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Bernstein Energy: Global Oil Marginal Cost Survey. What is the long term price for oil?

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We surveyed the 50 largest listed oil and gas companies globally (TOP50), which together account for roughly two-thirds of non-OPEC oil supply (excluding the FSU). Based on 2025 annual reports, we estimate that the global oil marginal cost declined by 2% YoY last year to US$69/bbl. ***Adjusting for cost inflation and price reflexivity to oil price we expect marginal cost will reach US$77/bbl in 2026.***

Global Marginal Cost of oil for non-OPEC oil producers decreased 2% to US$69/bbl in 2025. The decline in marginal cost was broad driven by lower production costs (-14% y-o-y). Meanwhile, DD&A and exploration expenses were largely stable y-o-y at US$13.3/boe and US$1.0/boe respectively. Interest expense declined to US$1.0/boe. The Marginal Cost of Oil is below the current spot price and in line with the long-term forward strip (US $70/bbl). **Global Marginal Cash Cost of production, which sets a floor for oil price, remained largely stable at US$39/bbl.**

With a tighter oil market and higher spot prices, we expect 2026 marginal cost to come in at US$77/bbl. The US$69/bbl level remains a key long-term reference, though backward-looking. Given the reflexivity of costs to oil price, we expect higher spot prices and a tighter physical market to drive cost inflation across the supply chain, lifting the marginal cost of supply towards US$77/bbl for this year. **This is consistent with our US $75/bbl as a reasonable long term oil price assumption for equity valuation, above the current 60M forward strip of US$70/bbl.**

Net income breakeven for the oil industry is US$50/bbl. Global Unit Production Cost declined by 5% y-o-y to US$35/boe. Given the realization spread between oil price and revenue per boe of 72%, it implies the industry needs a US$50/bbl oil price to 'break even' on a net income basis. **Industry ROACE declined last year to 10% (at an oil price of US $70/bbl) which is in line with the long term industry average and cost of capital of 10%.** Average net income was US$9.8/boe (-9% y-o-y) with net income margin of 20%. Free cash flow declined to US$9.4/boe (-3%) with lower cash flow alongside a modest decline in capex (-5%).

Industry re-investment rate (capex to cash flow) was stable at 61% in 2025 but remains well below the long-term average. Industry capex per unit of flowing barrel declined to US$14.7/boe. After troughing at 36% in 2022, the reinvestment ratio recovered to 61% in 2025, though still below the 80–90% long-term range, reflecting a more cautious outlook on long-term demand.

Reserve life remains on a declining trend given lower re-investment in recent years and the 1P oil reserves life reached a 20-year low of 10.4 years, which could imply a bullish signal. F&D costs for the industry were US$14.3/boe (-9%), which is above DD&A cost of US$13.3/boe. Despite reserves replacement remaining strong at 135%, the reserves to production (R/P) ratio fell to 10.4 years (for both total and oil), down from the long term average of 13 years, reflecting faster production growth relative to reserves additions. A lower R/P ratio implies a weaker outlook for oil production growth.

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BERNSTEIN TICKER TABLE

Ticker	Rating	Cur	26 May 2026 Closing Price	Price Target	TTM Rel. Perf.	Cur	Reported EPS 2025A	2026E	2027E	Reported P/E (x) 2025A	2026E	2027E
600028.CH (SinoPec)	U	CNY	4.87	4.40	(59.0)%	CNY	0.29	0.36	0.33	16.9	13.4	14.6
386.HK (SinoPec)	U	HKD	4.42	4.50	(40.8)%	CNY	0.29	0.36	0.33	13.3	10.5	11.5
883.HK (CNOOC)	O	HKD	26.92	31.70	5.8%	CNY	2.56	3.88	3.17	9.1	6.0	7.4
1605.JP (Inpex)	M	JPY	3,668.00	3,990.00	48.2%	JPY	330.82	449.77	412.65	11.1	8.2	8.9
857.HK (PetroChina)	O	HKD	10.91	13.20	22.3%	CNY	0.86	1.24	1.05	11.0	7.6	9.0
601857.CH (PetroChina)	M	CNY	10.96	12.60	(10.6)%	CNY	0.86	1.24	1.05	12.8	8.9	10.4
PTTEP.TB (PTTEP)	M	THB	146.50	145.00	2.1%	USD	0.46	0.67	0.54	9.7	6.7	8.3
STO.AU (Santos)	O	AUD	7.87	8.90	(22.4)%	USD	0.25	0.68	0.58	22.4	8.3	9.7
WDS.AU (Woodside Energy)	M	AUD	30.72	33.00	(1.4)%	USD	1.42	2.24	1.67	15.5	9.8	13.2
ASIAX			1,978.51									
JPL			2,562.70									

O - Outperform, M - Market-Perform, U - Underperform, NR - Not Rated, CS - Coverage Suspended

Source: Bloomberg, Bernstein estimates and analysis.

INVESTMENT IMPLICATIONS

Our survey of the global oil industry based on 2025 annual reports indicates that the marginal cost of oil, which sets the long term price of oil, declined 2% to US$69/bbl. The decline in marginal cost from last year reflects the 14% decline in oil price (Brent) to US$69/bbl in 2025. Adjusting for the higher anticipated oil price for this year (US$90/bbl), which will drive inflation in fuel costs, raw material prices and production taxes, we expect the marginal cost in 2026 to reach US$77/bbl in 2026. This range in marginal cost from US$69 (for 2025) to US$77/bbl (expected for 2026) provides a guide to the long run oil price which should be used for equity valuation. In our discounted cash flow models we therefore use US$75/bbl as a long term planning price. As such we use US$90/bbl for 2026, US$78/bbl for 2027 and US$75/bbl for our long term Brent price (flat nominal). Oil price can of course trade between the price of demand destruction and the marginal cash cost. The price of demand destruction sits at US$130/bbl (c. 4.5% of world GDP) which represents the point above which there is a high probability of a global recession of prices remain at that level or above for a prolonged period. Conversely, the marginal cash cost of oil, which represents the floor price for oil remained steady at US$39/bbl. Other key data points which we feel are important is the 'average' breakeven for the industry at US$50/bbl, which is the oil price required for the average company in the industry to break even. Moreover, industry return on capital last year was 10% at an oil price of c. US$70/bbl (Brent), which is in line with the long run industry ROACE of 10% and implied cost of capital for the sector. While reserve replacement was above 100%, the average reserves life of the TOP50 oil companies dropped to 10.4 years which is the lowest level in the last 20 years, and continues a long run declining trend. Reinvestment rates (ratio of capex to cash flow) remained stable at c. 60% but well below the peak rates of 100% back in the early 2010's. Lower reserve life ratios tends to be a lead indicator of lower production growth going forward, which could be taken as a bullish signal. For investors the key insight from this report is that long run marginal cost could well be about US$5/bbl above the long term forward price of US$70/bbl (60M Brent), which means that oil equities are likely to be undervalued.

VALUATION COMPS TABLE

EXHIBIT 1: **Global oil majors valuation comparison**

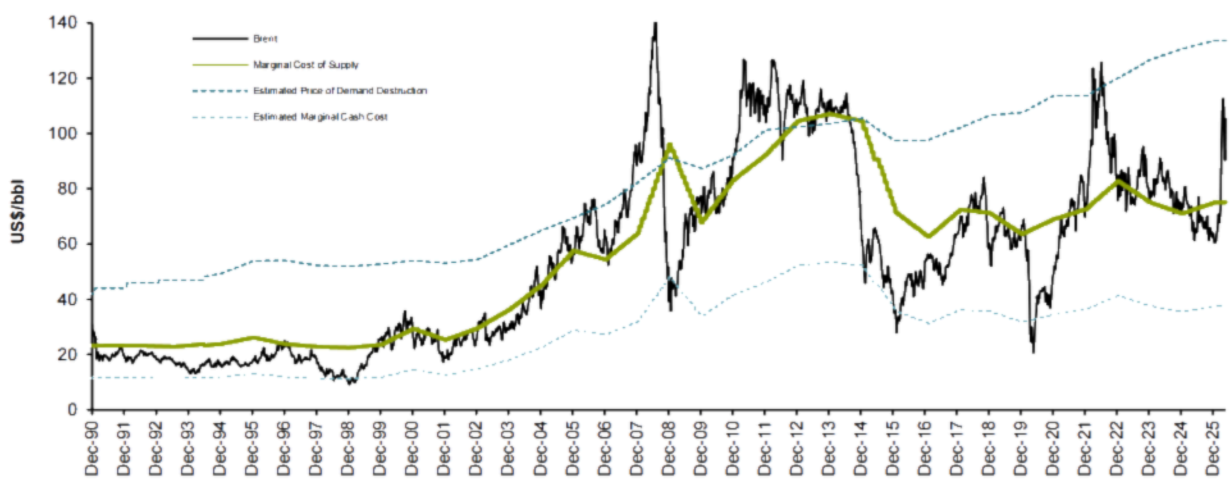
	Peer Group Valuation Multiple							
	2026 P/E	2026 Relative P/E	2026 PCF	2026 EV/DACF	2026 P/B	2026 FCF yield	2026 Dividend yield	2026 ROACE
PetroChina	9.3	0.8	4.0	5.4	1.1	3.7%	5.7%	10.8%
Sinopec	10.2	0.9	2.5	5.7	0.6	5.8%	7.0%	3.8%
CNOOC	6.9	0.6	4.6	4.0	1.4	10.7%	6.7%	19.1%
Average CH Majors (H-sh)	**8.8**	**0.8**	**3.7**	**5.0**	**1.0**	**6.7%**	**6.4%**	**11.2%**
ExxonMobil	15.2	0.7	9.2	9.6	2.6	6.3%	2.6%	12.2%
Chevron	14.1	0.6	7.3	8.1	2.1	8.6%	3.6%	14.1%
Average US Majors	**14.7**	**0.7**	**8.2**	**8.9**	**2.4**	**7.4%**	**3.1%**	**13.1%**
TOTAL	8.7	0.6	5.7	6.9	1.6	8.0%	4.3%	9.4%
Shell	9.0	0.7	4.1	4.9	1.4	12.2%	3.5%	9.7%
BP	8.9	0.7	3.7	5.7	2.1	14.7%	4.5%	-1.3%
Equinor	7.9	0.6	3.9	4.1	2.4	10.3%	4.0%	16.3%
ENI	9.2	0.7	4.8	6.1	1.5	12.0%	4.7%	8.5%
Average EU Majors	**8.7**	**0.7**	**4.4**	**5.5**	**1.8**	**11.4%**	**4.2%**	**8.5%**
Petrobras	5.0	0.4	2.9	3.9	1.5	12.0%	9.9%	18.6%
ONGC	8.9	0.7	4.6	6.3	1.0	14.3%	4.1%	8.7%
Average EM Majors	**7.0**	**0.6**	**3.7**	**5.1**	**1.3**	**13.2%**	**7.0%**	**13.6%**
Aramco	**14.4**	**1.2**	**11.1**	**11.5**	**4.4**	**6.3%**	**5.0%**	**21.6%**

Source: Bloomberg (consensus), Bernstein analysis

DETAILS

We believe that oil prices over the long run are set by Marginal Cost with the floor being set by Marginal Cash Cost. When oil markets are in balance, with inventories and spare capacity at normalized levels, oil price should trade at or around the Marginal Cost which is the oil price required for the marginal non-OPEC producer to cover production costs and replace reserves. Conversely, when markets are oversupplied, inventories swollen and spare capacity elevated, prices should trade down towards the Marginal Cash Cost of production which is the oil price required for companies to cover production costs only. When we use the term 'marginal' we refer to the top decile (90th percentile) of the cost curve. While inventory movements may dictate the short-term movement of oil prices, the marginal cost plays a key role in setting the long-term equilibrium price of oil. But costs are not static and every year the marginal cost changes. While Marginal Cost is by definition - backward looking, it is still the most useful reference point for where oil prices should trade at on a fundamental level and a key yardstick for long term oil prices.

EXHIBIT 2: **The Marginal Cost of Oil for Top 50 decreased by 2% to US$69/bbl in 2025**



Source: Bloomberg, Company Reports, Bernstein analysis

To determine marginal cost, we analyze cost and profitability trends of the 50 largest oil producing companies globally (excluding Russia and the Middle East which sit at the bottom of the cost curve), in what we term as the *TOP50*. Due to mergers and acquisitions, the updated company list has 44 companies remaining. The key conclusion of this analysis based on the latest annual reports is that the Marginal Cost of the TOP50 globally decreased by 2% y-o-y in 2025 to US$69/bbl. This is below the current spot price of Brent of c.US$100/bbl and long-term forward price (60M forward) of US$70/bbl which oil equities are generally priced off. The Marginal Cash cost US$39/bbl is the lower limit of the sustainable pricing in the industry.

While the marginal cost sets the long-term price for oil (and marginal cash cost sets the floor), it is important to remember that this is a backward-looking metric. Production costs and taxes tend to fluctuate with oil prices which will have an impact on the marginal costs of production. Based on our analysis, for every $10/bbl change in Brent, we expect a c.US$3-4/bbl change in the Marginal Cost of oil and c.US$3-4/bbl change in Marginal Cash Cost of oil (Exhibit 3). Given the higher spot prices and tight physical oil market, we see the Marginal Cost of supply gravitating toward the high US$70s and Marginal Cash Costs anchored in the high US$40s.

EXHIBIT 3: **Reflexibility of Marginal Cost and Marginal Cash Cost under different oil prices. Given the higher spot prices and tight physical oil market, we see the Marginal Cost of supply gravitating toward the high US$70s and Marginal Cash Costs anchored in the high US$40s**

US$/boe Brent	50	60	70	80	90	100
Revenue	35.0	42.0	49.0	56.0	63.0	70.0
Realization Spread	15.0	18.0	21.0	24.0	27.0	30.0
Realization as % of Brent (%)	70%	70%	70%	70%	70%	70%
Production Costs	10.4	12.2	14.0	15.9	17.7	19.5
Exploration Expense	1.0	1.0	1.0	1.0	1.0	1.0
DD&A	13.3	13.3	13.3	13.3	13.3	13.3
SG&A & Other	2.5	2.5	2.5	2.5	2.5	2.5
Net interest cost	1.0	1.0	1.0	1.0	1.0	1.0
Unit Costs	28.2	30.0	31.8	33.6	35.4	37.3
Cash Costs	13.8	15.7	17.5	19.3	21.1	22.9
Income Tax	2.4	4.2	6.0	7.8	9.6	11.5
Implied CT Rate (%)	35%	35%	35%	35%	35%	35%
Net Income	4.4	7.8	11.2	14.5	17.9	21.3
Marginal Cost	**62.7**	**66.2**	**69.7**	**73.2**	**76.7**	**80.2**
Marginal Cash Costs	**32.3**	**35.8**	**39.3**	**42.8**	**46.3**	**49.9**

Source: Company Report, Bernstein estimates and analysis

GLOBAL MARGINAL COST – RESULTS FROM OUR 2024 ANALYSIS

Based on our analysis of the 50 largest non-OPEC oil and gas producing companies (excluding FSU), the Marginal Cost of oil appears to have declined in 2024. **Our analysis of the *TOP50* leading oil and gas companies globally indicates that marginal cost decreased by 2% in 2025 to US$69/bbl** (Exhibit 2). Unit costs were down 3% at US$36/boe.

Our detailed definition of Marginal Cost is given below. Essentially, we define it *as 'the cost to replace reserves for the top decile producers within the global cost curve'*. To derive the marginal cost of production we have analyzed the financial reports from the 50 largest non-OPEC oil and gas producing companies globally (excluding FSU), in what we term the *TOP50*. The data for our analysis of the *TOP50* come from 20-F reports and Annual Reports where there is no 20-F report available.

Before we start, some definitions;

Within this report we use the term ***TOP50*** for the abbreviation of the **50 largest non-OPEC oil and gas producing companies globally**. **We believe this is representative of the non-OPEC production cost curve** although it excludes FSU and Middles Eastern companies where there is not enough financial data to assess Marginal Cost. Given that these companies fall towards the bottom of the marginal cost curve, we do not think it important that these companies are included.

We also use several definitions of Cost such as Cash Cost, Production Cost, Unit Cost of Production and Marginal Cost. These costs relate to each other to some extent but measure slightly different aspects of cost. The definitions of costs we use within the report are summarized below.

Production Cost or Lease Operating Expense (LOE) *= Operating Costs + Production Taxes*

Cash Costs *= Operating Costs + Production Taxes+ SG&A and other + Net Interest cost*

Unit Costs *= LOE + SG&A and other + Net Interest cost + Exploration Expense + DD&A*

Organic F&D Costs *= Organic Capex / Reserve Additions from Discoveries or Revisions*

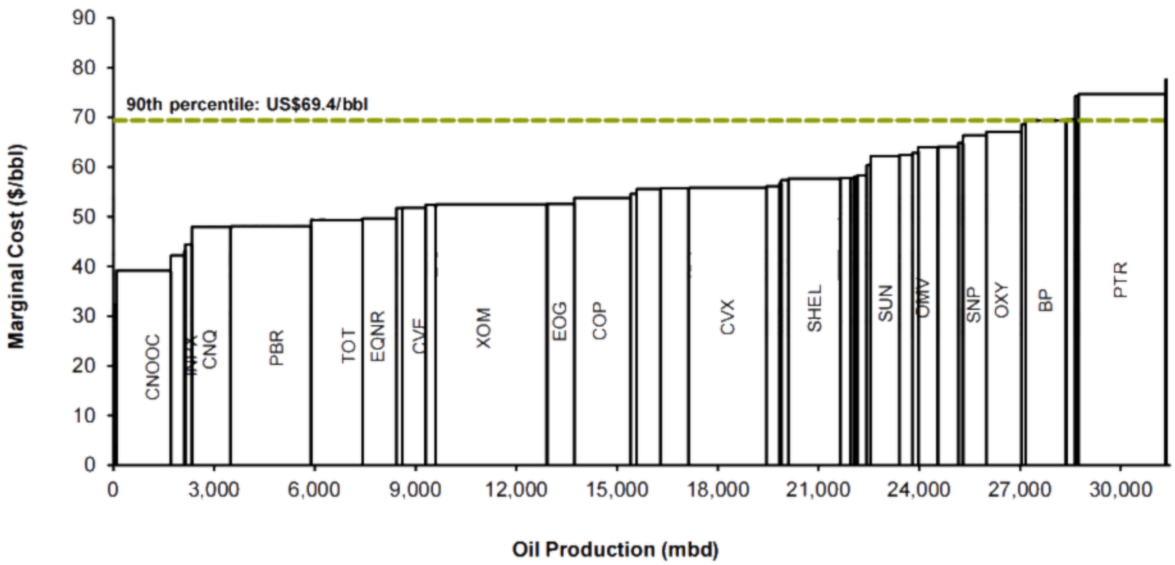
Marginal Cost *= [LOE + SG&A and other + Net interest cost + Exploration expense + DD&A + 0.3*DD&A/ (1 – Tax)]/ %Z, where Tax is the corporate tax rate, and %Z is the revenue per barrel as a percentage of the benchmark price.*

Marginal Cash Cost *= (LOE + Net Interest cost) / %Z*

The Marginal Cost Curve by company for the *TOP50* is shown in (Exhibit 4). **Based on our analysis, the Marginal Cost of Production for the *TOP50* decreased by 5% y-o-y in 2024 to US$71/bbl (90th percentile of global non-OPEC cost**

curve).

EXHIBIT 4: **2025 Global non-OPEC ex FSU Marginal Cost Curve**



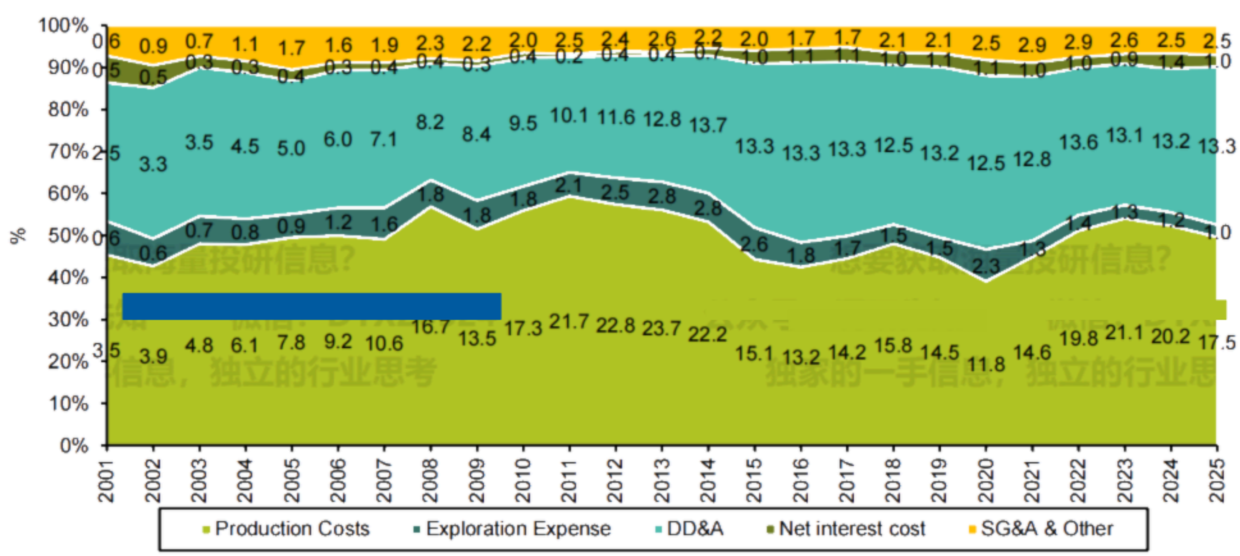
Source: Company Reports, Bloomberg, Bernstein estimates and analysis

THE ANATOMY OF INDUSTRY COSTS – BREAK DOWN OF THE BARREL

The starting point for our analysis is the breakdown of the global oil barrel.

Weighted by production, it is possible to define the make-up of the global barrel for the global *TOP50* in terms of the split between cost, tax and profit (Exhibit 5). While Brent oil prices averaged US$69/bbl in 2025, the net realization or revenue per boe for the *TOP 50* was US$50/boe (72% of Brent). The realization spread between revenue per boe and Brent oil price in 2025 was US$19/boe, tightening from prior years.

EXHIBIT 5: **Breakdown of Unit costs. Production cost and exploration cost went down while DD&A cost was stable**



Source: Corporate Reports, Bernstein Analysis

Production Costs (operating expenses and production taxes) were down 14% y-o-y at US$17.5/boe. DD&A, meanwhile, remained broadly flat at US$13.3/boe and net interest expenses declined to US$1.0/boe. In total, Unit Cost of Production were down 5% y-o-y at US$35.2/boe. The weighted average net earnings of the global *TOP50* decreased to a profit of US$9.8/boe which implies a net margin of 20% (Exhibit 5). With most of the companies generating profits, overall tax rates (which include profit related taxes) have normalized at 18% of pre-tax income.

Organic operating cash flow per boe decreased to US$24.1/boe while organic industry capex declined to US$14.7/boe giving a free cash flow (pre div) of US$9.4/boe. The recycle ratio was at 135%. The industry capex/DD&A decreased slightly to 1.1x. Re-investment ratio was maintained flat at 61%. ROACE declined slightly to around 10% given weaker profitability.

EXHIBIT 6: **Breakdown of the Barrel For 50 Largest Global Oil Companies *TOP50* (Weighed by Production)**

US$/boe	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10Yr CAGR	Y-o-Y
WTI (US$/bbl)	95.1	94.1	98.0	93.0	48.8	43.3	50.8	65.0	57.0	39.2	68.1	94.6	77.7	75.9	64.9	3%	-15%
Brent (US$/bbl)	111.1	111.9	108.8	98.9	52.3	44.1	54.4	70.6	64.5	42.9	70.6	101.3	82.6	80.7	69.1	3%	-14%
Henry Hub (US$/mscf)	4.0	2.8	4.0	4.4	2.6	2.5	3.0	3.2	2.6	2.0	3.8	6.4	2.5	2.2	3.5	3%	60%
Revenue	67.6	67.5	66.5	62.6	36.4	30.0	37.8	47.5	43.7	29.2	49.7	74.9	57.6	54.9	50.0	3%	-9%
Realization Spread	43.4	44.5	42.3	36.3	15.9	14.1	16.6	23.1	20.8	13.7	20.9	26.4	25.0	25.7	19.0	2%	-26%
Realization as % of Brent (%)	61%	60%	61%	63%	70%	68%	70%	67%	68%	68%	70%	74%	70%	68%	72%		
Production Costs	19.0	19.6	20.4	19.5	14.2	12.2	13.0	14.3	13.5	11.8	14.6	19.8	21.1	20.2	17.5	2%	-14%
Exploration Expense	2.1	2.6	2.9	2.9	2.7	1.9	1.8	1.5	1.3	2.3	1.3	1.4	1.3	1.2	1.0	-9%	-16%
DD&A	10.4	11.9	13.1	14.1	13.6	13.6	13.6	12.8	13.5	12.5	12.8	13.6	13.1	13.2	13.3	0%	1%
SG&A & Other	2.5	2.5	2.7	2.2	2.0	1.7	1.7	2.3	2.3	2.5	2.9	2.9	2.6	2.5	2.5	2%	-3%
Net interest cost	0.2	0.3	0.3	0.7	0.9	1.0	1.0	1.0	1.1	1.1	1.0	1.0	0.9	1.4	1.0	1%	-34%
Unit Costs	***34.3***	***37.0***	***39.5***	***39.4***	***33.5***	***30.4***	***31.2***	***31.8***	***31.8***	***30.2***	***32.6***	***38.8***	***37.8***	***37.1***	***35.2***	**1%**	**-5%**
Cash Costs	***21.8***	***22.5***	***23.5***	***22.4***	***17.2***	***14.9***	***15.8***	***17.6***	***16.9***	***15.4***	***18.5***	***23.7***	***23.4***	***22.7***	***20.9***	**2%**	**-8%**
Income Tax	15.0	14.4	12.3	10.4	1.1	0.8	2.8	5.5	4.3	0.6	7.1	13.2	7.8	7.1	5.0	17%	-29%
Implied CT Rate (%)	*45%*	*47%*	*45%*	*43%*	*36%*	*146%*	*36%*	*33%*	*33%*	*329%*	*39%*	*36%*	*38%*	*37%*	*32%*		
Net Income	18.3	16.1	14.7	12.8	1.0	(1.2)	3.8	10.1	7.6	(1.6)	10.0	22.9	12.0	10.7	9.8	26%	-9%
Net Income Margin (%)	27%	24%	22%	20%	3%	-4%	10%	21%	17%	-5%	20%	31%	21%	20%	20%		
Organic F&D Costs	**17.9**	**23.5**	**23.6**	**27.0**	**50.8**	**41.4**	**8.4**	**8.4**	**18.2**	**(27.8)**	**6.2**	**16.2**	**17.8**	**15.7**	**14.3**	-12%	**-9%**
F&D (3 year trailing av.)	**15.2**	**19.5**	**21.7**	**24.7**	**33.8**	**39.7**	**33.5**	**19.4**	**11.7**	**(0.4)**	**(1.2)**	**(1.8)**	**13.4**	**16.6**	**15.9**		
Reserve Replacement Ratio	135%	113%	128%	110%	47%	69%	194%	189%	100%	-13%	205%	128%	119%	161%	135%		
3-year Average RRR	144%	125%	126%	117%	92%	72%	101%	151%	160%	90%	98%	105%	148%	137%	138%		
Recycle Ratio	172%	130%	130%	110%	34%	34%	230%	289%	124%	-48%	390%	234%	148%	160%	169%		
Cash Flow (Pro-Forma)	30.9	30.6	30.7	29.8	17.1	14.3	19.2	24.4	22.5	13.2	24.0	37.9	26.4	25.2	24.1	4%	-4%
Capex	22.9	27.6	29.7	28.2	19.3	13.2	12.6	13.8	14.3	10.3	10.4	13.5	15.4	15.5	14.7	-3%	-5%
Capex/DD&A	2.2	2.3	2.3	2.0	1.4	1.0	0.9	1.1	1.1	0.8	0.8	1.0	1.2	1.2	1.1		
Free Cash Flow (after interest)	8.0	3.0	1.0	1.6	(2.8)	1.1	6.6	10.5	8.2	3.0	13.7	24.5	11.0	9.7	9.4	n.a.	-3%
Re-Investment Ratio (%)	74%	90%	97%	95%	113%	92%	66%	57%	63%	78%	43%	36%	58%	61%	61%		
ROACE	19%	15%	13%	8%	-2%	0%	4%	10%	6%	-4%	11%	22%	14%	11%	10%		
Total Reserve/Production	13.6	13.5	13.7	13.6	12.8	12.0	12.3	12.8	12.2	10.7	11.5	11.2	11.1	11.1	10.4		
Marginal Cost	***92.3***	***104.5***	***107.1***	***104.5***	***71.3***	**62.6**	**72.4**	**71.2**	***63.6***	***68.9***	**72.6**	***82.8***	***75.1***	***71.0***	***69.4***	**0%**	**-2%**
Marginal Cash Cost	**39.6**	**44.2**	**48.1**	**42.7**	**30.3**	**27.7**	**31.1**	**36.1**	**32.2**	**26.5**	**31.8**	**40.3**	**40.2**	**39.4**	**39.0**	**3%**	**-1%**

Source: Company Reports, Bloomberg, Bernstein estimates and analysis

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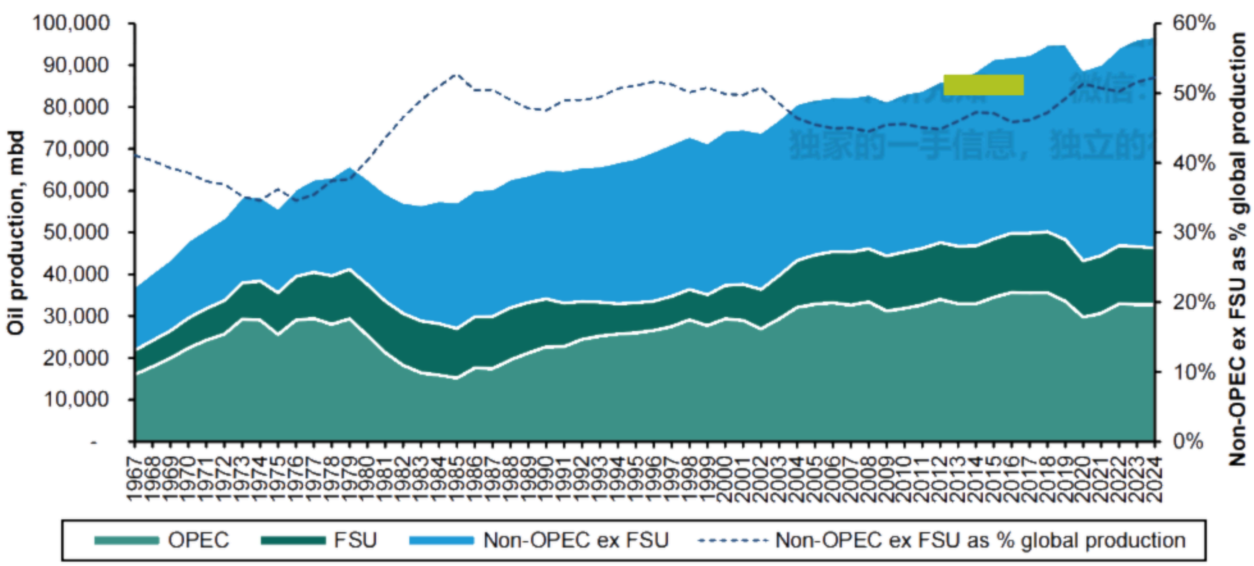
HOW WE BUILD THE NON-OPEC COST CURVE

We believe that global oil prices are set by the marginal cost of non-OPEC production. Most OPEC production is at the low end of the cost curve and not sensitive to oil price (unlike the budgets of most of the OPEC countries which are highly sensitive to oil). In 2024, non-OPEC supply (excluding FSU) accounted for 52% of the world's oil supply (Exhibit 7) This is also the highest cost supply source within the oil industry.

EXHIBIT 7: **Non-OPEC (excl. FSU) accounts for 52% of the world's oil production which is key to meet demand**



Source: BP Statistics, Bernstein analysis

To assess the cost of non-OPEC production, we have analyzed a global database of the 50 largest non-OPEC oil and gas producing companies or *TOP50* (Exhibit 8). The criteria we use for inclusion into the top 50 to screen companies are those which are:

(a) among the 50 largest oil and gas producing companies globally, and

(b) have a continuous time series of at least ten years. We have excluded Russian companies given the limited time series and some of the limitations around data reporting.

The *TOP 50* group of companies' accounts for over three-quarters of the total non-OPEC oil supply (excluding FSU), and in our view, is the most representative data set to analyze industry costs over an extended period.

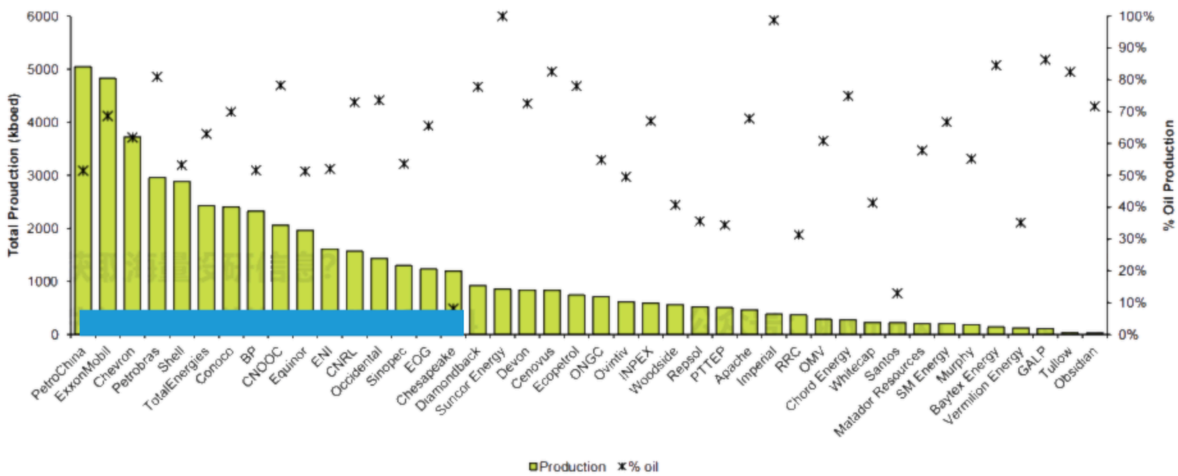
EXHIBIT 8: **Summary of companies included in non-OPEC ex FSU cost curve (2025)**

Company	Country	M. Cap US$bn	Production kboepd	% oil	Blended MC US$/bbl	Oil MC US$/bbl
PetroChina	China	307.0	5,046	51%	50.9	82.0
ExxonMobil	USA	673.8	4,828	69%	41.7	50.0
Chevron	USA	392.8	3,723	62%	41.9	51.5
Petrobras	Brazil	126.1	2,960	81%	42.1	49.2
Shell	UK	246.2	2,885	53%	40.0	66.8
TotalEnergies	France	213.1	2,432	63%	37.4	52.0
Conoco	USA	152.5	2,405	70%	43.2	49.6
BP	UK	120.7	2,327	52%	47.4	60.1
CNOOC	China	174.6	2,063	78%	33.6	42.7
Equinor	Norway	103.5	1,963	51%	33.7	44.3
ENI	Italy	84.1	1,615	52%	38.2	56.7
CNRL	Canada	102.9	1,571	73%	39.5	73.8
Occidental	USA	60.4	1,433	74%	55.4	68.4
Sinopec	China	86.5	1,299	54%	46.2	65.5
EOG	USA	76.9	1,239	65%	40.7	49.6
Chesapeake	USA	24.1	1,197	8%	23.0	49.2
Diamondback	USA	58.4	921	78%	47.5	45.1
Suncor Energy	Canada	82.4	860	100%	62.3	83.1
Devon	USA	57.3	842	73%	52.6	52.2
Cenovus	Canada	59.5	836	83%	45.9	56.1
Ecopetrol	Columbia	28.8	745	78%	54.8	56.9
ONGC	India	38.6	717	55%	39.5	59.4
Ovintiv	Canada	17.1	615	49%	35.0	60.5
INPEX	Japan	31.6	592	67%	33.1	49.0
Woodside	Australia	43.9	561	41%	49.8	54.4
Repsol	Spain	30.0	523	36%	29.9	48.7
PTTEP	Thailand	18.7	510	34%	27.3	45.6
Apache	USA	14.5	464	68%	45.6	62.6
Imperial	Canada	66.5	389	99%	61.8	67.2
RRC	USA	10.2	373	31%	37.7	74.4
OMV	Vienna	24.2	288	61%	46.7	49.3
Chord Energy	USA	8.4	277	75%	37.1	44.1
Whitecap	Canada	15.1	231	41%	35.7	57.0
Santos	Australia	18.7	225	13%	32.3	48.9
Matador Resource:	USA	7.7	207	58%	43.7	55.1
SM Energy	USA	8.2	207	67%	50.7	57.0
Murphy	USA	5.8	189	55%	52.5	70.4
Baytex Energy	Canada	3.9	145	85%	55.9	61.5
Vermilion Energy	Canada	2.0	120	35%	32.6	68.6
GALP	Portugal	17.3	111	86%	29.4	42.9
Tullow	UK	0.3	41	82%	68.7	58.2
Obsidian	Canada	0.9	31	72%	56.6	68.4

Source: Company Reports, Bloomberg, Bernstein estimates and analysis

Within our global database, the largest companies in terms of total production are ExxonMobil, PetroChina, Shell, Chevron, BP, and Petrobras. We have included 15 companies with total production greater than 1 million boe per day.

EXHIBIT 9: **2025 production of TOP50 oil and gas companies**



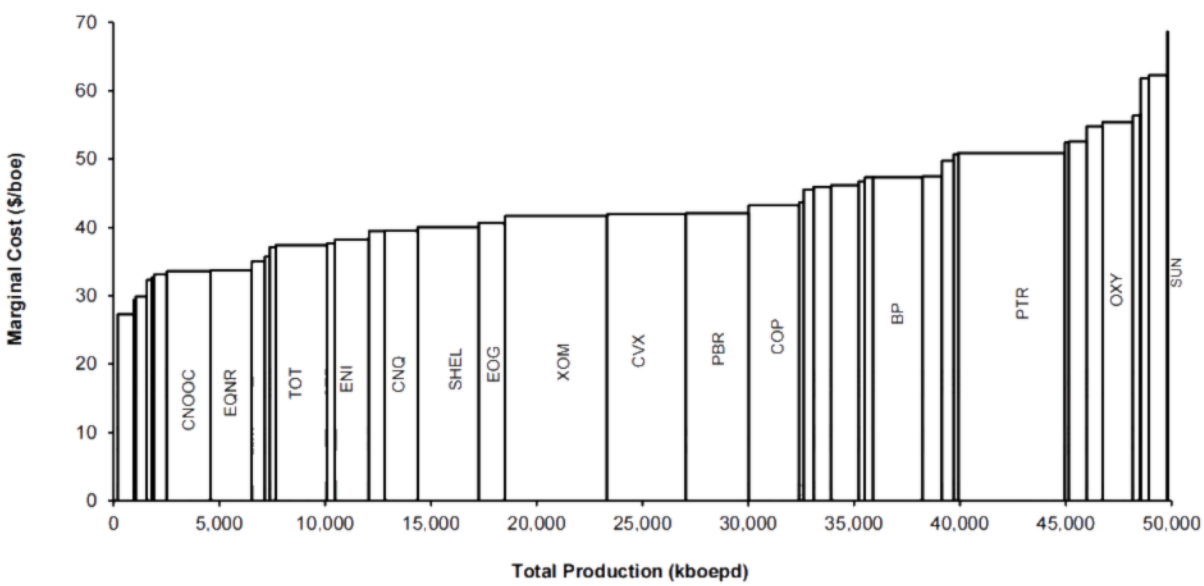
Source: Corporate Reports, Bernstein analysis

THE GLOBAL MARGINAL COST CURVE

How do we calculate the marginal cost of oil production? Companies do not split revenues and costs by oil and gas when they report. Assigning costs to oil and gas separately for wells that simultaneously produce oil, gas, and/or NGLs would be nearly impossible.

Consequently, we must determine the appropriate oil-to-gas cost ratio to split the estimated Marginal Cost. We do this by firstly calculating the Marginal Cost of blended oil and gas production for the *TOP50* (Exhibit 10), and then allocating the Marginal Cost of production to oil and gas separately using what we term the 'implied ratio'.

EXHIBIT 10: **2025 Global non-OPEC ex FSU Marginal Cost curve for blended oil and gas production**



Source: Company reports, Bloomberg, Bernstein analysis

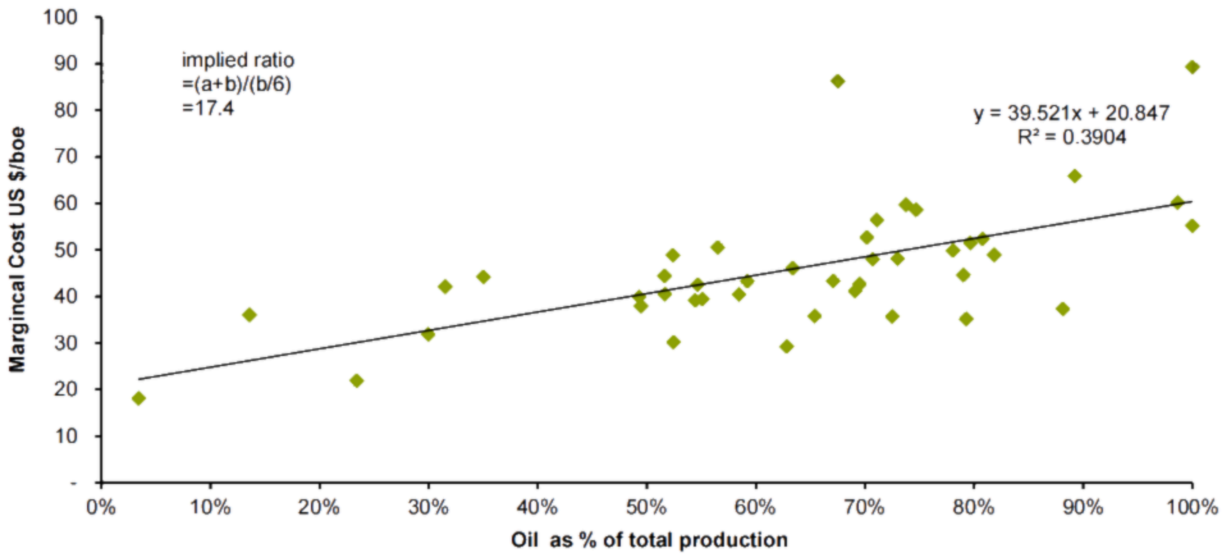
To calculate the 'implied ratio' we determine the relationship between blended Marginal Cost and oil as a percentage of total production. When oil as a percentage of total production increases to 100%, the blended Marginal Cost is the sum of slope and intercept which reflects Marginal Cost of oil production. Our formula for the implied ratio is as follows:

Implied ratio between oil and gas Marginal Cost allocation = (Slope+ Intercept) / (Intercept/6)

We adjust the Marginal Cost of blended oil and gas by the implied ratio to get the Marginal Cost of oil production.

The slope and intercept of the company cost vs. oil as percentage of total production yields an implied ratio of 17.4 in 2024 (Exhibit 11). This is a decline from last year's implied ratio of 14.8 which suggests the adjustment to Marginal Cost of Oil will be higher comparatively for 2024.

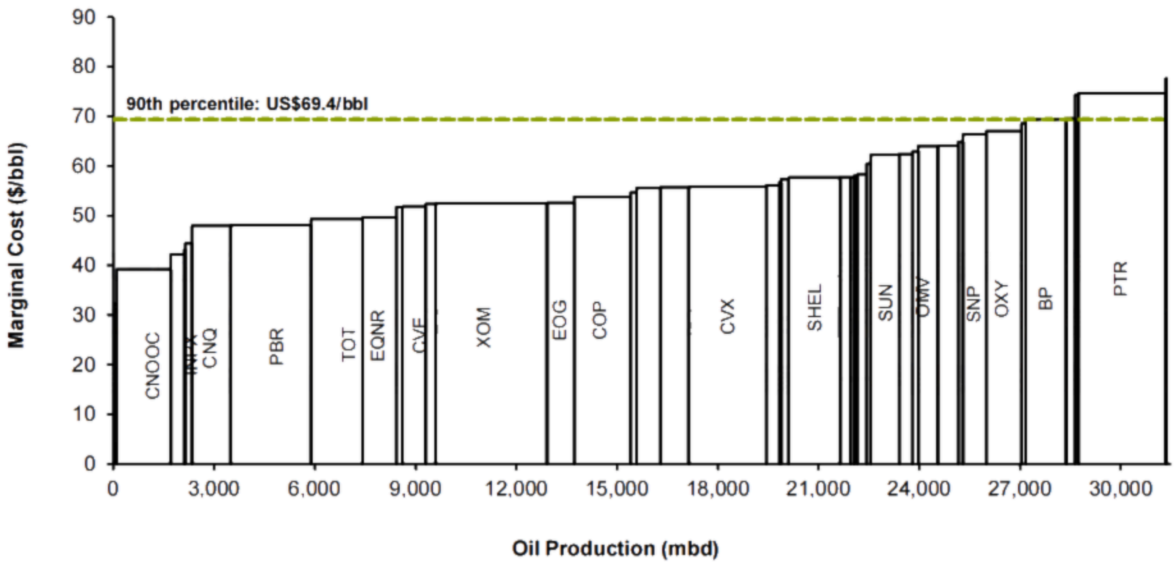
EXHIBIT 11: **Combined Marginal Costs vs Oil as % of Production**



Source: Company Reports, Bernstein analysis

Based on this data, we calculate the non-OPEC Marginal Cost curve for oil. **Taking the 90th percentile on the cost curve, the Marginal Cost of Oil was US$69/bbl for non-OPEC producers.** From this analysis, we find that companies at the low-end of the cost curve are companies such as Equinor, Devon, Diamondback Energy, CNOOC, ConocoPhilips, EOG, and TotalEnergies. Companies at the high end of the cost curve are typically smaller North American companies and international companies (e.g. Suncor, PetroChina, and Sinopec) which are dominated by onshore mature oil portfolios which have high operating costs (Exhibit 12).

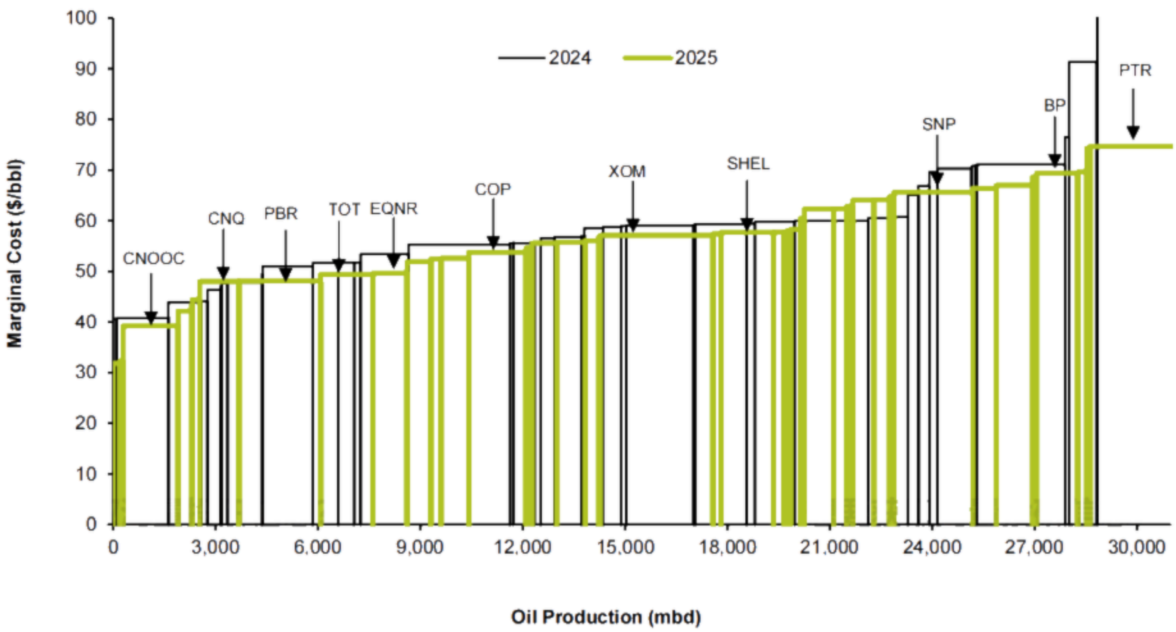
EXHIBIT 12: **2025 Global non-OPEC ex FSU Marginal Cost Curve**



Source: Company Reports, Bloomberg, Bernstein estimates and analysis

Using the data set for the same companies, we show how the non-OPEC Marginal Cost of Oil has evolved from 2023 to 2024 (Exhibit 13). The marginal cost of production has shifted lower across all producers which broadly went down in 2024.

EXHIBIT 13: **2025 Global non-OPEC ex FSU Marginal Cost curve for oil vs 2024**



Source: Company data, Bloomberg, Bernstein analysis

THE GLOBAL MARGINAL CASH COST CURVE

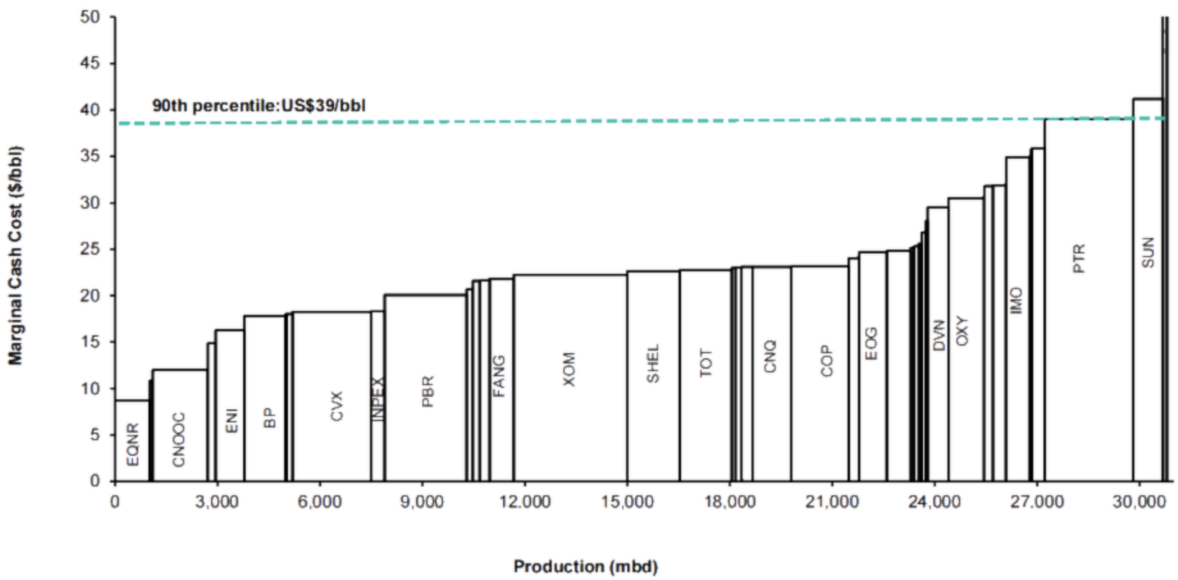
In addition to calculating the Marginal Cost of Oil, we also calculate the Marginal Cash Cost of Oil.

This is based on operating expenses and production taxes but excluded some of the non-cash items such as DD&A and exploration expenses. From our analysis of 2025 data, the Marginal Cash Cost of Oil for the *TOP50* was US$39/bbl.

The Marginal Cash Cost of production indicates a price level below which it becomes uneconomical to produce oil and thus leads to the shuttering of production. Given the variability within each company's portfolio, some production will presumably get shut in even at higher price levels than the 90th percentile Cash Costs.

The Marginal Cash Cost of production provides an indication of the minimum level to which oil prices could drop. Canadian oil sands have the highest marginal cash cost of supply. Companies with the lowest Cash Costs were integrated oil majors such as Equinor and CNOOC (Exhibit 14) which are all below US$15/bbl.

EXHIBIT 14: **2025 Global non-OPEC ex FSU Marginal Cash Cost**



Source: Company Reports, Bloomberg, Bernstein analysis

INDUSTRY COST TRENDS

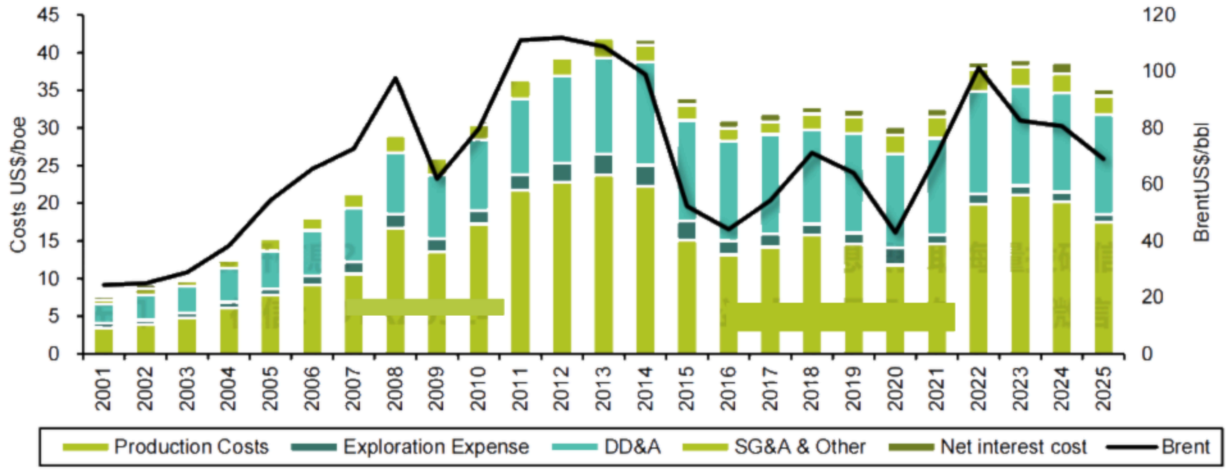
Unit Costs are the broadest measure of cost in the industry and are defined as follows;

Unit Costs *= LOE + SG&A and other + Net Interest cost + Exploration Expense + DD&A, where*

Production Cost or Lease Operating Expense (LOE) *= Operating Costs + Production Taxes*

Over the past two decades, Unit Costs have trended with oil prices, rising from US$7/boe to over US$42/boe at their peak. Current Unit Costs are around US$35/bbl which fallen with lower oil prices in the past few years

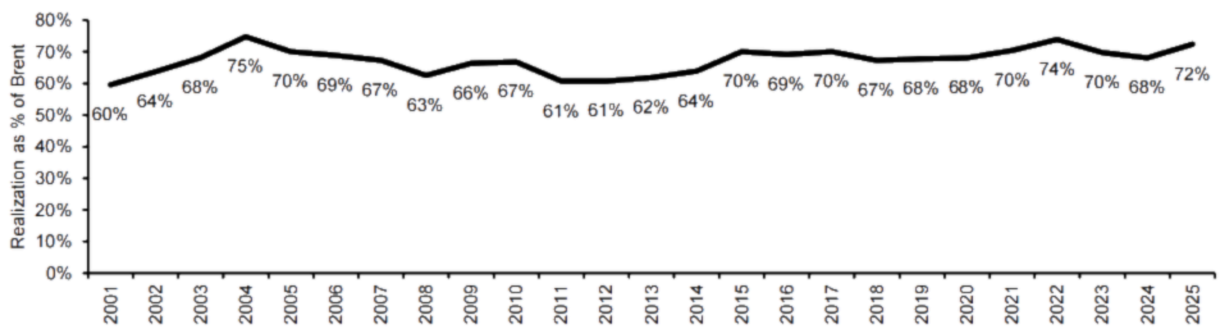
EXHIBIT 15: **Industry unit costs fell by 5% to $35/bbl in 2025**



Source: Company Report, Bernstein analysis

This does not mean that US$35/bbl is needed for the industry to break even. Oil and gas prices are very different, and companies achieve on average two thirds or 66% of revenue per boe relative to oil price. Last year the realization was 72% of the price of Brent which is above long-term average. Given that the average Unit Cost was US$36/boe this implies that the 'break-even' price for the industry on average is around US$50/bbl in oil price terms.

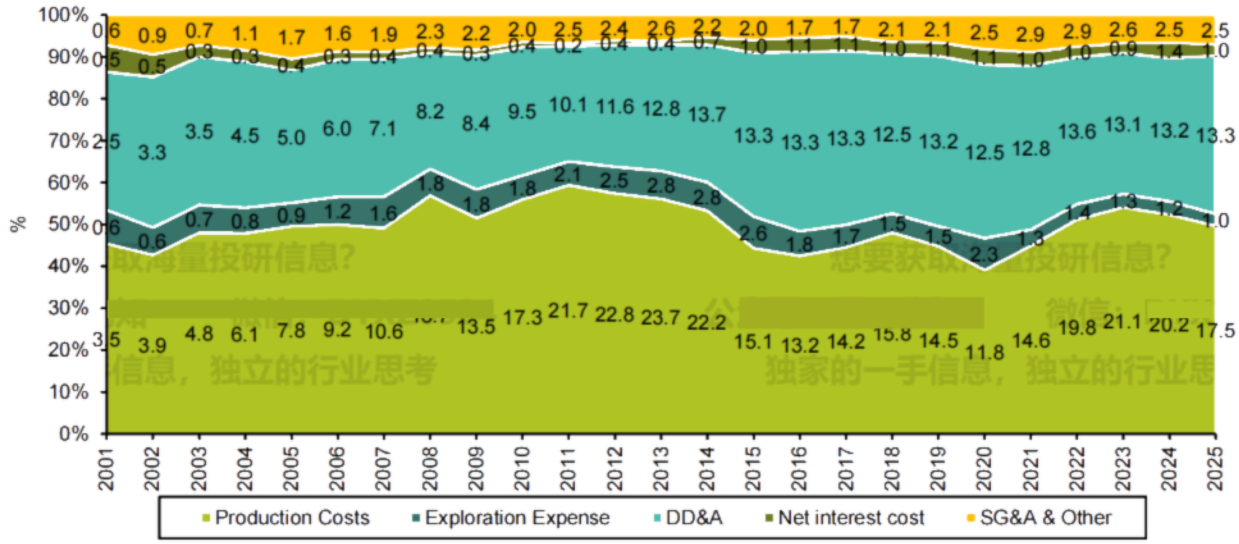
EXHIBIT 16: **Realization as a % of Brent has varied from 60-75% over the past decade and is currently at 72%. This means that with a unit cost of US$35/bbl the industry needs about US$50/bbl to break even**



Source: Company Reports, Bernstein analysis

Over the past 20 years, the composition of Unit Costs has been relatively constant. Production Costs (opex + production taxes) are the most important component and make up about 50% of Unit Costs. DD&A makes up the next accounting for around 35% of Unit Costs. The remainder is split between exploration expense and SG&A at around 6% each and net interest expense which typically accounts for 2% of costs.

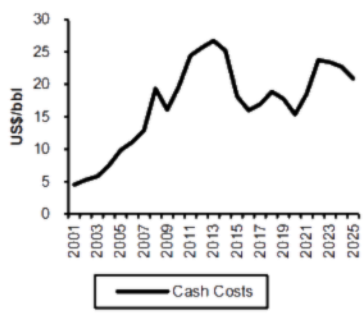
EXHIBIT 17: **Breakdown of Unit costs. Production cost and exploration cost went down while DD&A cost was stable**



Source: Company Reports, Bernstein analysis

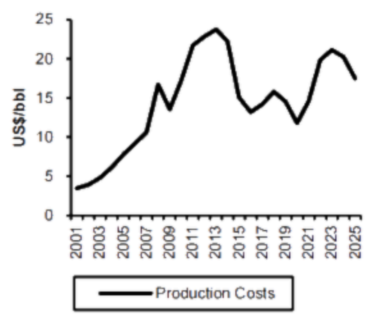
Cash costs (=Operating Costs + Production Taxes+ SG&A and other + Net Interest cost) fell by 8% y-o-y to US$20.9/boe last year. Production Costs (operating expenses and production taxes) which tend to move in line with commodity prices, decreased to US$17.5/boe last year, a decline of 14%. DD&A was flat at US$13.3/boe which have plateau over recent years.

EXHIBIT 18: **Cash cost trend**



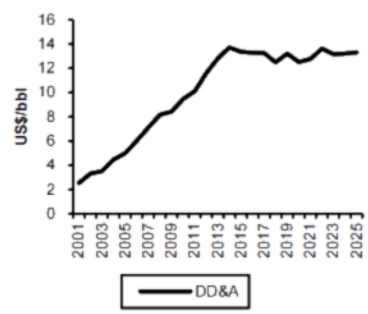
Source: Company Reports, Bernstein analysis

EXHIBIT 19: **Production cost trend**



Source: Company Reports, Bernstein analysis

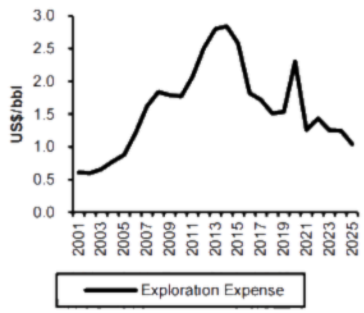
EXHIBIT 20: **DD&A trend**



Source: Company Reports, Bernstein analysis

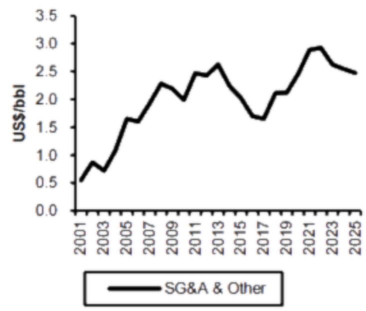
Exploration costs have been cut back and now stand at US$1.0/boe from a high of US$3/boe as companies cut back on finding new reserves. SG&A costs were at US$2.5/boe which is down slightly from last year but much higher than historical average of $1.5-2.0/boe. Net interest costs have probably shown the largest decline, although at US$1.0/boe or 3% of Unit Costs, they remain a small part of overall cost and are starting to fall as companies deleverage.

EXHIBIT 21: **Exploration expense trend**



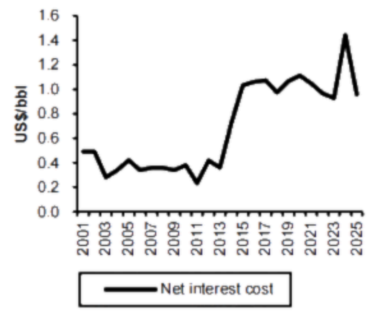
Source: Company Reports, Bernstein analysis

EXHIBIT 22: **SG&A trend**



Source: Company Reports, Bernstein analysis

EXHIBIT 23: **Net interest cost trend**

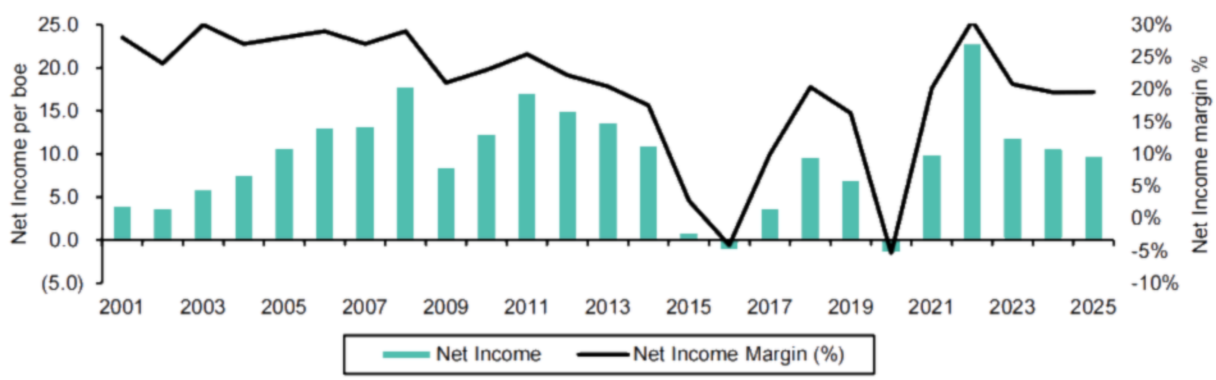


Source: Company Reports, Bernstein analysis

PROFITABILITY AND RETURN TRENDS

Last year net income per barrel reached US$10/boe. Net income margins (net income / oil price) at 20% remained broadly in line with historical average of 20% over the past 20 years. With oil prices still substantially above Unit Costs, we expect strong profit margins for the industry this year

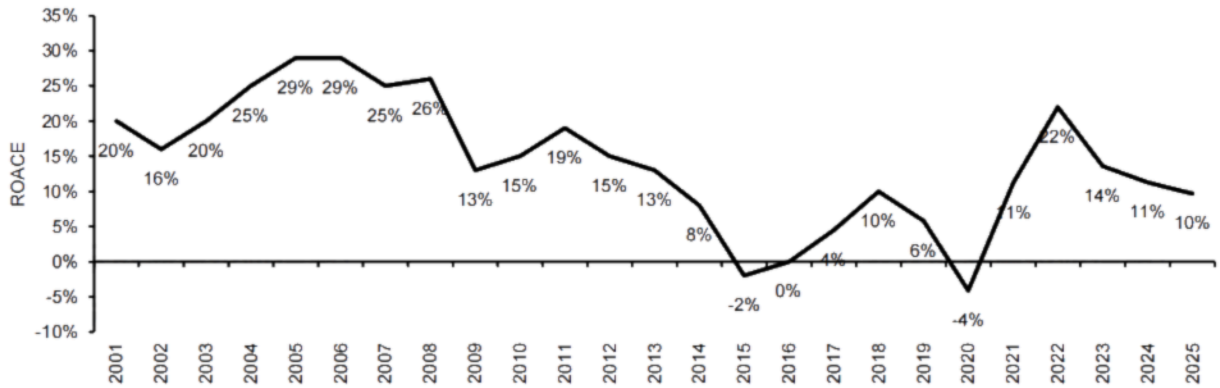
EXHIBIT 24: **Net income margins were 20% in 2025**



Source: Company Reports, Bernstein analysis

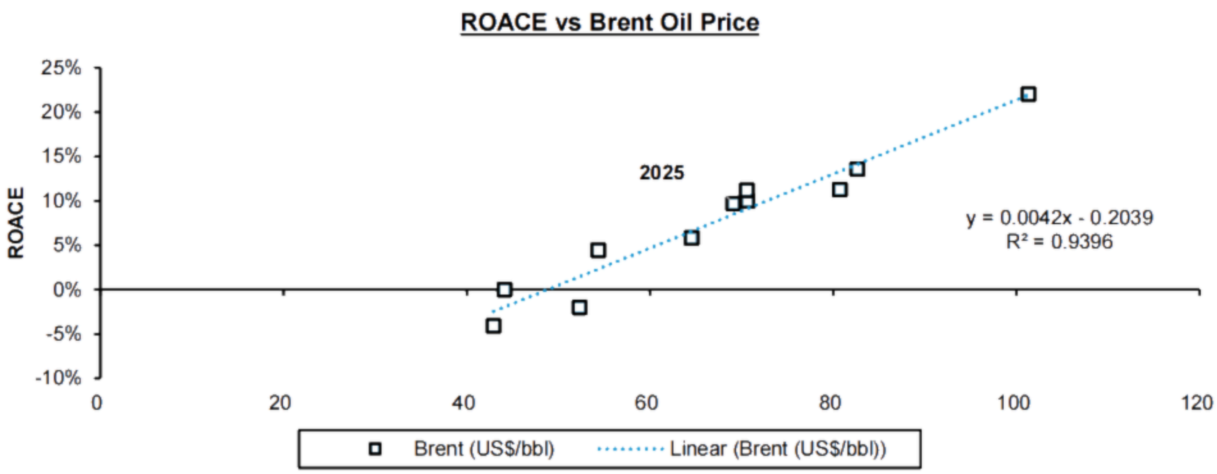
In terms of return on capital, average weighed ROACE for the sector was 10% last year which is largely aligned with long term cost of capital at 10%. Note that at US$90/bbl for this year the industry should earn a return on capital in the mid to high teens given the supply disruption in the Middle East which is well above the long term industry average.

EXHIBIT 25: **Return on capital for the sector was 10% last year**



Source: Company Reports, Bernstein analysis

EXHIBIT 26: **Return on capital vs Brent oil price**

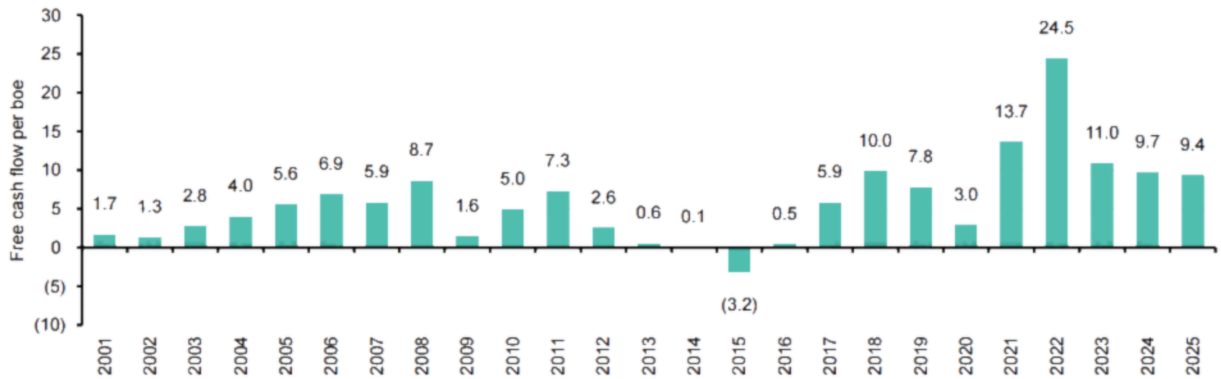


Annual data for 2015-2025

Source: Company Reports, Bloomberg, Bernstein analysis

Free cash flow declined slightly in 2025 to $9/bbl driven by lower profitability. As a result free cash flow per boe declined, but remains higher than historically due to lower re-investment rates as we discuss below.

EXHIBIT 27: **Free cash flow per boe were $9/boe in 2025**



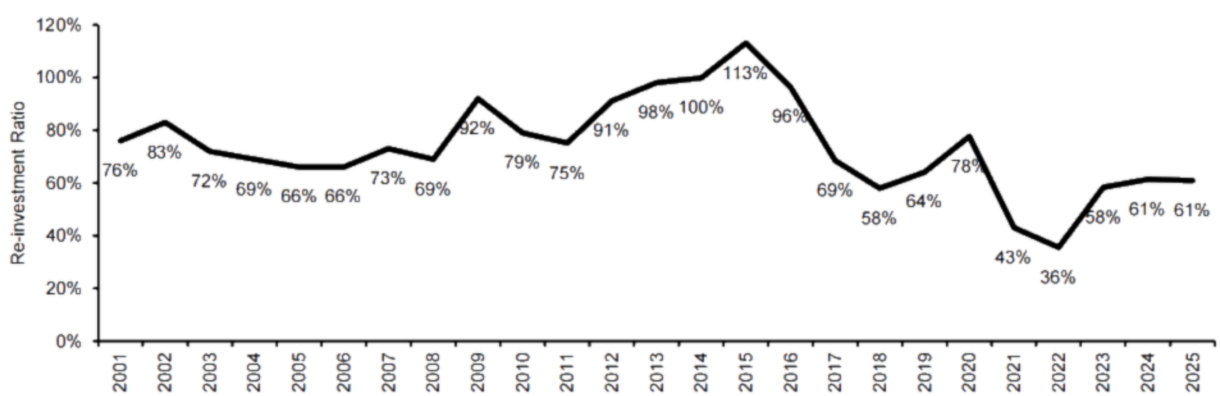
Source: Company Reports, Bernstein analysis

RESERVES REPLACEMENT AND REPLACEMENT COSTS

Industry re-investment trends remain stable. We measure re-investment ratio as organic capex as a percent of operating cash flow (pre-dividend). Clearly it should be expected that re-investment ratio is below 100% given that companies will distribute some excess cash flow to shareholders through dividends.

Over the past 20 years, the average re-investment ratio has been close to 80%. Last year, the average reinvestment rate was stable at 61% in 2025 which is an increase from 36% low in 2022. While re-investment rates improved, it remains significantly below the long-term average and the peak of 113%.

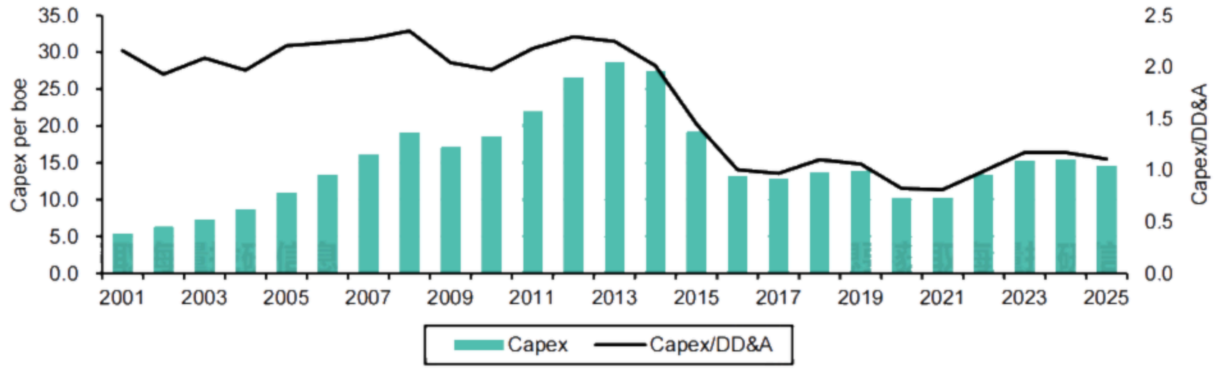
EXHIBIT 28: **Industry re-investment (capex / cash flow) was stable at 61%**



Source: Company Reports, Bernstein analysis

Capex for the TOP50 was down y-o-y at $14.7/boe. With capex to DD&A ratio sitting at 1.1x, this implies that companies should be growing.

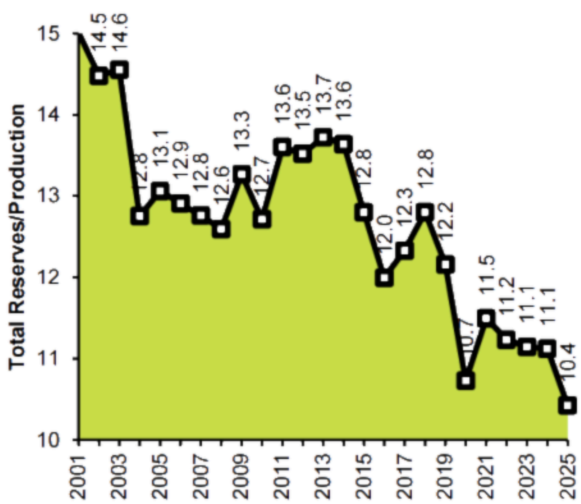
EXHIBIT 29: **Capex per boe was down slightly y-o-y in 2025 with capex/DD&A ratio at 1.1x**



Source: Company Reports, Bernstein analysis

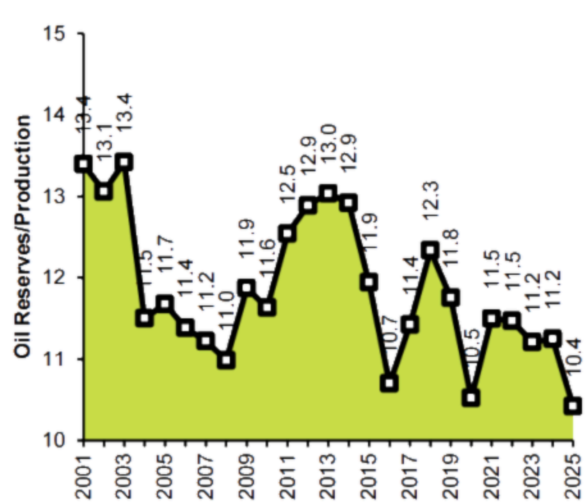
Despite the below average re-investment rate, 2025 witnessed reserves replacement rate of 135% (organic). The 3-year trailing reserves replacement stands at 138%, which is surprisingly strong given the low rate of reinvestment in the industry. However, despite RRR being above 100%, reserve life has still fallen as reserve additions have only modestly exceeded production and remain insufficient to rebuild the overall reserve base. In other words, while the industry is replacing what it produces, it is not adding enough incremental reserves to expand total inventory. As a result, the R/P ratio — reserves divided by annual production — has declined, indicating a shorter reserve life despite headline RRR appearing strong. The reserves to production life for the *TOP50* fell to 10.4 years, which remains below the long-term average of 13 years. Given the lower R/P, supply growth could slow, as a low reserve life is often a leading indicator of weaker future production growth.

EXHIBIT 30: **Total reserve to production were down at 10.4 in 2025**



Source: Company report, Bernstein analysis

EXHIBIT 31: **Oil reserves to production also fell to 10.4x as re-investment rates in the industy remain low**



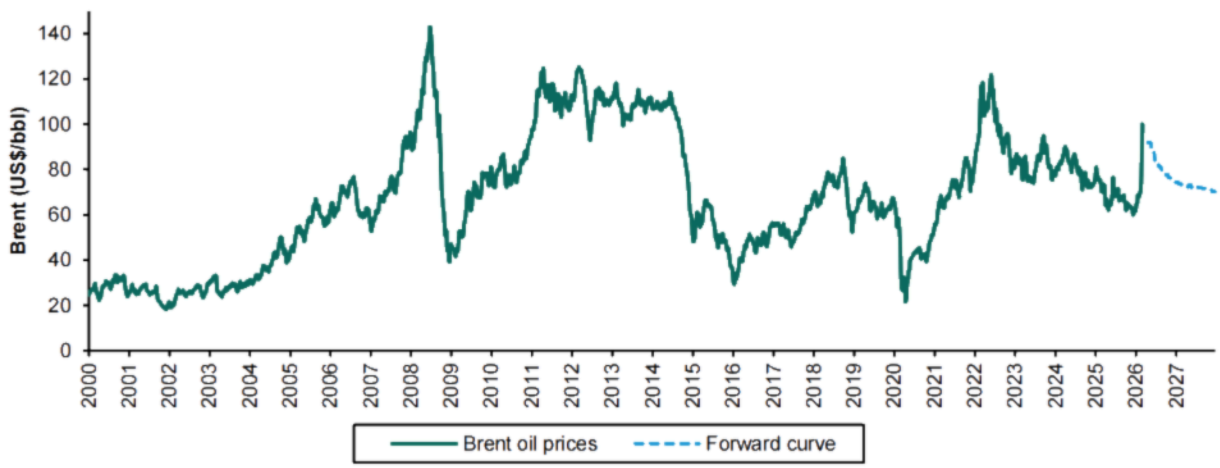
Source: Corporate reports, Bernstein analysis

SUMMARY

Our survey of the global oil industry based on 2025 annual reports indicates that the marginal cost of oil, which sets the long term price of oil, declined 2% to US$69/bbl. The decline in marginal cost from last year reflects the 14% decline in oil price (Brent) to US$69/bbl in 2025. Adjusting for the higher anticipated oil price for this year (US$90/bbl), which will drive inflation in fuel costs, raw material prices and production taxes, we expect the marginal cost in 2026 to reach US$77/bbl in 2026. This range in marginal cost from US$69 (for 2025) to 77/bbl (expected for 2026) provides a guide to the long run oil price which should be used for equity valuation. In our discounted cash flow models we therefore use US$75/bbl as a long term planning price. As such we use US$90/bbl for 2026, US$78/bbl for 2027 and US$75/bbl for our long term Brent price (flat nominal).

Oil price can of course trade between the price of demand destruction and the marginal cash cost. The price of demand destruction sits at US$130/bbl (c. 4.5% of world GDP) which represents the point above which there is a high probability of a global recession of prices remain at that level or above for a prolonged period. Conversely, the marginal cash cost of oil, which represents the floor price for oil remained steady at US$39/bbl. Other key data points which we feel are important is the 'average' breakeven for the industry at US$50/bbl, which is the oil price required for the average company in the industry to break even. Moreover, industry return on capital last year was 10% at an oil price of c. US$70/bbl (Brent), which is in line with the long run industry ROACE of 10% and implied cost of capital for the sector. While reserve replacement was above 100%, the average reserves life of the TOP50 oil companies dropped to 10.4 years which is the lowest level in the last 20 years, and continues a long run declining trend. Reinvestment rates (ratio of capex to cash flow) remained stable at c. 60% but well below the peak rates of 100% back in the early 2010's. Lower reserve life ratios tends to be a lead indicator of lower production growth going forward, which could be taken as a bullish signal. For investors the key insight from this report is that long run marginal cost could well be about US$5/bbl above the long term forward price of US$70/bbl (60M Brent), which means that oil equities are likely to be undervalued.

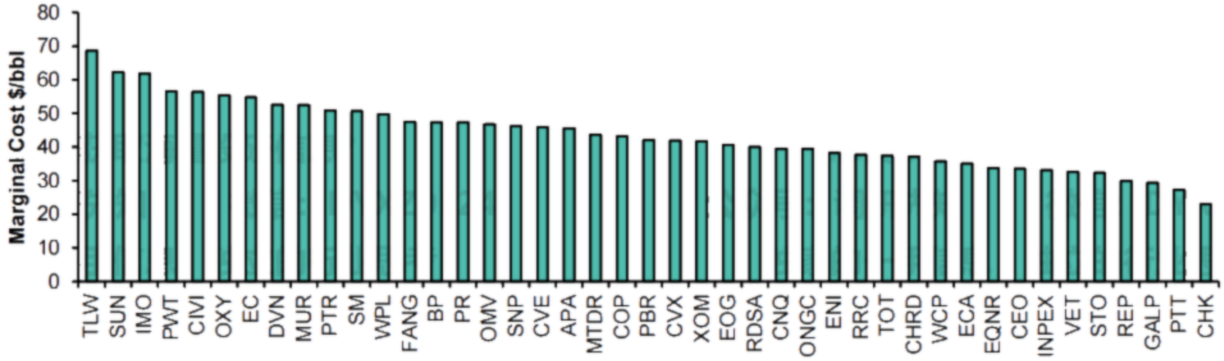
EXHIBIT 32: **We view that US$75/bbl is a reasonable estimate for the long term price of oil in equity valuation, which is above the current 60M forward strip of US$70/bbl**



Source: Bloomberg, Bernstein analysis

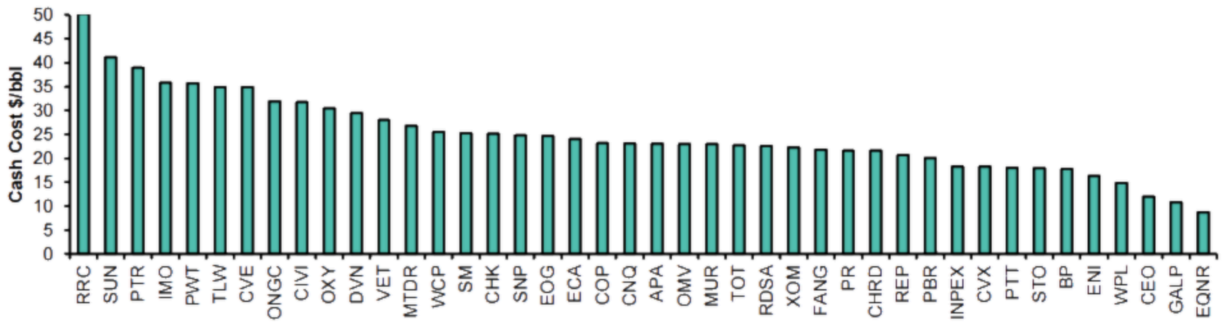
APPENDIX - COSTS BY COMPANY AND COST INFLATION

EXHIBIT 33: **Marginal Cost of Oil Production by company in 2025, calculated by (LOE + DD&A + Exploration + Net interest cost + SG&A and Others + 0.3 * (DD&A) / (1 – Tax)] / %Z and implied oil and gas ratio**



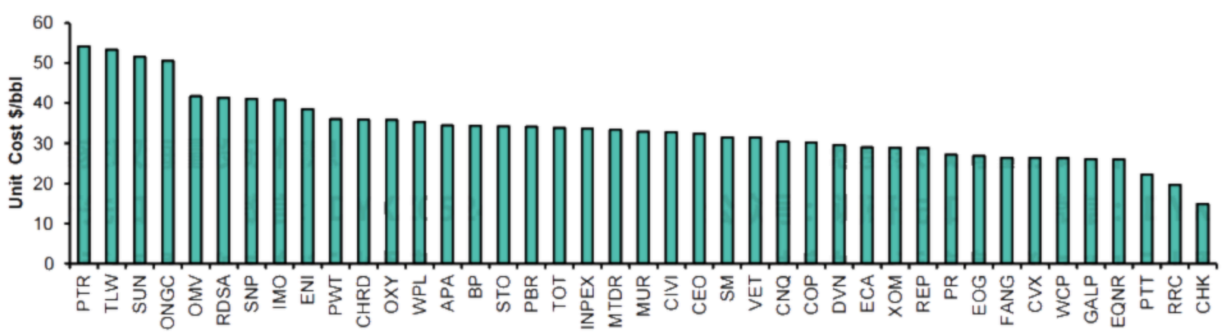
Source: Company Reports, Bernstein analysis

EXHIBIT 34: **Cash Cost of Oil Production by company in 2025, calculated by (LOE + Net interest cost) / %Z and implied oil and gas ratio**



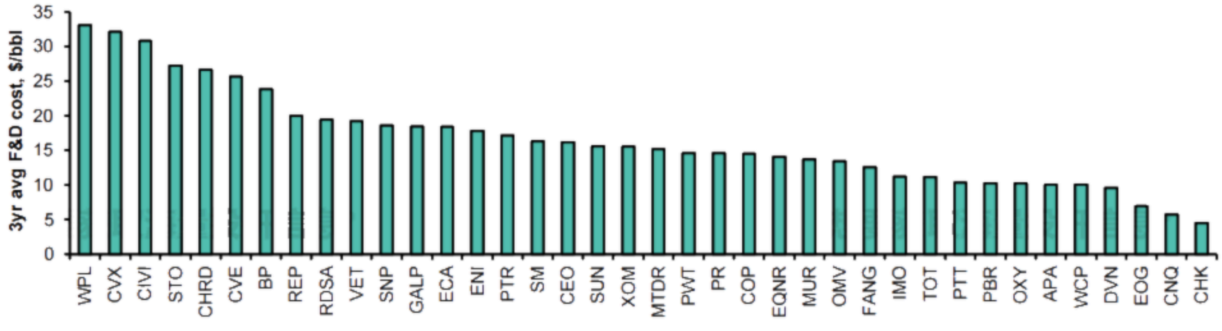
Source: Company Reports, Bernstein analysis

EXHIBIT 35: **Unit Costs by company (Unit Costs = Production Costs + Exploration Expense + Net interest cost + DD&A+ SG&A and other)**



Source: Corporate Reports, Bernstein Analysis

EXHIBIT 36: **Three-year average Organic F&D Costs by company (Organic F&D Costs = Organic Capex / Reserve Additions from Discoveries or Revisions.)**

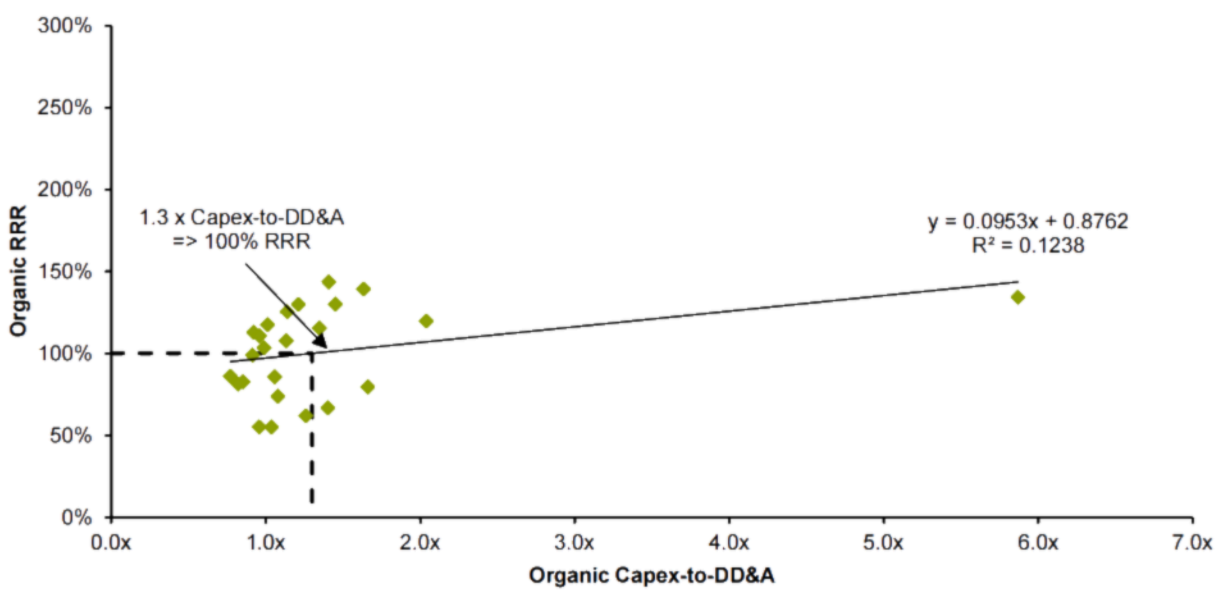


Source: Company reports, Bernstein analysis

CALCULATING THE MARGINAL COST: OUR METHODOLOGY

To generate the global cost curve, we set out to find the oil price at which each of the companies would be able to cover its variable costs and have sufficient cash flow to replace 100% of its reserves. Given the lumpiness of F&D, we instead sought to build a formula using DD&A. We found a relationship between the ratio of organic capex to DD&A and the organic reserve replacement rate, telling us that for the 50 companies in our screen, over the past 3 years companies have had to spend an average of 1.3x DD&A in order to replace 100% of their reserves (Exhibit 37).

EXHIBIT 37: **Organic Capex to DD&A vs. Organic Reserve Replacement Rate, 2015-2019**



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In addition to finding out the appropriate capex to DD&A ratio of 1.3x, we looked at realization spreads as a percentage of blended oil and gas price, instead of a dollar per barrel number. We used Brent and Henry Hub as benchmark oil and gas prices. We also looked at production taxes as a percentage of the benchmark price. Eventually, our formula for the Marginal Cost was:

MC = [LOE + DD&A + Exploration + Net interest cost + Other + 0.3 * (DD&A) / (1 – Tax)] / %Z

where Tax is the corporate tax rate, %Z is the revenue per barrel as a percentage of the benchmark price.

We also calculated the cash cost as:

CC = (LOE + Net interest cost) / %Z

FULL DEVIATION OF MARGINAL COST AND CASH COST

%Z: The percentage of the oil price that the company realizes (revenues over the blended oil and gas price)

LOE: lease operating expense

Other: SG&A and other operating expense

Tax: Corporate tax rate

DD&A: Depreciation, Depletion and Amortization

1. Basic Marginal Cost Formula

Problem: Given that the ratio of organic capex to DD&A must be 1.3x to replace reserves, Find benchmark price such that Cash flow = 1.3 * DD&A

Solution: We know that Cash flow = Blend Price*(%Z) – LOE– Other – Cash Taxes – Net interest cost – Exploration expense

We also know that Cash Taxes = (Blend Price *(%Z) – LOE – Net interest cost – Exploration expense – Other – DD&A) * (Tax)

So need to find Blend Price such that

(Blend Price * %Z – LOE – Net interest cost – Exploration expense – Other) * (1 – Tax) +DD&A*(Tax) = (1.3)*(DD&A)

-> Blend Price * %Z – LOE – Net interest cost – Exploration expense – Other = [(1.3 – Tax)*DD&A] / [1- Tax]

-> Blend Price * %Z – LOE – Net interest cost – Exploration expense – Other = DD&A + 0.3*DD&A/(1 – Tax)

-> Blend Price = [LOE + Net interest cost + Exploration expense + Other + DD&A + 0.3*DD&A/(1 – Tax)]/%Z

2. Formula For Cash Costs

For Cash Costs, we seek the oil price that will cover the company's Cash Costs (LOE and production taxes).

Want: Blend Price such that WTI*(%Z) = LOE + Net interest cost

-> Blend Price = (LOE + Net interest cost) / %Z

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