

Executive summary

Balancing investments, production, and returns in today's lower-for-longer oil price environment is becoming a major challenge for upstream companies. When oil was trading above \$100/bbl, this balance could be achieved with any single resource type. But, with oil staying around \$50/bbl for an extended period, and the newly significant role of short-cycle resources such as shales in a highly competitive market like the United States, almost every resource is struggling to provide the desired balance to exploration & production (E&P) companies.

That is why the question of what portfolio of resources, concentrated or diversified, would deliver the best in this new environment is making the rounds in the boardrooms of E&P companies. Deloitte's Upstream Diversification Index (UDI), covering the top 150 listed E&P companies worldwide, suggests that the industry is divided on this question. Some companies seem to be exiting some resources to concentrate on core ones while others are extending their diversification across resources and regions to spread risks.

Our analysis of E&P companies' performance and strategies over the past 10 years using key financial parameters suggests that companies on both extremes of the diversification spectrum—fully focused (*"focus on a few, best rocks"*) and highly diversified (*"solid presence across assets, resources, and regions"*)—have outperformed the companies in the "middle." However, companies with a consistent strategy, a stronghold in top markets and quality basins, a low-declining asset base, and a strong gas position with infrastructure advantage have also done well on many financial parameters irrespective of their size, portfolio mix, and diversification level.

The next few years of price recovery, amid uncertainty and volatility, will likely test and challenge the existing business models and portfolio mix of those companies in the middle, which are primarily medium- to large-sized pure-play E&P companies. The pressure to find the right combination of investments, production, and returns will likely push these companies to either side of the spectrum, leading to a greater exchange of assets, mergers in the industry, and prioritization of some resources and basins over others.

Spoiled for choice

A period of complicated decision making

The oil price collapse since 2014 has disrupted nearly all strategies, business models, and value propositions in the upstream sector. Big or small, the collapse has forced most players to cut down their spending significantly, raise debt to sustain production or meet shareholder commitments, and streamline operations. Long or short cycle, both project types face questions on their high capital intensity and breakeven levels in the foreseeable future. Similarly, this lower-for-longer downturn has complicated the investment decision making and portfolio management of many oil and gas (O&G) producers.

Can E&P companies ensure predictable and stable upstream performance through cycles? How diversified or focused should future investment decisions be as they navigate and eventually come out of this downturn? Although the question of portfolio management and diversification is legitimate at any point in the cycle, this lower-for-longer downturn has made the question more pressing for E&P companies. “We continue to spend a lot of time analyzing the macro outlook and the choices we have for allocating cash flows through the business cycles. This is an important aspect of our value proposition and very much on the minds of investors,” said Ryan Lance, CEO of ConocoPhillips, while presenting 2Q16 results.¹

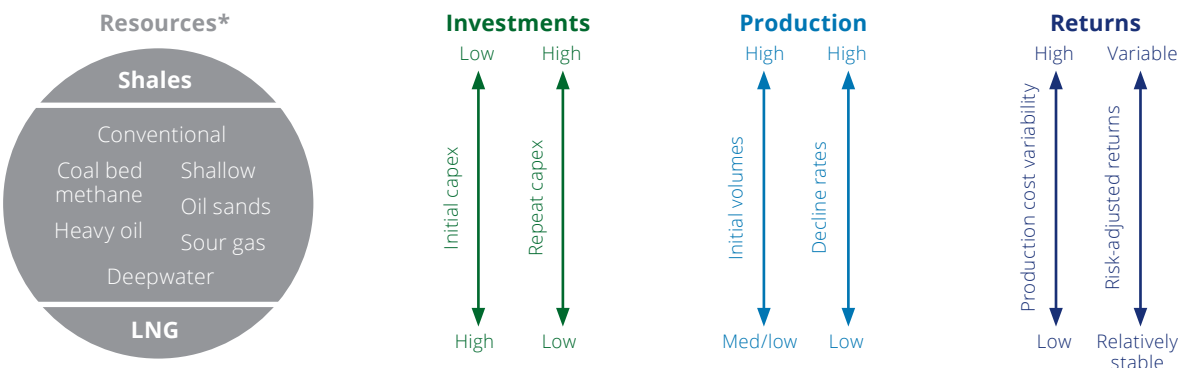
Lack of resource choices or options is not the problem. On the contrary, many resource choices with different

investments, production, and return combinations are complicating companies’ decision making. Companies can now choose to produce hydrocarbons from 10 resource types with each having its own unique characteristics, instead of limiting themselves to mostly conventional onshore and shallow-water offshore resources as in the past.²

Resources like shale, for example, produce immediately, but they require significant repeat investments due to steep well-decline rates. On the other hand, deepwater and liquefied natural gas (LNG) resources have lower repeat capital expenditures (capex) and medium-to-higher full-cycle returns, but their initial capital requirements are high and production starts in two to five years or longer (figure 1). The right portfolio—focused or diversified—is key to striking a balance between three parameters (investment, production, and returns), especially in today’s capital-constrained and uncertain price environment.³

While the oil and gas industry is not new to assessing the value of concentration or diversification, especially in the context of the entire O&G value chain, new and multiple resource choices and increasing market complexities have now trained the spotlight on the upstream sector—one resource, one geology, one geography, or a diversified upstream portfolio?

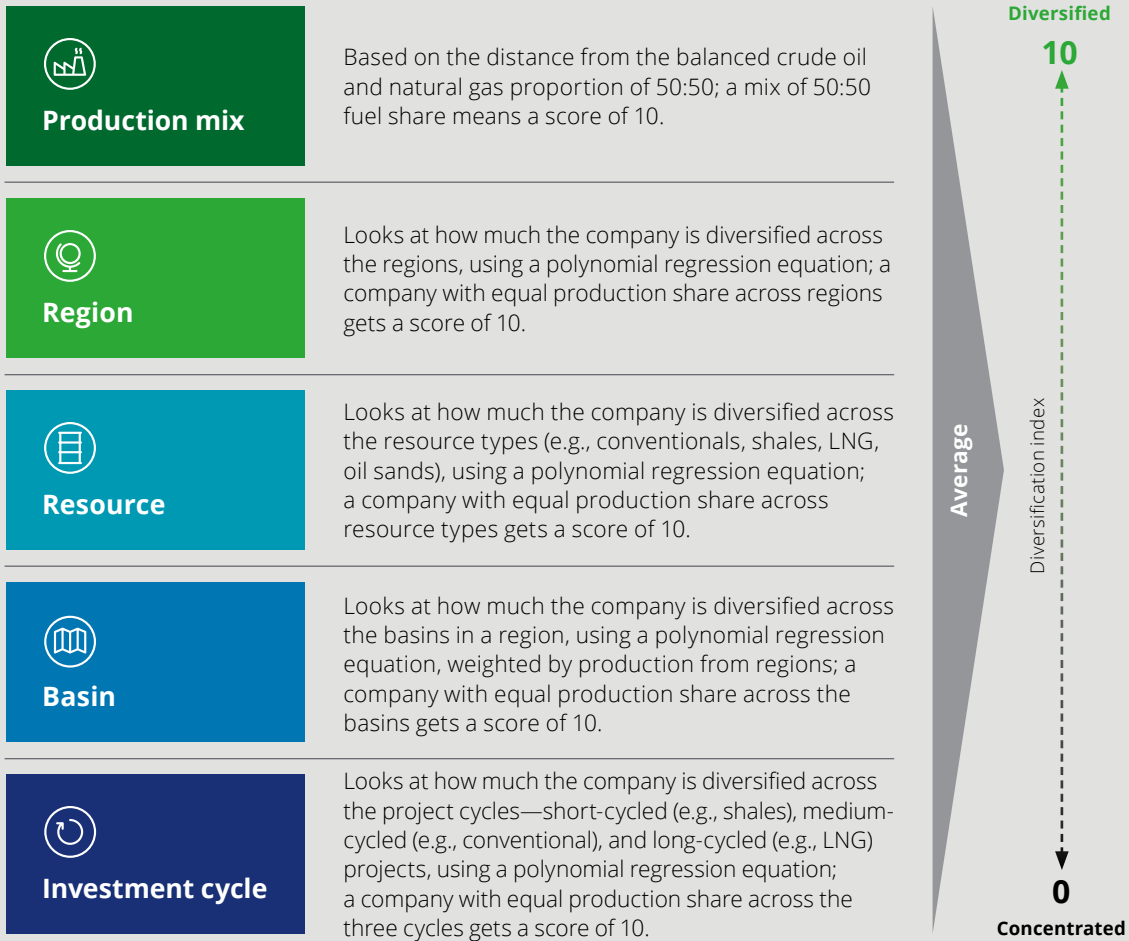
Figure 1. Financial attributes of resources



*Resources that are currently producing
Source: Deloitte analysis

Figure 2. Upstream Diversification Index (UDI)

The analysis uses the net-entitlement O&G production of companies to develop an overall index on a scale of 0-10, which is an average index score of the five parameters described below. An overall index of 10 for a company means it is fully diversified, while a score of zero means the company is highly concentrated in a fuel, region, basin, resource, and/or investment cycle.



*For more details on the UDI, refer to the methodology section in the appendix.

Coming full circle

New resources that drove diversification now prompting concentration...

In the early 2000s, decision making for E&P companies started becoming more complex because of new and multiple resource choices that came into the picture. Advanced technologies and a long period of high crude oil prices gave enough thrust to E&P companies to materialize sizeable production from resources like LNG, deepwater, oil sands, and shales (including tight oil and shale gas). As a result, the production share of these new resources more than doubled to 25 percent by 2010.⁴

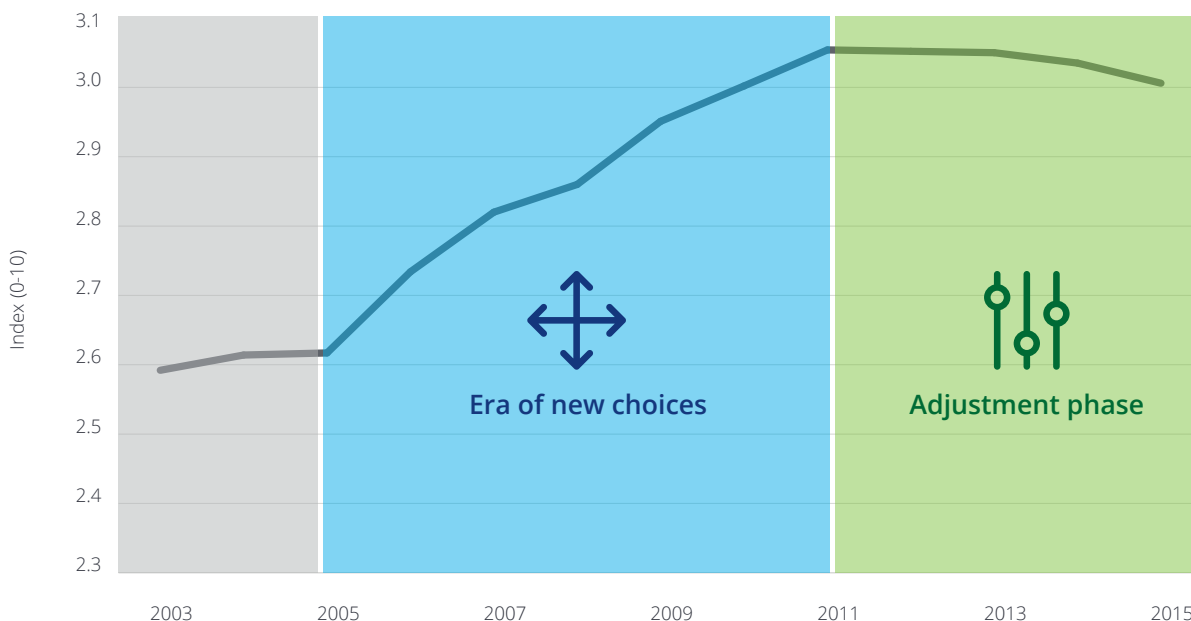
These new resources have significantly diversified the then concentrated fuel (which was oil-heavy), region and basin (primarily Middle East-centric), resource type (largely conventional), and investment cycle (mostly medium with an investment gestation of two to three years) of the oil and gas industry. If explained through the Deloitte UDI (figure 2), this *era of new choices* made the industry a lot more diversified, reflected in the

increase in its diversification score from 2005 to 2010 (figure 3). (Note: At a company level, the highest UDI was 6.12 in 2014).

However, since 2011, the index has flattened out and is showing some signs of a downward trend (that is, a slight move toward concentration). Here again, new resources have played a big role, particularly shales. Among all the newly found resources, the growth of US shales became so material that it kick-started an *adjustment phase* in the industry, making some E&P companies leave international markets, and even sell domestic offshore operations, to focus on this resource.⁵

Simply put, in a short period of 10 years, new resources, led by shales, have pushed players to both sides of the diversification spectrum. Companies that used shales to diversify in the early phase of the shale boom have become over-concentrated in shales in the past five years, while some have taken shales as an essential “add-in” to their already balanced portfolio.

Figure 3. Global upstream diversification index (Production weighted, 2003-2015)



Sources: Wood Mackenzie and Deloitte analysis

...and diverging the pathways of companies

Like the overall diversification trend, there was a deviation in the trend—and thus strategies—of company groups, and even companies within groups. Integrated oil companies (IOCs), the conventional front-runners in terms of the breadth of their operations, further diversified their upstream operations by adding all new resource choices to their portfolio. Independent E&Ps, primarily medium-sized, on the other hand, used new resources like shales as a strategy to concentrate.

The upward movement in the diversification trend of IOCs is in line with their overall business strategy of having a strong diversified or balanced portfolio, where each resource or business has an important role to play across the cycles (figure 4). “Turning to our future investment strategy, this will continue to be balanced—targeting a mix of deep water, conventional oil and gas, and unconventionals. It will include a geographical, geopolitical and fiscal exposure aimed at diversifying risk and improving our resilience to a broad range of outcomes,” says Bob Dudley, group chief executive of BP.⁶

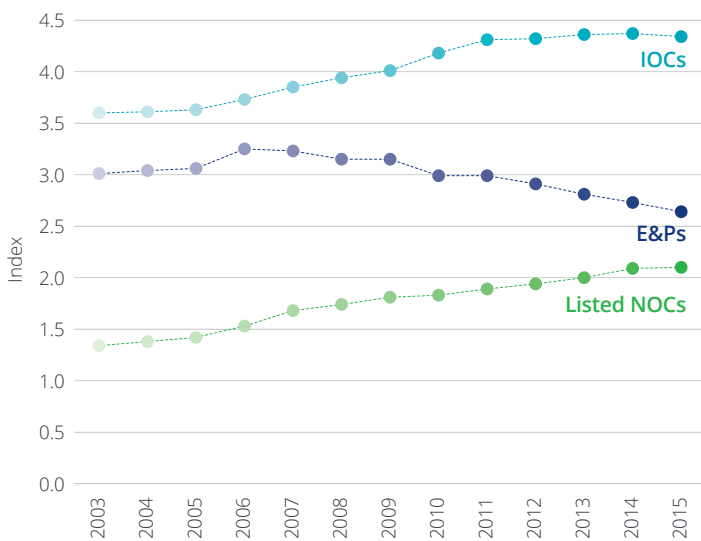
Among the five diversification factors in the index (basin, investment cycle, production mix, region, and resource type), IOCs have made their investment cycle, production mix, and resource more diversified than what they were in 2003 or earlier (figure 5). IOCs,

in general, embraced both long-cycle (for example, LNG and deepwater) and short-cycle (for example, shales) projects and strived for a leading position in all resource types. Despite low natural gas prices and high investment, IOCs remained honest to their bullish long-term view on natural gas by investing in LNG and maintaining a balanced production mix.

On the other hand, the diversification index of pure-play E&Ps (primarily US E&Ps) fell by about 20 percent with a downward movement across all five factors—production (switch from balanced mix to oil), resource (conventional and deepwater to shales), region (significant international to only the United States), cycle (medium- and a few large-cycle projects to only short-cycle ones), and basin (presence spread across basins to focus only on a few basins in the United States).

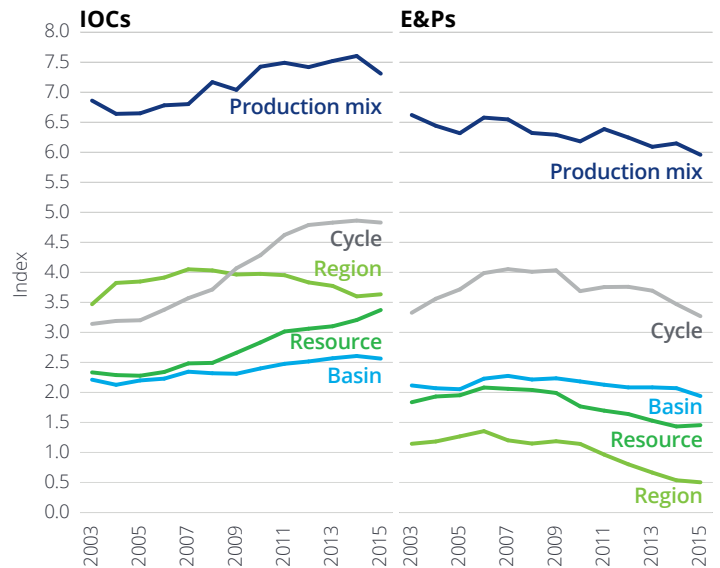
Meanwhile, listed national oil companies (NOCs) remain the least diversified group, despite strong diversification moves lately by Asian NOCs. Chinese NOCs, in particular, have come a long way in reducing their oil-heavy production mix and Asia-centric operations. On the other hand, Gazprom and Rosneft, the two major Russian NOCs, have not made significant changes to their gas-heavy and oil-heavy production mix, respectively, and Russia-centric (including Caspian) operations.⁷

Figure 4. UDI trend by company groups (production weighted)



Sources: Wood Mackenzie and Deloitte analysis

Figure 5. UDI trend by factors for IOCs and E&Ps (production weighted)



Sources: Wood Mackenzie and Deloitte analysis

Metrics that matter

A look at how diversification or concentration affects how companies perform

Clearly, new resources have led to significant changes in the portfolio mix and investment strategies of E&P companies. But, what has been the impact of these changes on company performance metrics, such as shareholder returns and return on assets, over the past 10 years, a period that witnessed both upcycles and downturns? Which companies have performed better—those with the least changes to their diversification score or those with the most? Having a factual understanding of these questions is important for E&P companies as they assess their future portfolio mix in light of the changed capital and price environment and as they compare their own portfolio performance with their peers.

To facilitate this understanding, we have grouped companies into four categories, based on UDI scores in 2015:

- *Concentrated* (score of below two)
- *Less diversified* (between two and three)
- *Moderately diversified* (between three and four)
- *Diversified* (above four)

We then assessed the performance of each group, or companies in these groups, on four financial parameters:

- Total shareholder returns (TSR) of company over the S&P E&P index (annualized relative TSR)*
- Sustainable growth (production growth and leverage)
- Profitability and stability in earnings (per barrel of oil equivalent [BOE] and variation in income/BOE)
- Asset efficiency (upstream net income by assets, return on assets)**

* Annualized relative TSR means total shareholder returns over and above the S&P 500 index.

** Although return on average capital employed (ROCE) is a common return ratio used by upstream companies, its closest proxy metric, return on assets, is used instead due to non-availability of capital employed in upstream across the time periods for all the companies in the sample set. For more details on the financial parameters, refer to the methodology section in the appendix.



TSR: Although concentrated companies reported higher returns, those with a consistent strategy also did well across the diversification scale.

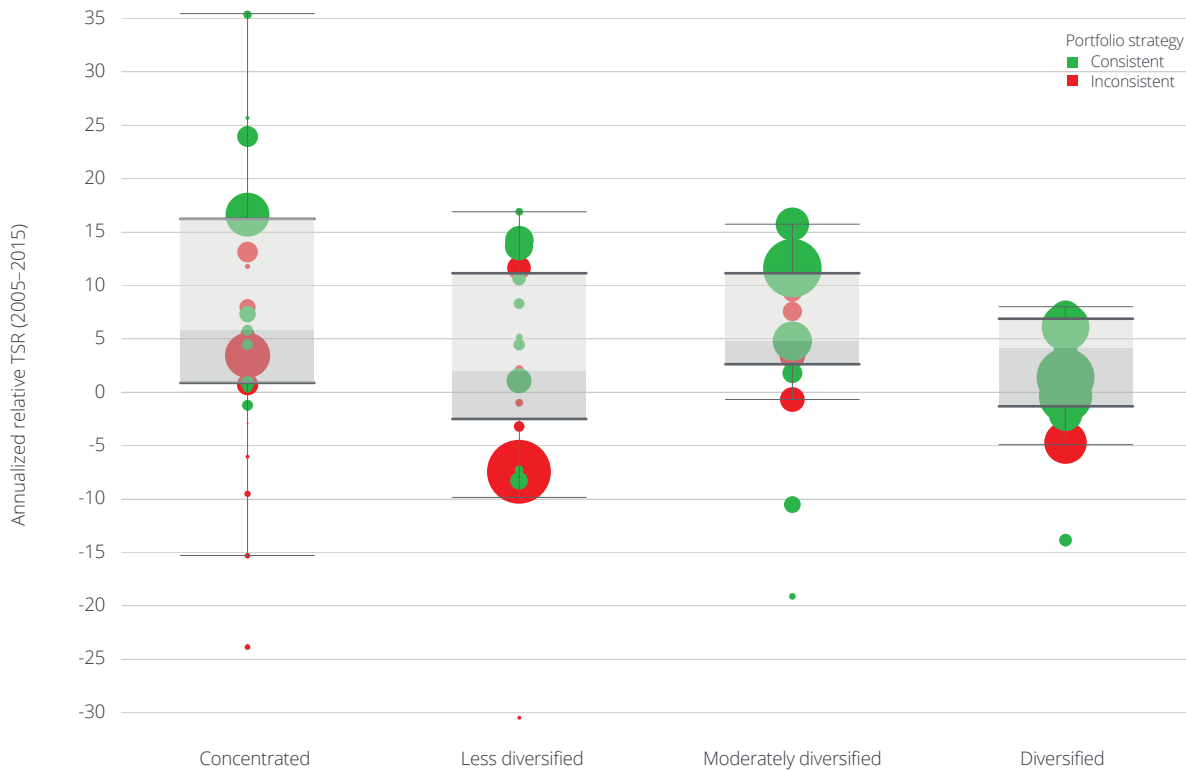
Concentrated and less-diversified companies have reported higher annualized relative TSR than moderate to highly diversified companies over the past 10 years (figure 6). Concentrated companies like Concho Resources and Continental Resources, for example, have delivered annualized relative TSR of 25 and 17 percent, respectively, nearly four to six times the median returns of moderate to highly diversified company groups.⁸

However, it is important to notice the spread of returns in the concentrated group. In this group, the spread is wide due to high differentiation and companies' mixed

financial standings. Conversely, the spread starts narrowing as diversification increases and companies' portfolios start to look alike.

Concentration is the primary driver while consistency in strategy is the secondary driver that explains higher TSR within each group. Companies that have had a consistent strategy (that is, marginal or gradual changes to their diversification index over the past 10 years, highlighted in green circles) delivered higher returns within each of the four diversification groups. Conversely, companies that frequently altered their strategy or underwent significant restructuring (that is, large and frequent changes to their diversification index, highlighted in red circles) delivered either average or lower returns across the groups.

Figure 6. TSR by diversification groups (percent, 2005-2015)



Note: Circle size represents production in 2015.
Sources: S&P Capital IQ, Wood Mackenzie, and Deloitte analysis



Growth: Small and concentrated companies delivered higher production growth, but it was largely funded by debt and by exploiting reserves.

High production growth delivered by concentrated companies explains their high TSR. Companies like Antero Resources, Concho Resources, and Consol Energy have grown their production by 15 to 20 times over the past 10 years or so.⁹ On the other hand, large and diversified companies have mostly delivered flat to negative production growth.¹⁰

However, it is important to analyze the aspect of growth along with the changes in reserves life and leverage position of a company or group. Over the past two to three years, in particular, many concentrated companies have delivered significant production growth. But, this growth has largely come from external capital (reflected in a significant increase in their debt-to-capital ratio in 2015 in figure 7) and by drawing

down reserves (reflected in a significant fall in reserves life, both because of impairments and fewer organic additions). For example, Chesapeake Energy’s proved reserves life in 2015 was just 6.1 years, compared to 15 years in 2011.¹¹

With limited access to new capital, the challenge for these companies will be to maintain their high production growth rates—a key factor that supported their TSR in the past. From its peak in early 2015, US tight oil production has already fallen by about 20 percent.¹²

Although debt levels have increased across the board, especially in the past few years, they are still quite low and manageable for diversified companies. Thus, more than the production growth, which is purely a function of capital in shales, the key is to deliver sustainable and competitive growth in this lower-for-longer price environment.

Figure 7. Proved reserves life and leverage ratio by diversification groups



■ Concentrated ■ Less diversified ■ Moderately diversified ■ Diversified

Sources: S&P Capital IQ, Bloomberg, and Deloitte analysis

Net income: Diversified companies reported higher and stable income during the period in question, but players operating in niche markets and those with an advantageous gas orientation also did well.

Relatively, diversified companies have reported higher and stable upstream income per BOE over the past 10 years (dark green circles in the bottom right quadrant in figure 8). A portfolio of projects across fuels, resources, and regions has allowed many diversified companies to deliver a dependable production base, to exploit price gaps or withstand lower prices in a market, and benefit from economies of scale and scope on the operational front.

However, some concentrated companies—small and medium-sized—have also done well on both fronts or at least provided stable income (red and orange circles in the bottom left quadrant). Companies that especially have a regional or market dominance (limited competition), operate in niche areas where they have solidified their positions (for example, Marcellus and Permian shales in the United States), or have a strong natural gas orientation (including LNG) and associated infrastructure have done well irrespective of their size and diversification.

Figure 8. Profitability and stability in earnings by diversification groups



Notes:
 1. Circle size represents production in 2015.
 2. Variance in earnings (standard deviation), lowest = best.
 3. Net income/BOE (rank), highest = best.
 Sources: S&P Capital IQ, Bloomberg, Wood Mackenzie, and Deloitte analysis

Return on assets (ROA): More than diversification, mid- and long-cycle projects drove higher ROA for companies, emphasizing the importance of conventional and mega-projects.

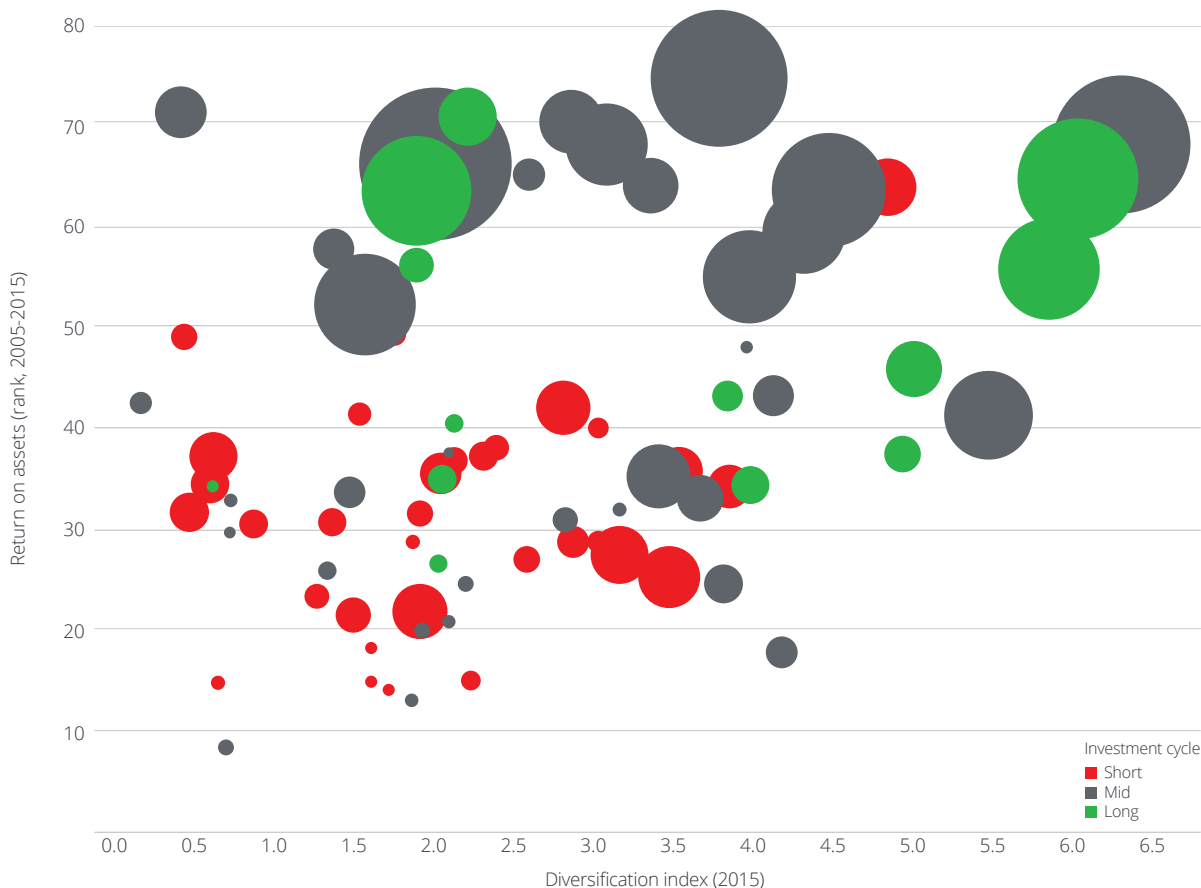
When it comes to asset efficiency, mid- and long-cycle projects better explain the higher ROA of a company, rather than its diversification level (figure 9). A low-cost legacy asset base, the long-life production profile of large developments, facility-based projects that provide high cash flows and uncopyable competitive advantage, and projects with minimal repeat capex and significant brownfield opportunities play a big role in influencing the upstream ROA of a company.

Although increasing operational and capital efficiency in shales or short-cycled projects has and continues to provide strong support, discounted realizations, steep decline curves, marginal wells, and an inventory of uncompleted wells continue to keep returns low for US

shale companies. Those that have done relatively well in shales were vertically integrated (for example, EOG Resources self-sources sand, chemicals, and drilling fluids)¹³ or had inventory at all stages of development and greater control over costs and operations through owned and operated facilities (for example, ARC Resources has drilling and producing inventory at all stages of development, allowing for self-funding and providing full-cycle returns across the portfolio)¹⁴

In summary, although diversified companies performed better on some financial parameters, companies with a consistent strategy, operations in niche markets and quality basins, a legacy asset base, and a strong gas orientation with advantageous infrastructure also did well irrespective of their diversification index.

Figure 9. Mapping ROA and UDI of companies



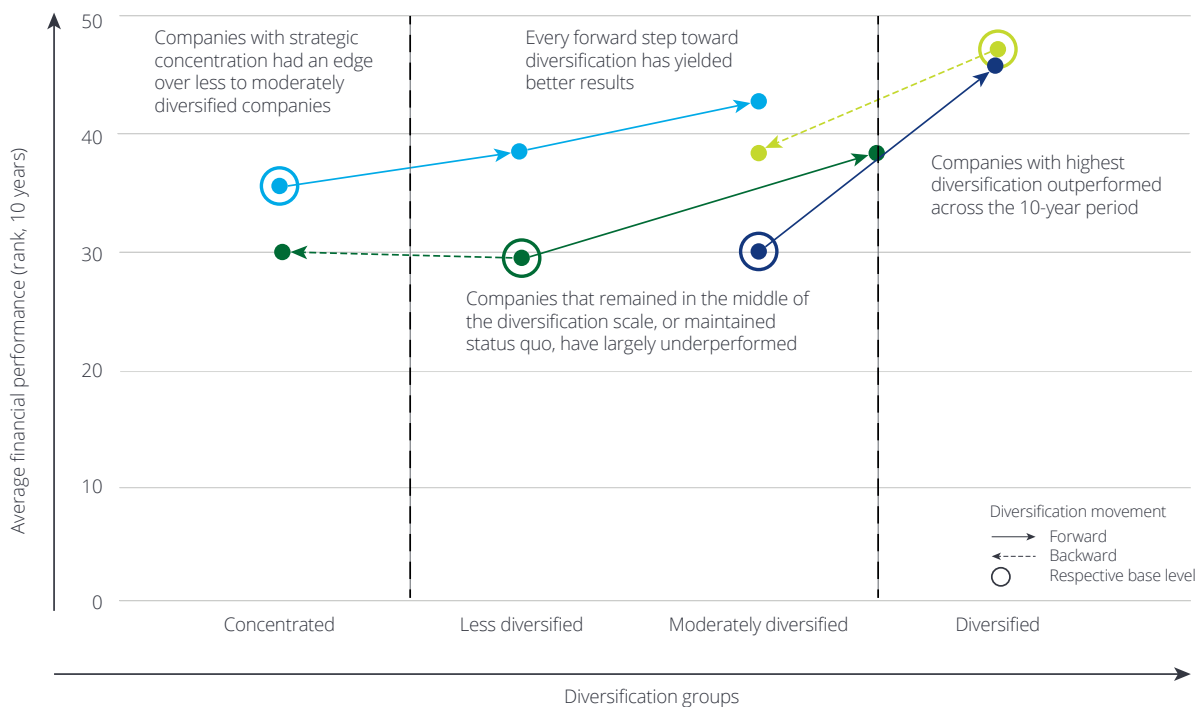
Notes:
 1. Circle size represents production in 2015.
 2. Return on assets rank, highest = best.
 Sources: S&P Capital IQ, Bloomberg, Wood Mackenzie, and Deloitte analysis

Back to basics or explore new avenues? A billion-dollar question for companies

The previous analysis relates to the “current” (2015) diversification level of companies with their financial performance. But, how do these results look if the “trend” toward or against diversification is analyzed—that is, the performance of companies for which the diversification index changed the most versus those whose diversification score changed the least over a 10-year period? Or, in examining if there is an advantage in sticking to what a company knows best versus aggressively moving into different kinds of opportunities?

Rather than looking at each financial measure again, we analyzed the consolidated performance (TSR, ROA, profitability, and stability) of companies for three movements over the past 10 years: (1) companies that maintained the status quo, or saw no major change in their overall diversification index (circles with an outer ring in figure 10), (2) companies that moved toward diversification (circles after the forward arrow movement), and (3) companies that moved back on diversification (circles to the left of the backward arrow movement).

Figure 10. Consolidated financial performance by diversification movement and groups



Note: Average financial performance rank, highest = best.
Sources: S&P Capital IQ, Bloomberg, Wood Mackenzie, and Deloitte analysis



(1) Maintaining the status quo

Marginal or no change in overall diversification strategy has typically worked for companies on extreme ends of the curve (that is, the most concentrated or diversified), provided they remain dynamic and make timely and disciplined adjustments among various metrics. Highly diversified companies with this strategy were the front-runners in delivering higher and stable returns while strategically concentrated companies in shales outperformed the ones that had low to medium diversification.

Over 50 percent of the concentrated companies chose to remain concentrated, and the majority of them timed their identification and focus on productive shale plays (basin-level standard deviation of nearly “0”), enabling them to constantly improve their cost structures and overall productivity and to deliver production growth with minimal financial risk. For instance, Cabot Oil & Gas Corporation, aiming at a gas-heavy portfolio, remained focused on the Marcellus (a play with maximum production per well currently), while Concho Resources aligned its oil-heavy production strategy by remaining focused in the Permian, which allowed it to deliver good shareholder returns and profitability.¹⁵

(2) Moving ahead on the diversification curve

A progression toward greater diversification, regardless of the initial level of diversification, enhanced the performance of companies, provided they explored all possible options of diversification for navigating through business challenges. A slight forward movement from a highly concentrated portfolio delivered more moderate results, as not many options can be simultaneously explored at that level but a movement from any level beyond that resulted in highly profitable and stable returns for the companies.

Forward-moving NOCs did well as they explored all other options, except basin-level diversification. E&Ps behaved similarly, although they were cautious about regional diversification as well, and hence used production-mix, resource-type, and project-cycle diversification to build a profitable portfolio over time. Though several dynamics are unique to each company set, the common

trend of relying heavily on investment-cycle diversification (high positive variation in investment-cycle diversification index) to balance short-term cash flows and long-term profitability was prevalent in almost all companies.

Interestingly, a few companies that undertook a lot of fuel or production mix diversification without using other options to mitigate the operational and business challenges failed to reap diversification benefits. Therefore, companies that advanced their diversification improved their performance as they benefited from investment optionality and flexibility.

(3) Moving back on the diversification curve

Any step toward concentration, except *less diversified* firms becoming concentrated, exposed companies to market volatility and hence impacted their profitability and stability. Several mid- to large-size companies saw shales’ short-cycle returns as an opportunity and reduced their global presence as well as resource portfolio to concentrate on this newly found resource.

However, such companies were outperformed by peers that were either early entrants and pioneered the shale technology, remained focused on select basins despite changing trends, or used shales as an essential “add-in” to their already diversified portfolio. Additionally, several mid-size companies kept adjusting their portfolios to find a balance (reflected in their inconsistent trend on the diversification index), which did not allow them to maximize returns on existing as well as acquired asset bases and also led to more unstable financial performance.

In summary, companies that remained concentrated or diversified outperformed companies that aggressively traveled to either side of the spectrum; further, every step toward diversification yielded better results.

Next steps

Overcoming the decision-making dilemma

Considering there is limited availability of capital and reduced appetite for taking risks in today's lower-priced environment, concentrated (and small) companies only have the option of remaining concentrated—and, as seen above, they have performed relatively better by maintaining the status quo. But questions remain about the future strategies of less, moderate, and fully diversified companies—those that have some financial leeway, broader capabilities, and resource options to move to either side of the diversification scale.

Will fully diversified companies (primarily large IOCs) remain committed to diversification? If yes, would that strategy deliver in the changed industry landscape? What can guide the future direction of low to moderately diversified companies that have largely underperformed—knowing that maintaining the status quo or aggressively moving into different kinds of opportunities have not yielded results?

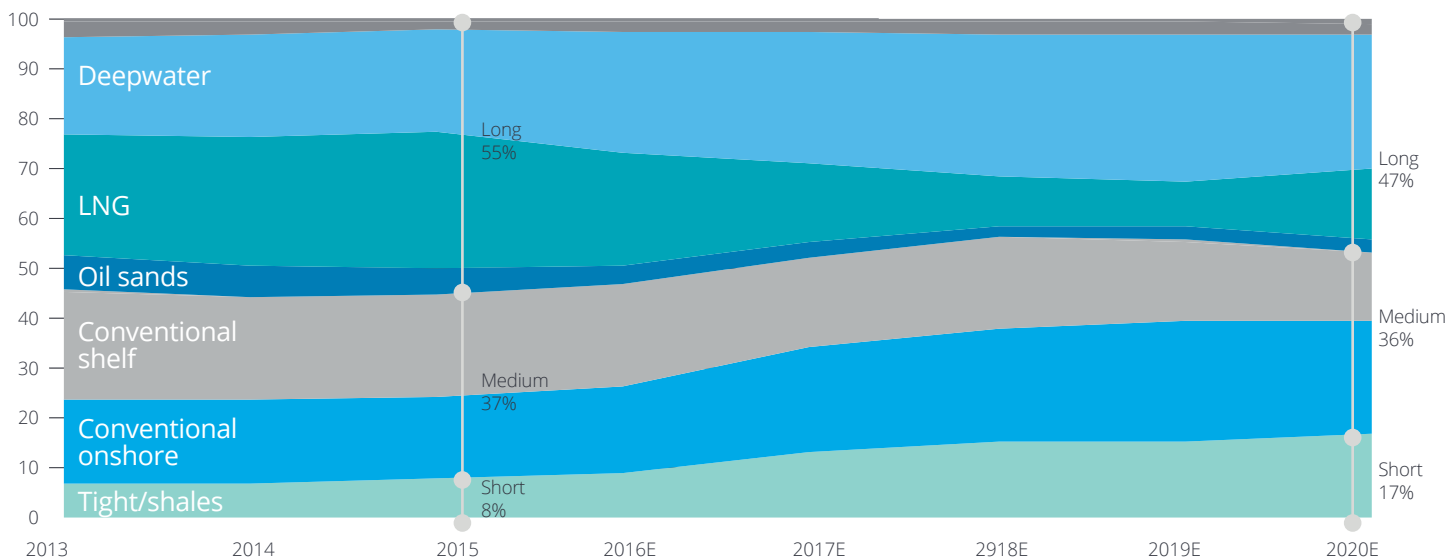
IOCs/supermajors: Using announced and estimated development capex over the next five years, large IOCs appear to continue with their strategy of having a balanced and diversified upstream portfolio. Although the production share of long-cycle projects is estimated to fall from 55 percent in 2015 to 47 percent by 2020, because of the completion of large LNG projects, they are expected to still maintain their dominant position in supermajors' production mix (figure 11).¹⁶

Surprisingly, despite today's low-priced environment, supermajors seem to remain—maybe rightfully so—committed to long-cycled resources, such as deepwater, that supported their high performance in previous downturns. Similarly, supermajors are projected to unlock their “real options” in short-cycled shales, primarily in Permian and Appalachian, which would lend more arms and legs to their already diversified portfolio and drive their overall production growth, the key missing factor until now.

Consistency in strategy, a legacy asset base with low repeat capex and high cash flows, operating position in assets and resources worldwide that provide investment flexibility, significant conversion of pre-productive capital into cash flows over the next few years in LNG, and now an expected growth boost from focused presence in shales lead to an argument against a “transformation” of supermajors' business model in general.

Although supermajors' overall business diversification (upstream, refining, chemicals) is outside the scope of this upstream-focused paper, their integrated and diversified businesses support each other—earlier upstream, then refining, and now chemicals—and sustain shareholder payouts, at least in this weak environment. This and future discussions, however, may not stop at the oil and gas value chain but should cover the perceived value and competitive advantages of becoming an *energy company* and serving *connected customers* for supermajors.

Figure 11. Development spending share by resources (supermajors)



Source: Wood Mackenzie and Deloitte analysis



Independent E&Ps: Of all the company groups, upstream portfolio decision making is most challenging for medium- and large-sized E&Ps (companies with production of more than 250,000 barrels of oil equivalent per day). This group of E&P companies will likely evaluate whether to fully concentrate in a region or resource like small-sized E&Ps or attain meaningful diversification like IOCs.

As seen in the above analysis, staying in the middle of the diversification scale or having some level of diversification has not helped many E&Ps. The case for their concentration seems strong due to the growing need to sell noncore operations to reduce mounting debt, but so may be the need for having meaningful diversification, given the competitive and margin pressure seen in the US shale market.

Although deciding between concentration and diversification might be unique to each company and depend on where each wants to play and their winning strategies, the parameters below could be a useful preliminary guide:

(1) Working interest in projects: Companies with a higher number of projects with operating (or controlling) interests would have greater degrees of investment optionality and development flexibility than those having non-operating interests in projects, supporting the diversification strategy for the former and consolidation for the latter in today's uncertain investment environment. "Today, a portfolio is a good word. A year ago, we kind of drove the stake in the ground and said, we're going to keep North Sea and Egypt [regions where Apache predominantly has operating interests]. It was not a decision that everybody agreed with. But as you look back a year later and see lower prices, it was the right thing to do," says Apache's CEO, John J. Christmann.¹⁷

(2) Access to capital/financial consideration: During the past two years of the downturn, companies that maintained their investment-grade credit rating, or retained their overall financial flexibility, were mostly diversified companies. Diversified companies with significant upcoming debt maturities and revolving credit redeterminations would have more room to negotiate with lenders, compared to companies with limited financial and operational flexibility because of their concentrated operations. "What they [rating agencies] really value is size and diversification, and that comes through in their commentary ...about how they determine ratings," says ConocoPhillips' CFO, Jeffrey W. Sheets.¹⁸

(3) Infrastructure dependency: Companies operating in regions where there is limited competition and an advantageous interdependency between their upstream and large operated infrastructure positions (for example, gas pipelines, processing facilities, terminals, and downstream) would benefit from strengthening their upstream positions in those countries and capturing margins across the O&G value chain. Occidental Petroleum Corporation, for example, plans to strengthen its international presence in Qatar, Oman, and the UAE—the core Middle East countries where it also has midstream presence and infrastructure advantages.¹⁹

(4) Level of technological advancement and innovation: Companies with strong technology capabilities and proprietary processes can reap the benefits of both concentration (focused on one resource) and diversification (spread out presence across quality basins in that resource) without compromising on returns and increasing capital requirements. EOG Resources, for example, is primarily focused on shales but has developed a strong inventory of premium wells across shale basins through science and innovation, including the testing of enhanced oil recovery technology in shales.²⁰

The way forward: Pathways to success

The next two to three years of probable price recovery amid uncertainty and volatility will most likely lead to, and may even compel, companies in the middle to choose between the two ends of the diversification curve—leading to greater exchange of assets, mergers, and reprioritization of capital in the industry.

Although consistent strategy, financial prudence, and operational capabilities will often be central to any company's success, how it gains competitive and operational advantages in the markets it operates in or monetizes the available optionality in its advantageous asset base will likely differentiate performers from nonperformers on both ends of the curve (green boxes

in figure 12). Likewise, the pathways of companies moving backward with overleveraged concentration and those moving forward with reduced optionality will likely be less successful (red boxes in the figure).

An upstream diversification index, which covers the length and breadth of a company's portfolio, could help companies select the right path, track changes in the decision making of peers, and offer a new, more consistent, and rigorous framework for internal portfolio analysis, strategic discussions, and communications to management, investors, employees, and other stakeholders.

Figure 12. Performance grid by strategic pathways



Source: Deloitte analysis

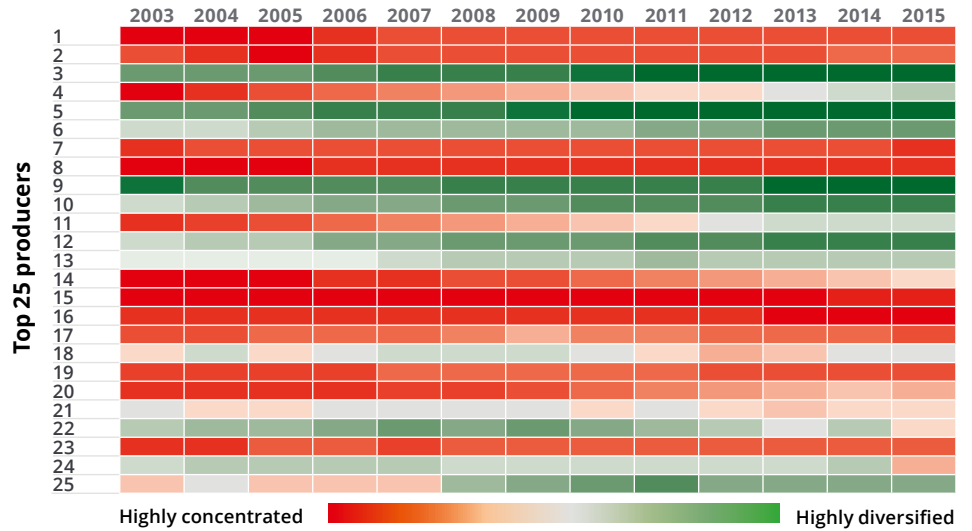
How can we help?

Given the changes in the market landscape, how can your company excel in the new normal?

Understanding how or how much your peers are diversifying can help you make an informed decision.

How does your company rank against its peers?

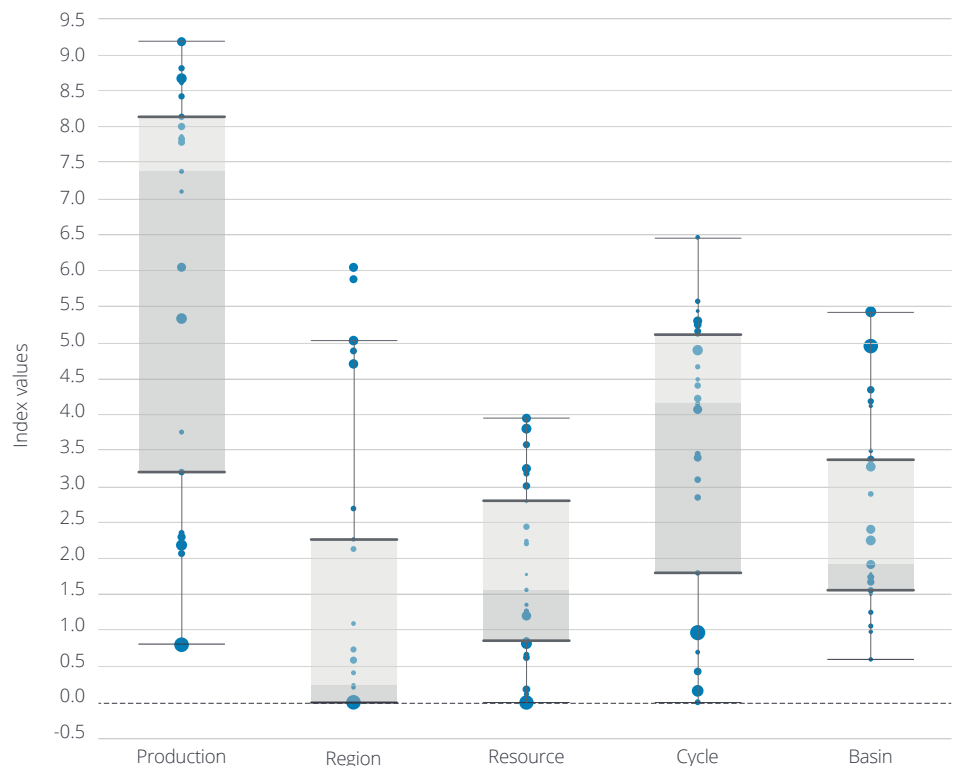
Figure 13. Changes in the diversification index and strategies of the top 25 producers worldwide



Source: Wood Mackenzie and Deloitte analysis

What factors drive the diversification strategies of your company and its peers?

Figure 14. Diversification index of top 25 producers by factors



Source: Wood Mackenzie and Deloitte analysis

Methodology

Table 1. Upstream diversification index

#	Factor	Details
1	Production mix	Net entitlement production of every company was divided into two product types: liquids (including natural gas liquids) and natural gas. Considering there are only two types, a distance equation was used from the balanced mix of 50%:50%.
2	Region	Net entitlement production of every company was segregated into eight regions: North America, Russia & Caspian, Oceania, Asia, Middle East, Europe, Latin America, and Africa. The following polynomial equation was used for developing the regional index: $y = 25746x^5 - 23827x^4 + 8058.2x^3 - 1100.1x^2 + 6.1043x + 10$
3	Resource	Net entitlement production of every company was segregated into nine resources: coal bed methane, acid/sour gas, tight/shale, oil sands, LNG, deepwater, conventional onshore, heavy oil, and conventional shelf. The following polynomial equation was used for developing the resource index: $y = 92606x^5 - 74152x^4 + 21544x^3 - 2597.8x^2 + 59.076x + 10.002$
4	Basin	Net entitlement production of every company was segregated into 181 basins across regions. For the United States, basins in close proximity and having similar characteristics were clubbed.
5	Investment cycle	Net entitlement production of every company was segregated into three investment cycles: short, medium, and long. The following polynomial equation was used for develop the investment cycle index: $y = -21.213x + 10$

Table 2. Financial parameters

#	Measure	Details
1	Relative annualized TSR	Total shareholder return (dividend, bonus, and stock split adjusted) was annualized, over and above the S&P 500. Eighty O&G companies with consistent data for a minimum of the past nine years were considered.
2	Net income/BOE	Upstream net income divided by upstream production in BOE was calculated; midstream and downstream income were excluded for companies, wherever applicable. A company's net income/BOE in a year was converted into a relative rank, and then the aggregated rank was considered.
3	Variability in net income	Standard deviation of net income/BOE of each company was calculated, adjusted for base effect.
4	Return on assets (upstream)	Upstream net income divided by upstream assets was calculated; midstream and downstream income and assets were excluded for companies, wherever applicable. A company's ROA in a year was converted into a relative rank, and then the aggregated rank was considered.

Endnotes

1. ConocoPhillips, "Quarterly Earnings Call: 2Q 2016," July 28, 2016, p. 3, <http://www.conocophillips.com/investor-relations/investor-presentations/Documents/COP-Transcript-FINAL%207-28-2016.pdf>, accessed August 15, 2016.
2. WoodMackenzie, Upstream data tool, data downloaded on May 1, 2016; Deloitte analysis.
3. John England, Andrew Slaughter, and Anshu Mittal, "Short of capital: Risk of underinvestment in oil and gas is amplified by competing cash priorities," Deloitte, 2016, <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/energy-resources/us-er-short-of-capital.pdf>.
4. Ibid.
5. John England and Anshu Mittal, "US Shale: A game of choices," Deloitte, September 2, 2014, <http://dupress.com/articles/us-shale-gas-ecosystem/>.
6. BP, "Quarterly results: 2Q16," July 26, 2016, p. 25, <http://www.bp.com/content/dam/bp/pdf/investors/bp-second-quarter-2016-results-presentation-slides-and-script.pdf>, accessed September 5, 2016.
7. Ibid.
8. S&P Capital IQ and Deloitte analysis.
9. SEC filings, Bloomberg, S&P Capital IQ.
10. Ibid.
11. Ibid.
12. US Energy Information Administration, "Drilling productivity report," November 14, 2016, <http://www.eia.gov/petroleum/drilling/pdf/dpr-full.pdf>, accessed November 16, 2016.
13. EOG Resources, "J.P. Morgan Inaugural Energy Equity Investor Conference," June 29, 2016, <http://investors.eogresources.com/Presentations-and-Events?item=46>, accessed August 19, 2016.
14. ARC Resources, "Investor Presentation," September 2016, p. 11, http://www.arcresources.com/assets/pdfs/presentations/2016/September/Q2_2016_Presentation_September_Handout.pdf, accessed September 14, 2016.
15. Company filings; Bloomberg; Wood Mackenzie, "Upstream Data Tool," accessed May 1, 2016.
16. Wood Mackenzie, "Corporate Analysis Tool (CAT)," accessed August 20, 2016.
17. Apache Corporation, "Annual shareholders meeting," May 12, 2016, p. 5, http://files.shareholder.com/downloads/APA/2735605725x0x891721/64240EEF-1C15-4DFC-A3DA-BB0DDEBCBFFF/Apache_Annual_Meeting_20160512.pdf, accessed August 15, 2016.
18. ConocoPhillips, "2016 Capital Budget and Operating Plan," December 10, 2015, p.26, <http://www.conocophillips.com/investor-relations/investor-presentations/Documents/COP-Operating%20Plan%20Deck%20Transcript-2015-12-10.pdf>, accessed August 18, 2016.
19. Occidental Petroleum Corporation, "UBS Global Oil and Gas Conference 2016," May 25, 2016, http://www.oxy.com/investors/Documents/UBS_WebPresentation_2016.pdf, accessed September 1, 2016.
20. EOG Resources, "Quarterly results: 1Q16," May 5, 2016, <http://investors.eogresources.com/2016-05-05-EOG-Resources-Announces-First-Quarter-2016-Results-and-Successful-Enhanced-Oil-Recovery-Project>, accessed September 3, 2016; Natural Gas Intelligence, "EOG Enhancing Eagle Ford Oil Recovery Using Novel NatGas Injection System," May 10, 2016, <http://www.naturalgasintel.com/articles/106368-eog-enhancing-eagle-ford-oil-recovery-using-novel-natgas-injection-system>, accessed September 3, 2016.

Let's talk



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