

Driving Value in Upstream Gas

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8th November 2013



Industry Briefing
PwC Brisbane
November 2013



pwc.com.au/industry/energy-utilities-mining

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Substantial capital investment is needed if the upstream oil and gas sector is to meet the growing demand for energy . This paper examines the ability of companies in the upstream Oil & Gas sector to deliver value to shareholders on this large future investment.

We have done this by identifying the top performing companies, as measured by their return on capital employed (ROCE), and isolating the key characteristics that enable them to deliver returns over and above that of their peers.

The study excludes the midstream (processing and refining) and downstream (marketing and distribution) activities of the companies included in the study.

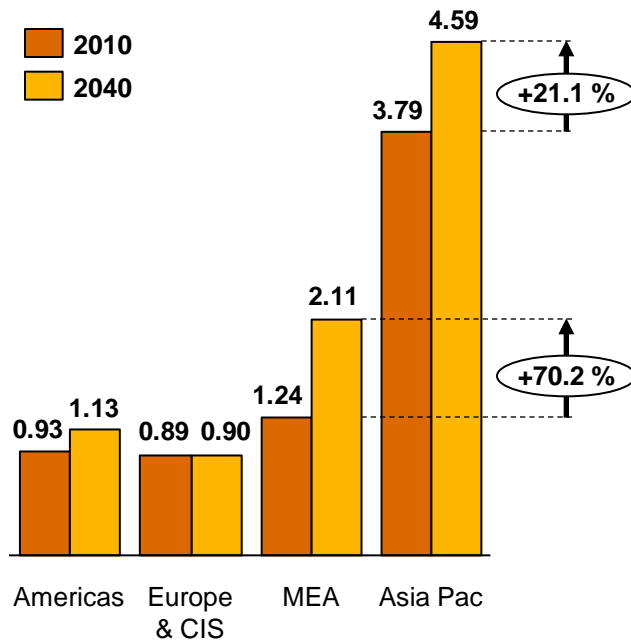
The companies selected for analysis are the Top 100 global Oil & Gas companies based on total assets in the latest published financial statements as at December 2012. A total of 26 companies were removed from the sample if upstream operations were insignificant or published data on key financial or operational metrics was not available. The sample for the study comprises 74 of the largest global Oil & Gas companies.

PwC acknowledges Evaluate Energy, who provided the required operational and financial data for this study. The findings in the study are based on PwC's analysis of the Evaluate Energy Data.

Megatrends are driving fundamental demand for energy

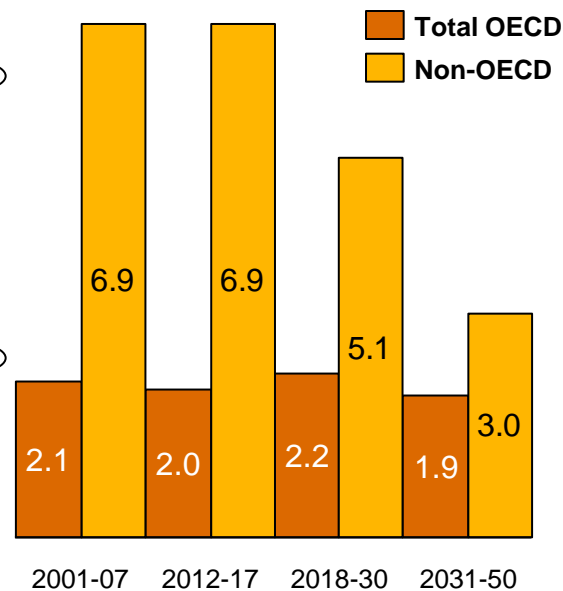
As populations and economies grow, so to will the demand for energy increase.

Global Population Growth



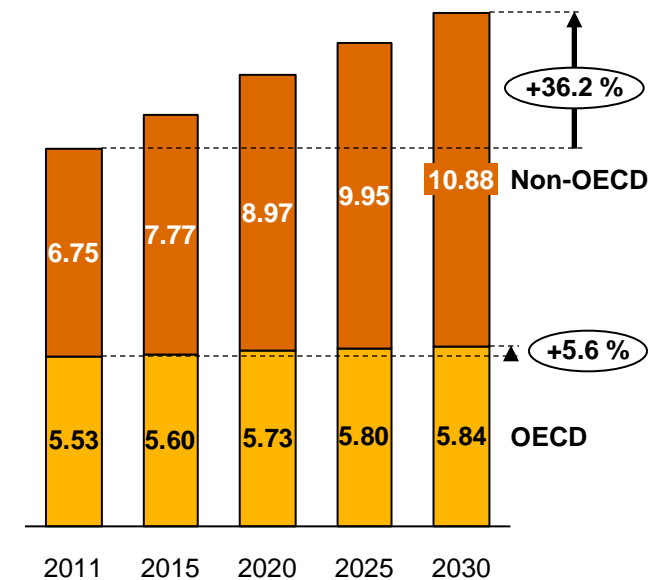
- Global population is forecast to grow by 25% in next 30 years.
- 75% of that population will live in either Asia or Africa.

Global GDP Growth



- Projections of global GDP growth indicate an expected growth of between 3.3 % p.a. from 2013 to 2030.
- Non-OECD economies will drive this growth.

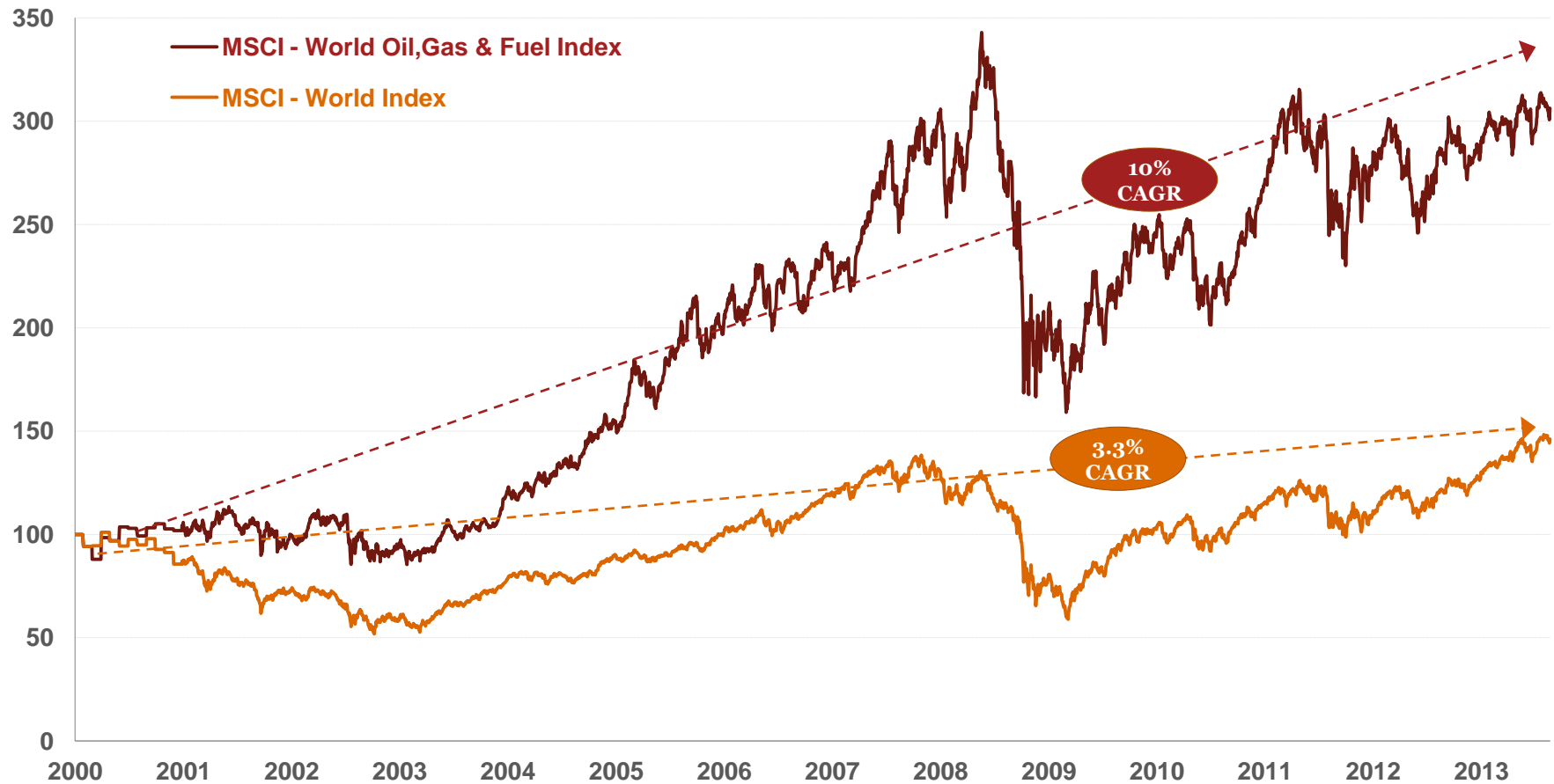
Global Energy Consumption



- Global energy consumption projected to grow by 1.6% per annum up to 2030.
- 36% growth – solely driven from the Non-OECD economies.

Shareholder Value & stock market performance

Oil & Gas stocks outpaced the global stockmarket between 2000 – 2013



Top performers significantly outperform

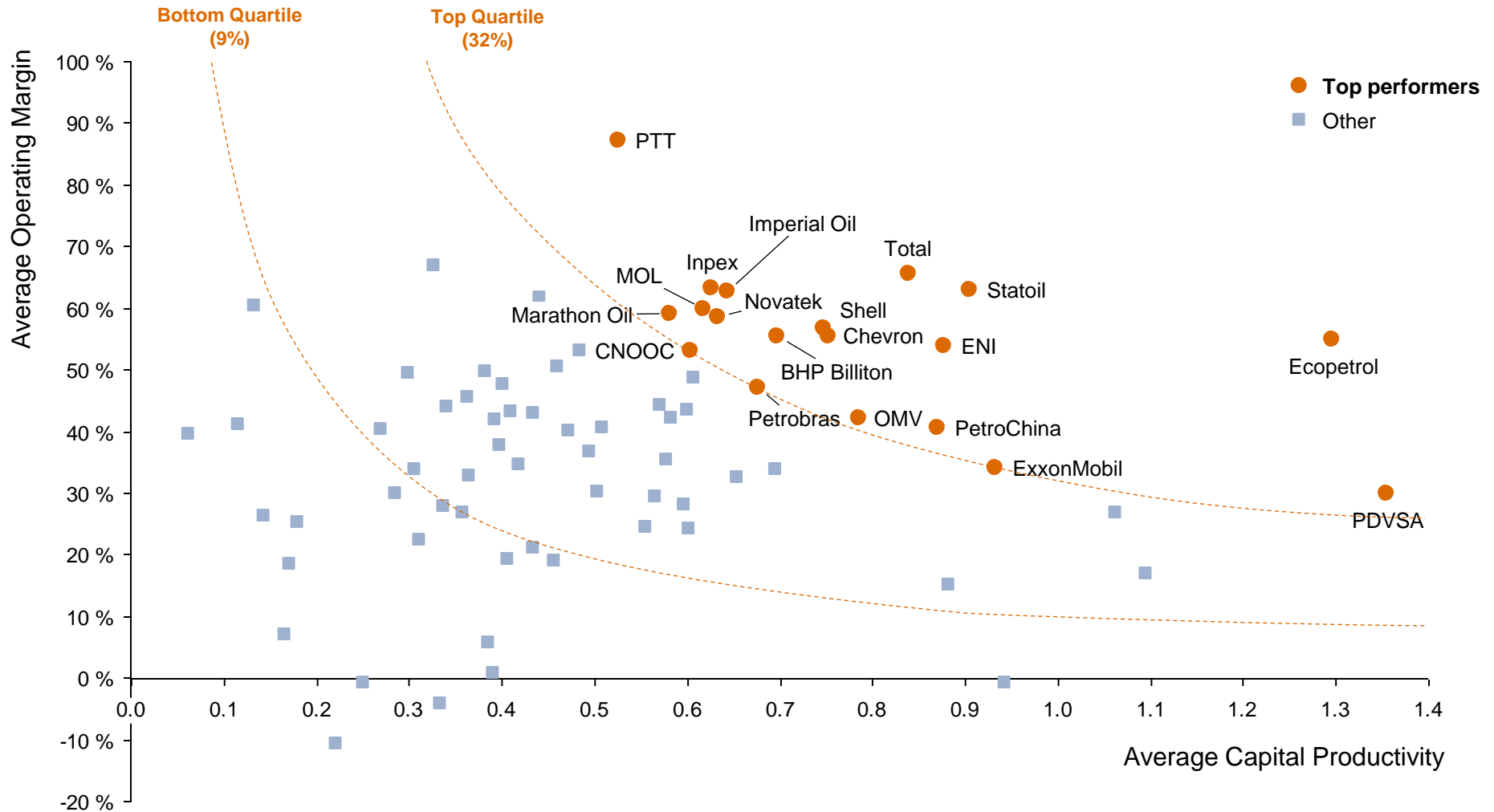
Upstream / E&P Average Returns on Capital employed (2006 – 2012)

Rank	Top performers	Based in	Total Assets (US\$m)	Upstream ROCE (%)	Upstream Operating Margin	Upstream Capital productivity
1	Ecopetrol	Colombia	\$ 64,521	71%	55%	1.30
2	Statoil	Norway	\$ 140,515	57%	63%	0.90
3	Total	France	\$ 227,125	55%	66%	0.84
4	ENI	Italy	\$ 184,578	47%	54%	0.88
5	PTT	Thailand	\$ 53,747	46%	87%	0.53
6	Shell	Netherlands	\$ 350,294	42%	57%	0.75
7	Chevron	United States	\$ 232,982	42%	55%	0.75
8	PDVSA	Venezuela	\$ 218,424	41%	30%	1.36
9	Imperial Oil	Canada	\$ 29,464	40%	63%	0.64
10	Inpex	Japan	\$ 32,566	40%	63%	0.63
11	BHP Billiton	Australia	\$ 129,273	39%	55%	0.70
12	Novatek	Russia	\$ 15,215	37%	59%	0.63
13	MOL	Hungary	\$ 21,696	37%	60%	0.62
14	PetroChina	China	\$ 344,207	35%	41%	0.87
15	Marathon Oil	United States	\$ 35,306	34%	59%	0.58
16	OMV	Austria	\$ 40,340	33%	42%	0.79
17	CNOOC	China	\$ 72,379	32%	53%	0.60
18	Petrobras	Brazil	\$ 331,645	32%	47%	0.68
19	ExxonMobil	United States	\$ 333,795	32%	34%	0.93
Top performers average				38%	54%	0.75
Industry average				21%	38%	0.51

Capital Productivity is defined as revenue generated per \$ capital employed

Top performers significantly outperform

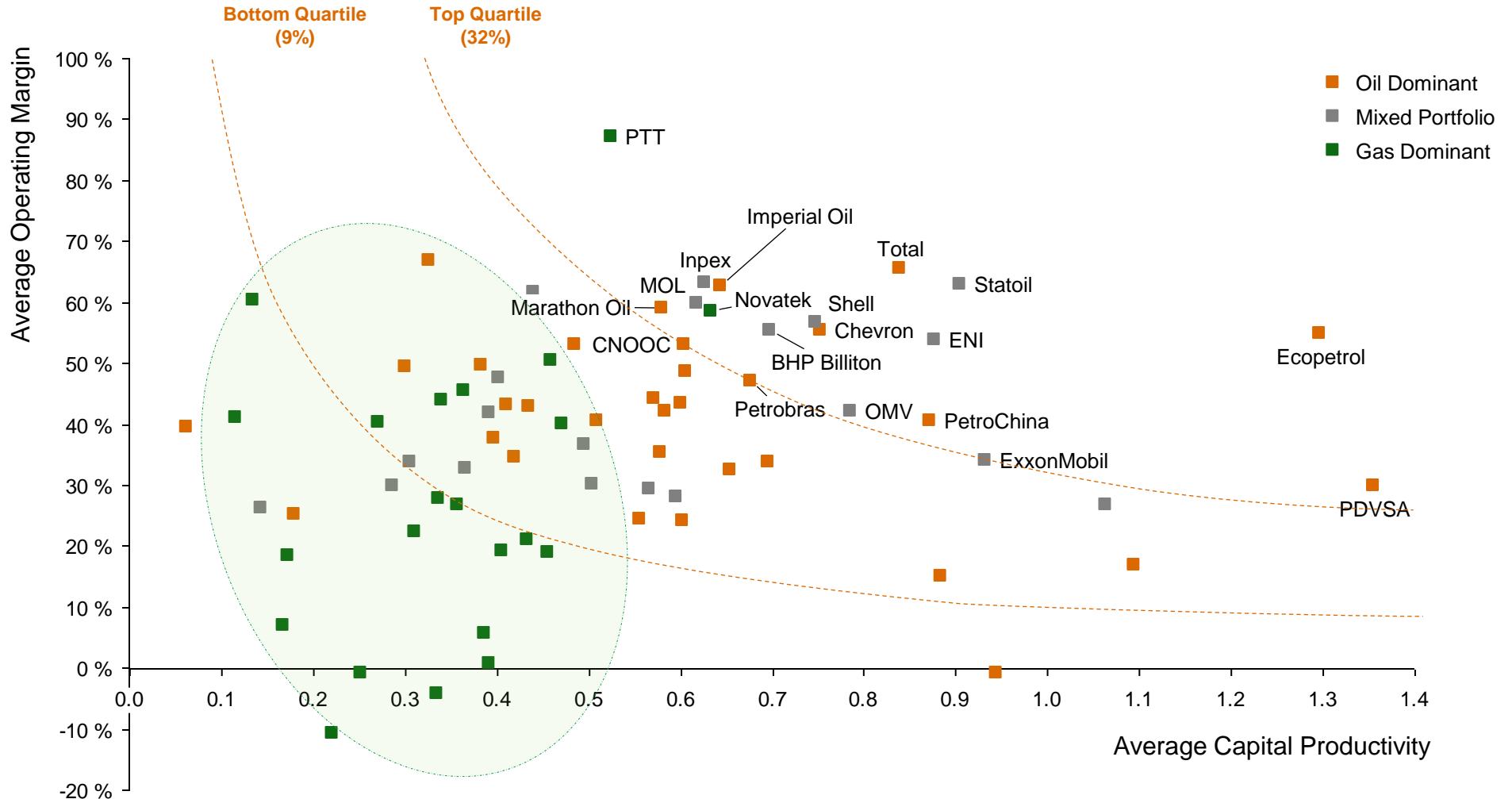
Upstream / E&P Average Returns on Capital employed (2006 – 2012)



Capital Productivity is defined as revenue generated per \$ capital employed

Gas dominant companies did not perform as well

Returns on Capital employed (2006 – 2012) by production profile



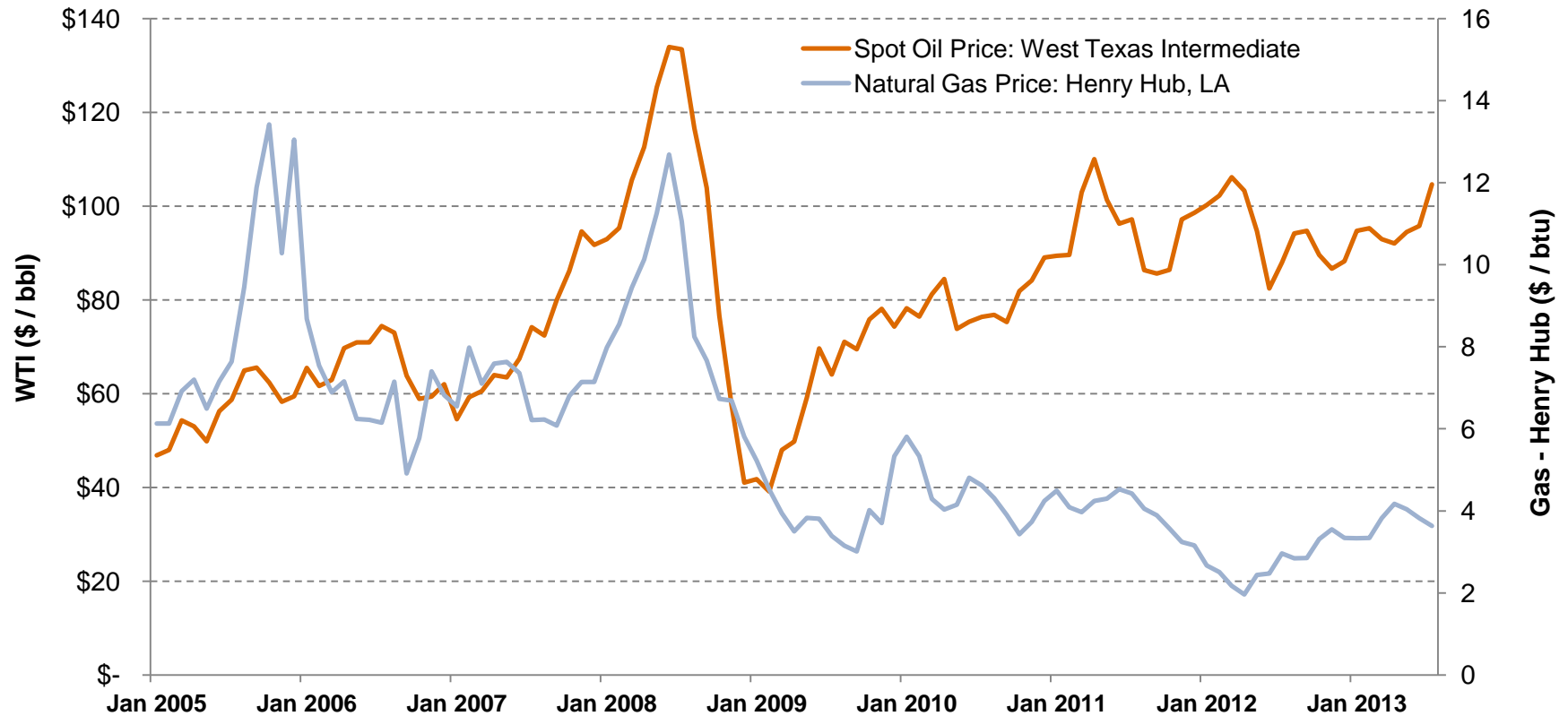
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PwC

Gas company underperformance driven by pricing pressures

Evidenced by the delinking of North American gas prices from crude pricing.

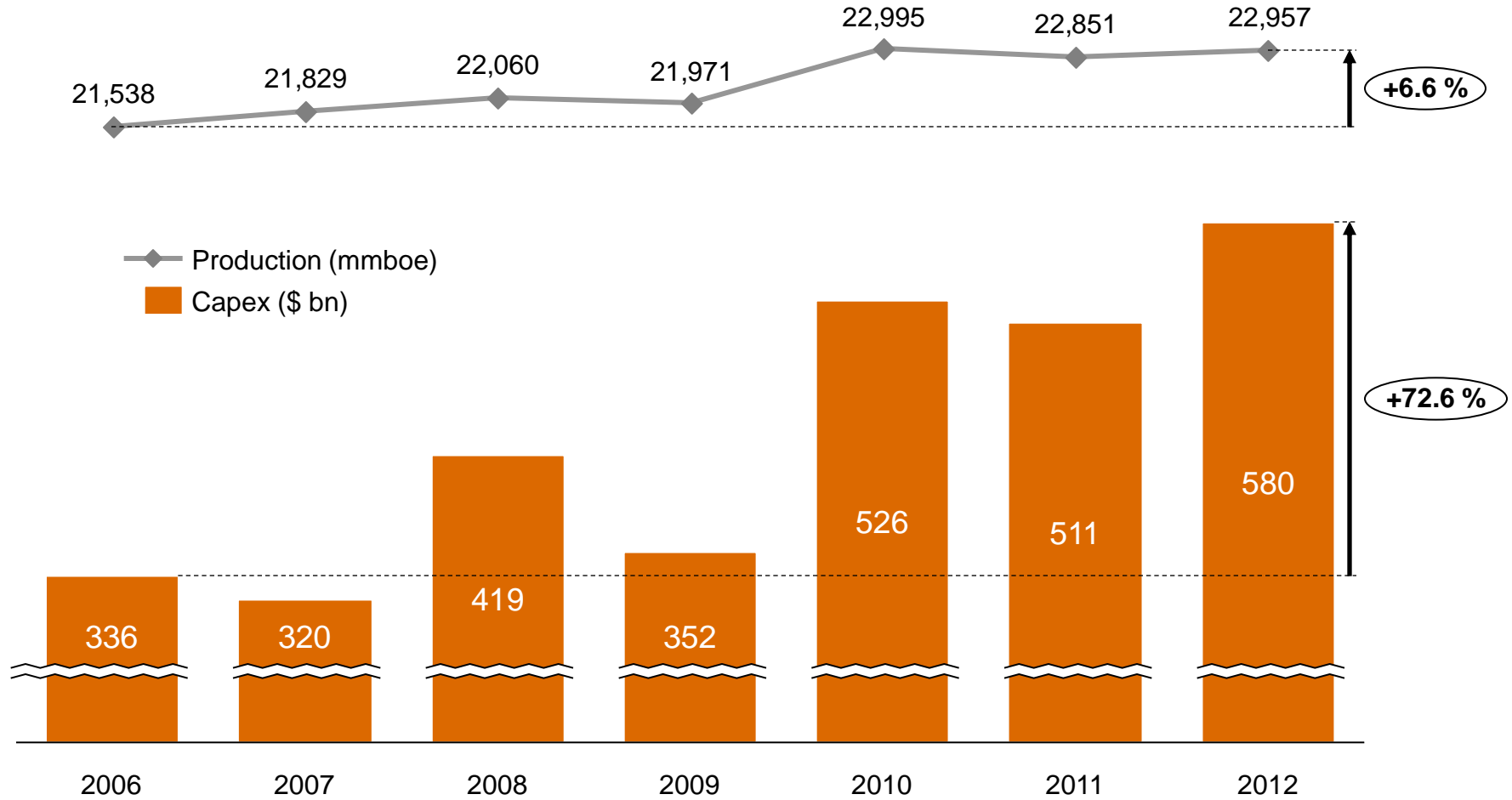
Henry Hub and West Texas Intermediate Prices, 2005 – 2013



“There has been an exponential growth in upstream capital expenditure in the past 7 years.”

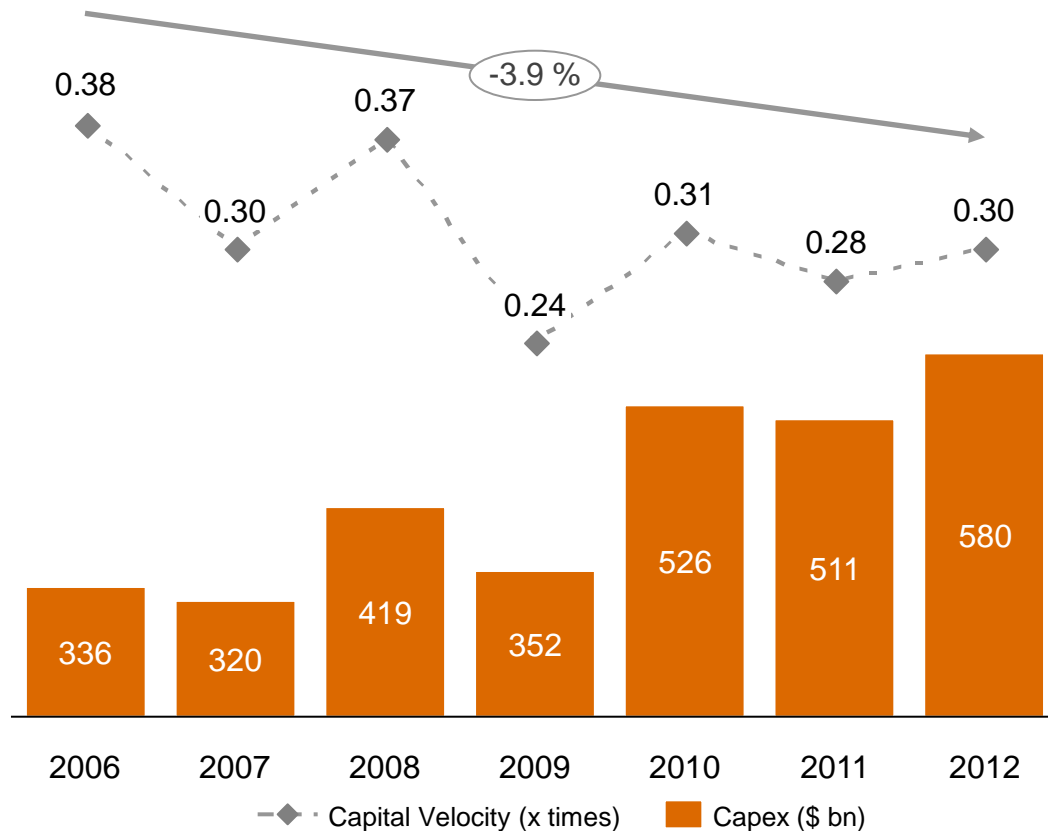
Upstream capital expenditure has risen exponentially.

Production growth stagnates at 6.5%, while capital expenditure grew 72%.



Global capital expenditure reached \$580 billion last year.

The study participants spent more than \$3.1 trillion in exploration and development capex since 2006.



Capital Velocity is the ratio of CAPEX to Capital Employed. It is PwC's proxy for measuring an organisation's growth agenda in capital intensive industries.

- Upstream capital expenditure grew 13.5% in 2012.
- Over the 7 years studied, it has grown 72% and is strongly correlated with oil prices.
- However, the velocity of this growth is slowing and has fallen from 0.38 to 0.30 in 7 years.
- The slowdown in velocity of capital commitments, indicates heightened capital discipline within the sector.
- North American are redirecting spending from gas to oil and liquids-rich plays.
- Gas dominant companies and those with limited oil acreage have slowed CAPEX spend ruthlessly.

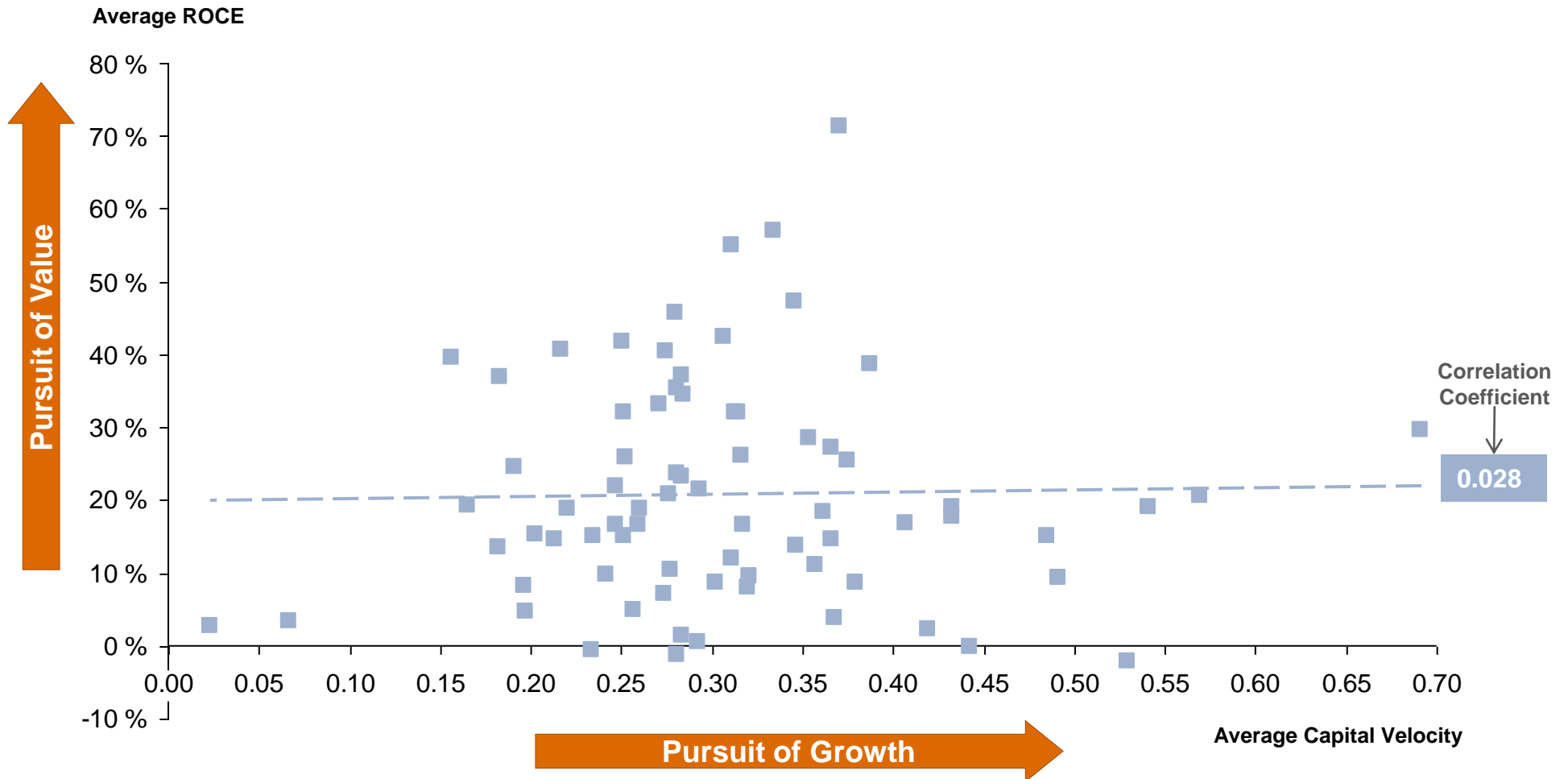
Differentiators of Value

The three factors we believe best explain the differences in performance are:

1. **Selectivity not velocity** in their approach to capital investment – it's not about how much you spend but what you spend it on that counts
2. A commitment to **driving capital productivity** – top performers are on average almost 47 % more effective as their peers in terms of capital productivity.
3. A strong focus on **operating excellence** – companies in the top quartile had production costs almost 10 % lower than the industry average

The rate of capital investment does not drive value

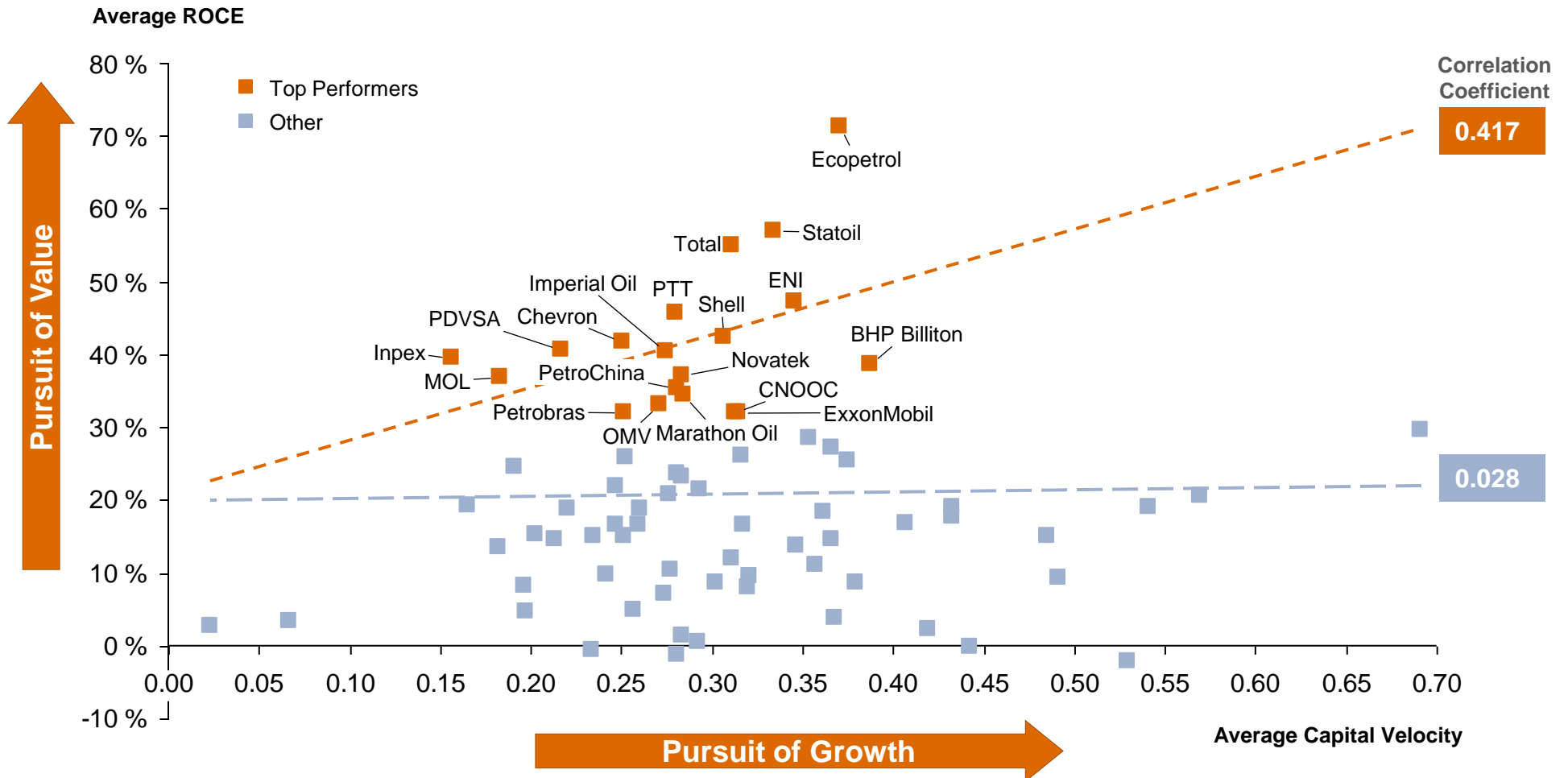
Growth does not necessarily generate value, equally - rationing capital to minimise risk can lead to value opportunities being overlooked.



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Selectivity not Velocity drives value

Top performers show a positive relationship between returns on capital generated and their pursuit of growth.



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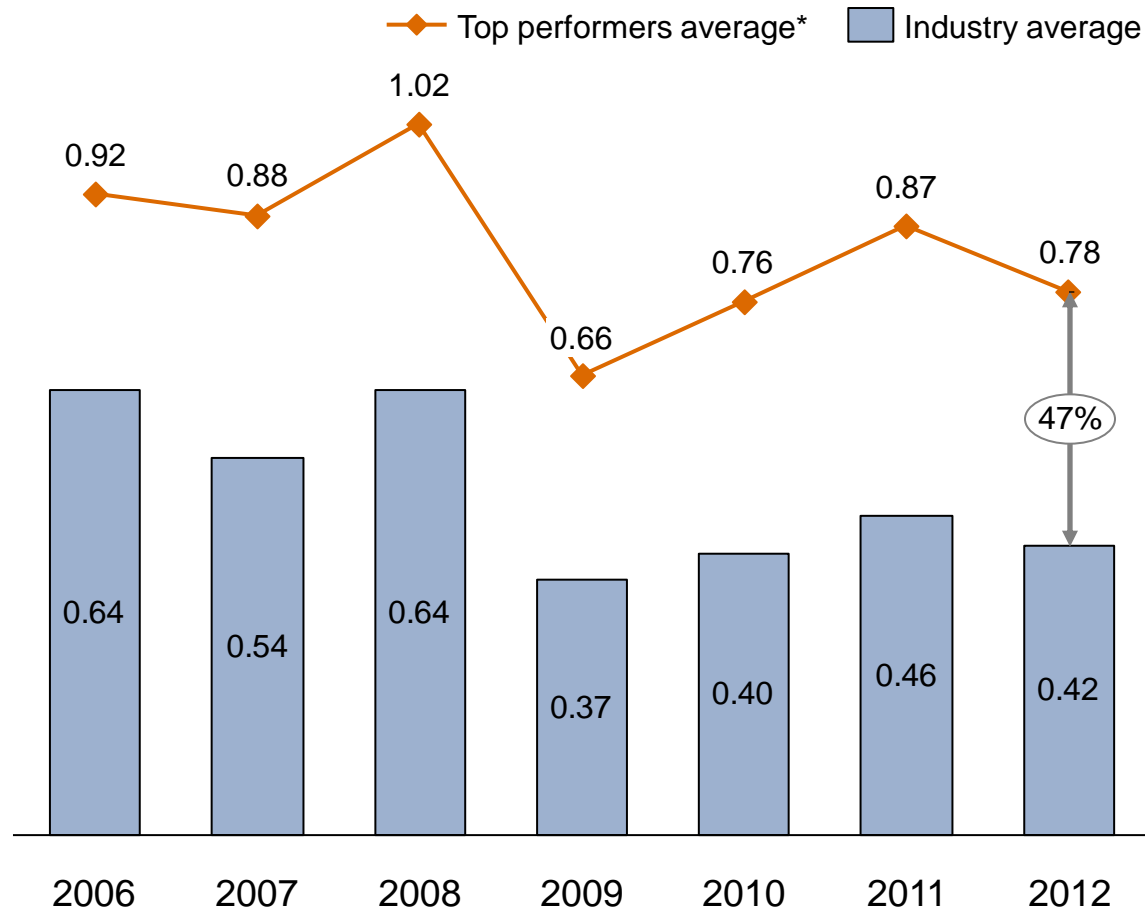
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Capital productivity is a general industry issue

The decline in upstream productivity is as consistent amongst the top performers as well as the industry as a whole.

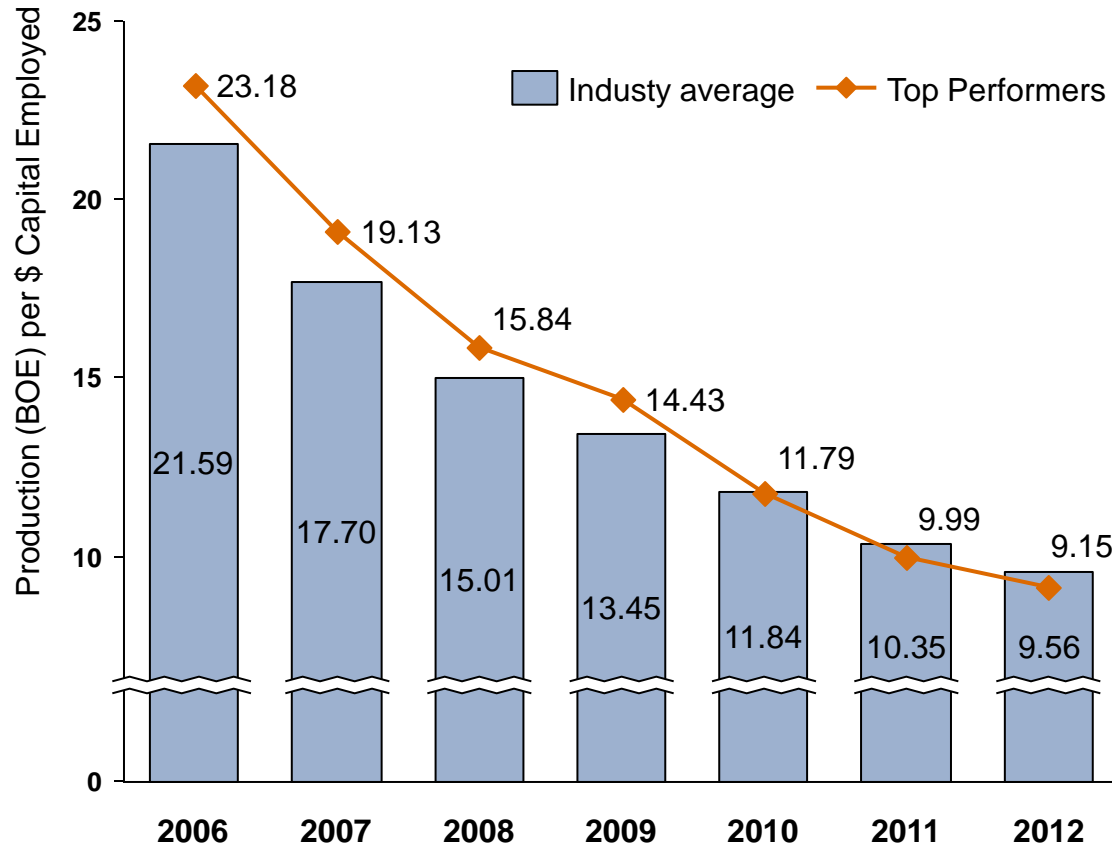


- Despite production increases, the industry has been less than efficient in its use of capital.
- Trend not likely to revert anytime soon, as exploration to discover reserves is being pushed to deeper water and frontier regions.
- Unconventional reserves whilst largely easier to discover, the development infrastructure (gathering, pipelines, cleansing and compression facilities) significantly add to the development costs.

* Capital Productivity is defined as \$ revenue generated per \$ capital employed.

Capital productivity is a general industry issue

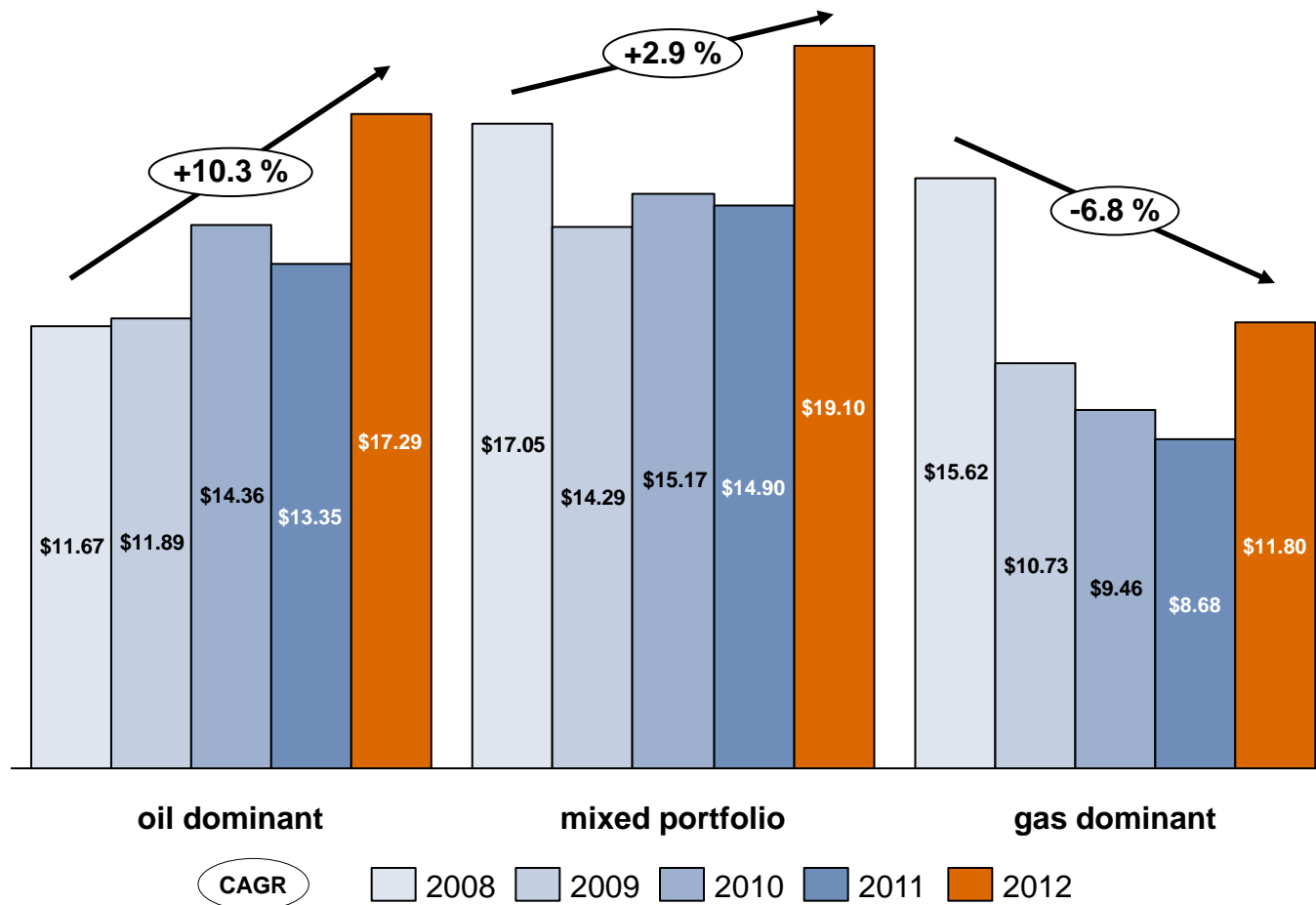
Production (boe) per \$'000 Capital Employed (Real \$ Terms)



- The industry has been less than efficient in its use of capital.
- 55% less output per unit of capital employed today in comparison to seven years ago
- Trend not likely to revert anytime soon, as exploration to discover reserves is being pushed to deeper water and frontier regions.
- In Australia, the recent wave of investment will near completion, resulting in large scale construction teams rapidly downsizing to smaller operational workforces
- The shift from a project mentality to a reliable and efficient operating rhythm will necessitate a large cultural shift in many instances.

Finding and developing reserves increasingly more expensive

F&D costs (\$ / boe 1p reserves added) on a 3 year rolling average.



- F&D costs takes all exploration, development and acquisition costs and divides by the proved reserve additions (net revisions, extensions, discoveries and acquisitions)
- A 3 year average is used to minimise annual fluctuations and lag times between costs and discoveries.
- Given heightened revenue pressure in the gas sector, this is the only sector to show improvement in F&D costs.
- As “cheap” oil and gas becomes increasingly more expensive to develop, improved F&D costs are unlikely to eventuate.

* We converted gas volumes into energy equivalent barrels of oil using an average factor of 6,000 (i.e. Six thousand cubic feet of gas equals one barrel of oil equivalent)

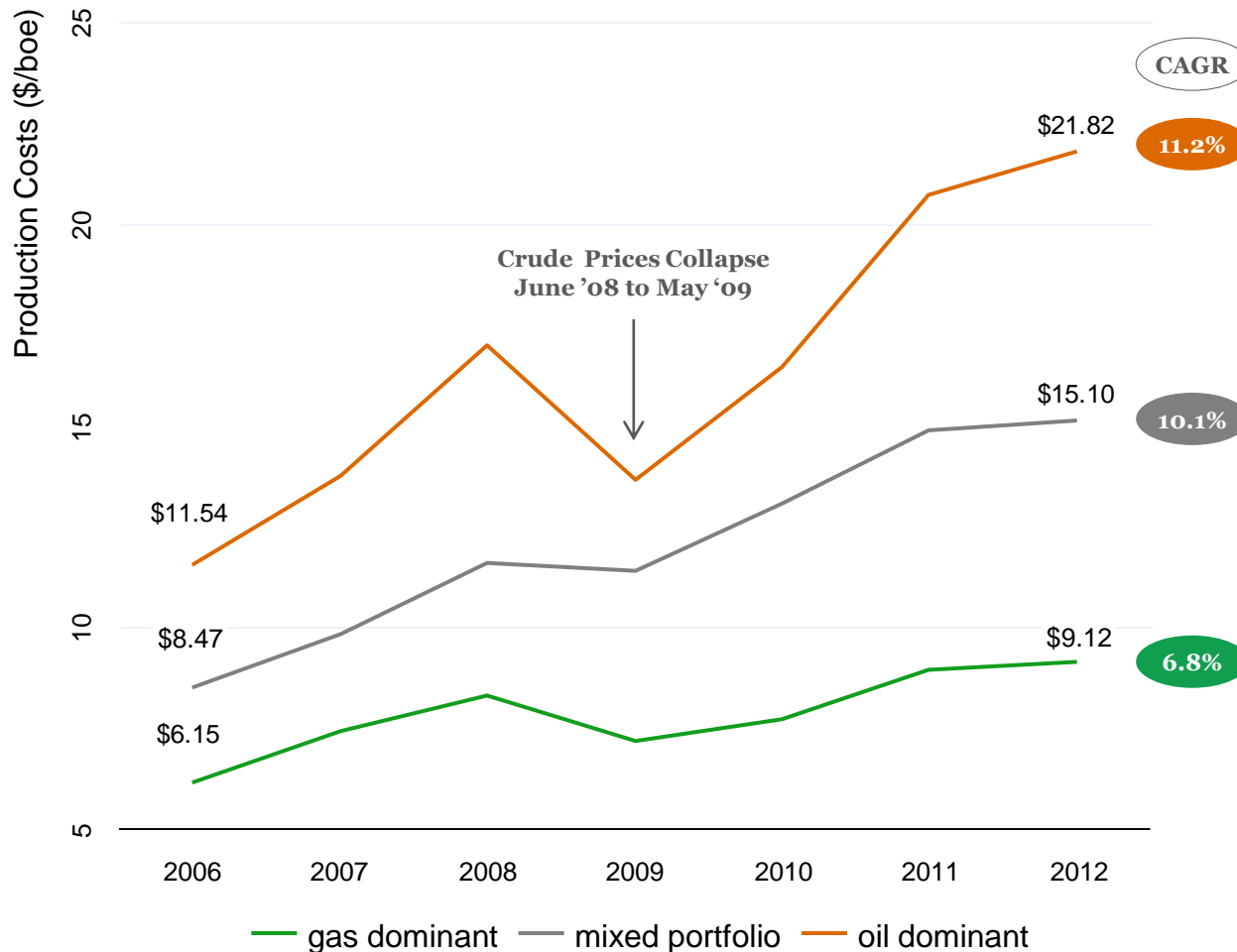
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Lifting (production) Cost Profile

Lifting Costs (\$/boe) have grown at 9.7% p.a. since 2006

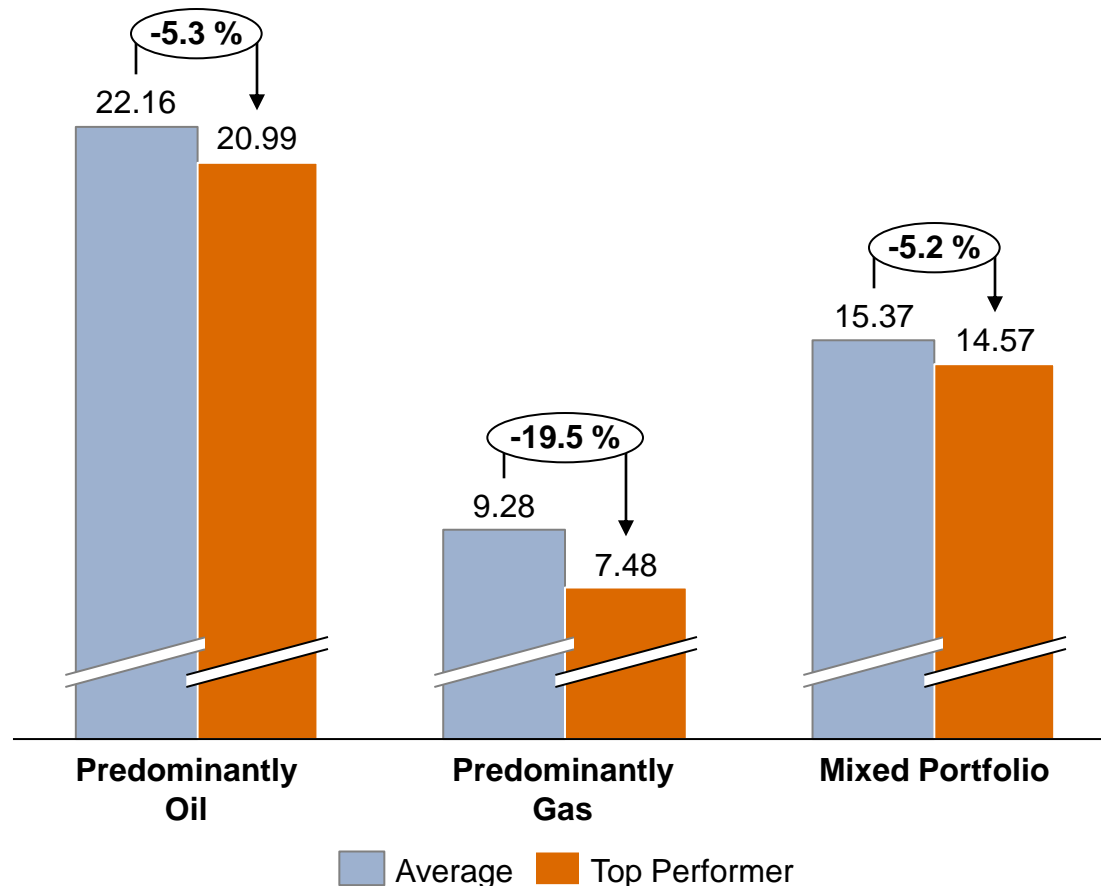


- Upstream sector as a whole has seen lifting (production) costs increase by a compound annual growth of 9.7%
- Collapse of oil prices from a high in June 2008 saw a renewed and rapid shift in focus to operating excellence and cost efficiency.
- This is the only period where the industry have managed to improve efficiency.
- Faced with declining gas prices, gas companies were more successful in controlling operating costs (6.8% CAGR)
- Top performers manage the demanding balance between risk, cost, and performance (availability and reliability).

Operational productivity uplift opportunity exists

Lifting Costs (\$/boe produced).

Lifting Costs (\$/boe) by production profile in 2012



- Performance gap in production costs cannot be explained away by differing production profiles
- We have found differentials of 5- 19% between top performers and industry average for well efficiency and production metrics.
- The opportunity to close this gap represents almost \$22 billion in annualised value
- Top performers are learning organisations

.... They realise that to drive down the cost curve they must first drive their people up the experience curve

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Look out for the full PwC Australia report on 'Driving Value in Upstream Oil & Gas', available here –

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