Asche and Osmundsen (2008); Misund (2015); Asche, F. and B. Misund (2016); Misund (2016); Misund and Osmundsen (2015); Misund and Osmundsen (2017); Osmundsen et al. (2006); Osmundsen et al. (2007); Misund (2018)).
- This relationship can also be found in other sectors (Misund (2016b), Misund (2018b), Misund and Nygård, (2018)).

University of Stavanger

Theoretical model

- Ohlson (1995)

- MV = f(BV, E, v)

- MV: Market value of equity
- BV: Book value of equity
- E: Earnings
- V: ‘Other information’

University of Stavanger

Empirical methodology

- Divide into two subsamples
  - Full cost (FC) firms
  - Successful efforts (SE) firms

- Run 2 models:

- Earnings model
- Cash flow model

- Determine best model using Vuong (1989) statistic

University of Stavanger

Empirical model (Earnings)

$$R_{it} = \beta_0 + \beta_1 \frac{E_{it}}{MVE_{it-1}} + \beta_2 \frac{\Delta E_{it}}{MVE_{it-1}} + \beta_3 \frac{\Delta NPV_{it}}{MVE_{it-1}} + \beta_4 MRP_t + \beta_5 SMB_t + \beta_6 HML_t + \beta_7 MOM_t + \beta_8 \Delta OP_t + \beta_9 \Delta GP_t + \boldsymbol{\theta FE_i} + \boldsymbol{\pi FE_t} + \varepsilon_{it}^3$$

Variables:

- R = returns
- NPV = net present value of oil&gas reserves (='other information'),
- MRP/SMB/HML/MOM = Fama-French-Carhart risk factors,
- OP = Oil price, GP = gas price,
- FE = fixed effects

University of Stavanger

Empirical model (Cash flow)

$$R_{it} = \beta_0 + \beta_1 \frac{CF_{it}}{MVE_{it-1}} + \beta_2 \frac{\Delta CF_{it}}{MVE_{it-1}} + \beta_3 \frac{\Delta NPV_{it}}{MVE_{it-1}} + \beta_4 MRP_t + \beta_5 SMB_t + \beta_6 HML_t + \beta_7 MOM_t + \beta_8 \Delta OP_t + \beta_9 \Delta GP_t + \boldsymbol{\theta FE_i} + \boldsymbol{\pi FE_t} + \varepsilon_{it}^4$$

Variables:

- R = returns
- NPV = net present value of oil&gas reserves (='other information'),
- MRP/SMB/HML/MOM = Fama-French-Carhart risk factors,
- OP = Oil price, GP = gas price,
- FE = fixed effects

University of Stavanger

Results

Earnings not significant Neither for full cost nor successful efforts firms

	Earnings model for Full Cost companies	Earnings model for Successful Efforts companies		Cash flow model for Full Cost companies	Cash flow model for Successful Efforts companies
E	-0.060 (0.418)	0.184 (0.190)			
ΔE	0.013 (0.519)	0.124 (0.293)			
CF				0.638 (<0.001)	1.218 (<0.001)
ΔCF				0.084 (0.154)	-0.572 (0.034)
ΔNPV	0.020 (0.188)	0.057 (0.030)		0.011 (0.193)	0.060 (0.008)
MRP	0.687 (<0.001)	0.680 (<0.001)		0.775 (<0.001)	0.773 (<0.001)
SMB	1.475 (<0.001)	1.011 (<0.001)		1.545 (<0.001)	1.002 (<0.001)
HML	0.803 (0.022)	0.266 (0.306)		0.298 (0.358)	0.059 (0.802)
MOM	-0.110 (0.609)	0.029 (0.857)		-0.044 (0.840)	0.224 (0.078)
ΔOP	0.449 (<0.001)	0.398 (<0.001)		0.527 (<0.001)	0.380 (<0.001)
ΔGP	0.393 (<0.001)	0.124 (<0.001)		0.287 (<0.001)	0.095 (0.011)
R^2-adj (within)	0.190	0.148		0.245	0.226
F-statistic	44.192 (<0.001)	37.264 (<0.001)		61.308 (<0.001)	63.852 (<0.001)
Vuong test (z-statistic)				-2.425 (<0.001)	-1.629 (0.052)

Earnings not significant Neither for full cost nor successful efforts firms

Vuong (1989) statistic confirm result

University of Stavanger

Conclusion

- Stronger association between cash flow and market values than between earnings and market values
- Can conclude that Cash flows are more value relevant
- Result independent of accounting method

University of Stavanger

References

- Asche, F. and B. Misund (2016). Who's a major? A novel approach to peer group selection: Empirical evidence from oil and gas companies. *Cogent Economics & Finance* 4:1264538. http://dx.doi.org/10.1080/23322039.2016.1264538.
- Bentley, R. and Y. Bentley (2015). Explaining the price of oil 1971-2014: The need to use reliable data on oil discovery and to account for 'mid-point' peak. *Energy Policy* 86, 880-890.
- Boone, J. (2002). Revisiting the reportedly weak value relevance of oil and gas asset present values: The roles of measurement error, model misspecification, and time-period idiosyncrasy. *The Accounting Review* 77 (1), 73-106.
- Boone, J. and K.K. Raman (2007). Does implementation guidance affect opportunistic reporting and value relevance of earnings? *Journal of Accounting and Public Policy* 26, 160-192.
- Boyer, M.M. and D. Filion (2007). Common and fundamental factors in stock returns of Canadian oil and gas companies. *Energy Economics* 29, 428-453.
- Bryant, L. (2003). Relative value relevance of the successful efforts and full cost accounting methods in the oil and gas industry. *Review of Accounting Studies* 8 (1), 5-28.
- Collins, D. and W. Dent (1979). The proposed elimination of full cost accounting in the extractive petroleum industry: An empirical assessment of the market consequences. *Journal of Accounting and Economics* 1, 3-44.
- Collins, D.W., Rozeff, M.S. and D.S. Dhaliwal (1981). The economic determinants of the market reaction to proposed mandatory accounting changes in the oil and gas industry: A cross-sectional analysis. *Journal of Accounting and Economics* 3(1), 37-71.
- Cormier, D. and M. Magnan (2002). Performance reporting by oil and gas firms: Contractual and value implications. *Journal of International Accounting, Auditing and Taxation* 11 (2), 131-153.
- Cortese, C.L. (2011). Standardizing oil and gas accounting in the U.S. in the 1970s: Insights from the perspective of regulatory capture. *Accounting History* 16 (4), 403-421.
- Cortese, C.L. and Irvine, H.J. (2010). Investigating international accounting standard setting: the black box of IFRS 6. *Research in Accounting Regulation* 22, 87-95.
- Cortese, C.L., Irvine, H.J. and M.A. Kaidonis (2009). Extractive industries accounting and economic consequences: Past, present and future. *Accounting Forum* 33, 27-37.
- Cortese, C.L., Irvine, H.J. and M.A. Kaidonis (2010). Powerful players: How constituents captured the setting of IFRS 6, an accounting standard for the extractive industries. *Accounting Forum* 34, 76-88.

University of Stavanger

Refences

- Dechow, P.M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics* 18, 3-42.
- DeFond, M.L. and M. Hung (2003). An empirical analysis of analysts' cash flow forecasts. *Journal of Accounting and Economics* 35, 73-100.
- Duchac, J. and Douthett, E. (1997). The effect of accounting for oil and gas reserves on the relation between returns and earnings. *Journal of Accounting and Finance Research* 4 (2), 20-32.
- Ewing, B.T. and M.A. Thompson (2016). The role of reserves and production in the market capitalization of oil and gas companies. *Energy Policy* 98, 576-581.
- Fields, T.D., T.Z. Lys and L. Vincent (2001). Empirical research on accounting choice. *Journal of Accounting and Economics* 31, 255-307.
- Healey, P. and K. Palepu (1993). The effects of firms' financial disclosure strategies on stock prices. *Accounting Horizons* 7, 1-11.
- Holthausen, R. and R. Leftwich (1983). The economic consequences of accounting choice: Implications of costly contracting and monitoring. *Journal of Accounting and Economics* 5, 77-117.
- Kretzschmar, G.L., Misund, B. and D. Hatherly (2007). Market risks and oilfield ownership – Refining oil and gas disclosures. *Energy Policy* 35(11), 5909-5917.
- Misund, B. (2015). Reserves replacement and oil and gas company shareholder returns. University of Stavanger Working Paper.
- Misund, B. (2016). Vertical integration and value-relevance: Empirical evidence from oil and gas producers. *Cogent Economics & Finance* 4:1264107, http://dx.doi.org/10.1080/23322039.2016.1264107.
- Misund, B. and P. Osmundsen (2015). The value-relevance of accounting figures in the oil and gas industry: Cash flow or accruals? *Petroleum Accounting and Financial Management Journal* 34(2), 90-110.
- Misund, B. and P. Osmundsen (2017). Valuation of proved vs. probable oil and gas reserves. *Cogent Economics & Finance*, 5: 1385443. https://doi.org/10.1080/23322039.2017.1385443.
- Misund, B., Asche, F. and P. Osmundsen (2008). Industry upheaval and valuation: empirical evidence from the international oil and gas industry. *The International Journal of Accounting* 43 (4), 398-424.
- Misund, B., Mohn, K. and M. Sikveland (2017). Exploration risk in oil and gas shareholder returns. Forthcoming in *Journal of Energy Markets*.
- Misund, B., Osmundsen, P. and M. Sikveland (2015). International oil company valuation: The effect of accounting method and vertical integration. *Petroleum Accounting and Financial Management Journal* 34(1), 1-19.

University of Stavanger

References

- Misund, B. (2016b). Verdirelevansen av å rapportere biologiske eiendeler til virkelig verdi. En studie av norske lakseoppdrettselskaper. Praktisk Økonomi & Finans, 2016/4, 437-451.
- Misund, B. (2018b). Valuation of salmon farming companies. Aquaculture Economics & Management 22(1), 94-111. http://dx.doi.org/10.1080/13657305.2016.1228712.
- Misund, B. and R. Nygård (2018). Big Fish: Valuation of the world's largest salmon farming companies. SSRN working paper.
- Ohlson, J.A. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research* 11 (2), 661-687.
- Osmundsen, P, Asche, F., Misund, B., and K. Mohn (2006). Valuation of international oil companies. *The Energy Journal* 27 (3), 49-64.
- Osmundsen, P, K. Mohn, F. Asche, and B. Misund (2007). Is supply choked by financial market pressures? *Energy Policy* 31(2), 467-474.
- Sadorsky, P. (2001). Risk factors in stock returns of Canadian oil and gas companies. *Energy Economics* 23, 17-28.
- Speirs, J., C. McGlade and R. Slade (2015). Uncertainty in the availability of natural resources: Fossil fuels, critical metals, and biomass. *Energy Policy* 87, 654-664.
- Sutton, T.G. (1984). Lobbying of accounting standard-setting bodies in the U.K. and the U.S.A.: A downsian analysis. *Accounting, Organizations and Society* 9 (1), 81-95.
- Van Riper, R. (1994). *Setting standards for financial reporting: FASB and the struggle for control of a critical process*. Connecticut, USA: Quorom Books.
- Vuong, Q.H. (1989). Likelihood ratio test for model selection and non-nested hypotheses. *Econometrica* 57, 307-333.
- Watts, R.L. and J.L. Zimmerman (1986). *Positive accounting theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Wright, C.J. and R.A. Gallun (2005). *International Petroleum Accounting*. Tulsa, Oklahoma: PennWell.
- Zeff, S.A. (1978). The risk of 'economic' consequences. *Journal of Accountancy* 146 (6), 56-63.

University of Stavanger