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# Total Shareholder Returns from Petroleum Companies and Oilfield Services (2004-2014): Capital Gains and Speculation Dissected to Aid Corporate Strategy and Investor Decisions

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**Abstract:** This study compares the long-term shareholder returns of diversified oil and gas majors, Canadian oil sands producers, US shale oil and gas producers and oilfield services companies during a decade of volatile oil and gas prices (2004-2014). Total shareholder returns (TSR) are analyzed for individual companies, for each peer group, and for the petroleum sector as a whole. We attempt to identify the factors that contributed to TSR growth and decline over the performance period 2004-2014. We specifically compare the performance of each peer group during two relatively stable periods, namely 2004-2007 (Period 1), and 2009-2013 (Period 2). In Period 1, the average TSR for all peer groups was higher than in Period 2. The increase or loss of TSR is in our study broken down into capital gains and dividends. The observed decline of TSR during Period 2 was mainly influenced by stock prices that reflected a slower growth in retained earnings that supports the capital gains. All peer groups had slower increases in retained earnings in 2009-2013 as compared to 2004-2007. Remarkably, during the two oil price crises of 2008 and 2014 all companies maintained an increase in retained earnings. For the 20 companies evaluated, further in-depth analyses of speculative investor valuations are included in our study, as well as implications for future corporate strategies and investor decisions.

**Keywords:** Total Shareholder Return, Capital Gains, Dividends, Retained Earnings, Speculative Valuation

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## 1. Introduction

The petroleum industry, comprising both privately-owned and stock-listed enterprises, competes for financing sources, mainly equity and debt. Companies are continually evaluated by financial analysts to seek out which firms are likely to generate solid returns on investment. Banks also analyze companies to reassess creditworthiness and periodically adjust credit lines based on the collateral remaining in the balance sheets of their debtor companies. Although a vast number of analyst reports passes through the board rooms of the investment community, few such reports are documented in the peer-reviewed literature. Our independent analysis fills

a gap by investigating whether the upstream oil and gas business has managed to deliver competitive total shareholder returns (TSR) over the past decade (2004-2014) compared to the returns offered by the average S&P stock (see Section 2.4).

Four distinct types of peer group companies were selected for this study. A base line of company performance is given by a peer group of diversified oil and gas majors (*Peer group A*). The global competition for access to hydrocarbon resources has intensified in the 21st Century (IEA 2010), which arguably has led to the development of unconventional

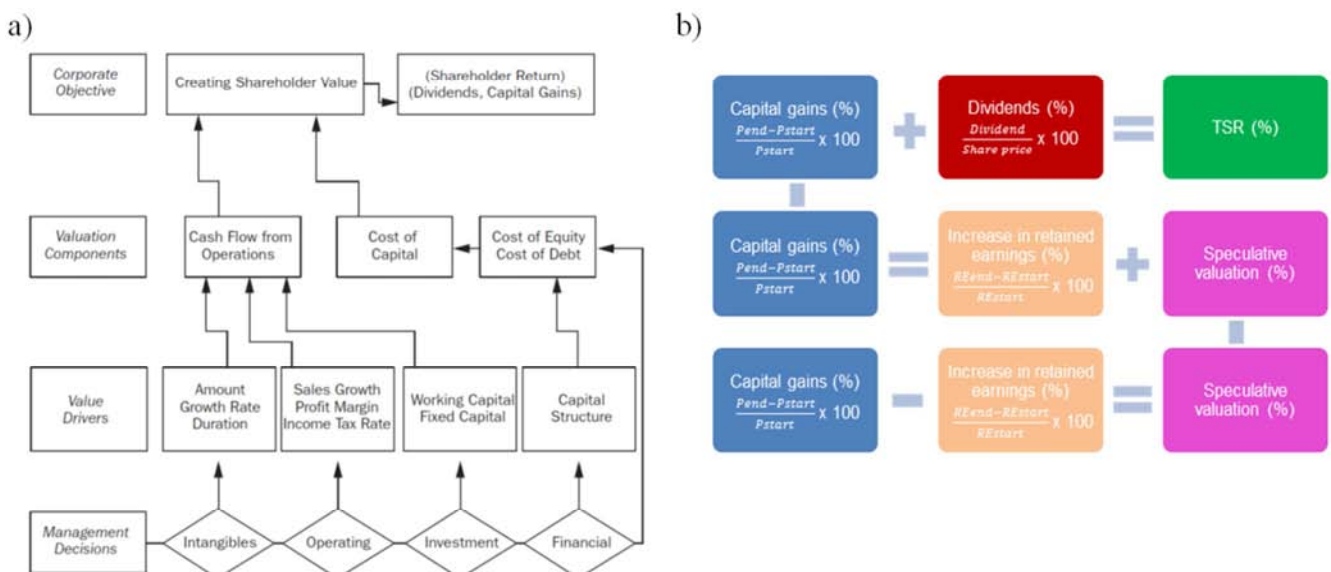
oil and gas companies. The radical expansion of unconventional oil and gas producers in North America coincides with the 11 year period covered by our study (2004-2014). We therefore include in this study (1) Canadian oil sands producers (*Peer group B*), and (2) US shale oil and gas producers (*Peer group C*). A fourth peer group is comprised of oilfield service companies (*Peer group D*), which commonly thrive in epochs of rapid new business development when exploration and field development activities intensify. Our study is limited to stock-listed entities, because public data are readily available for such companies. Given the time required to complete and document a comprehensive analysis, we used fiscal year 2014 as the most complete recent year when our study was conducted in 2015/2016.

Shareholder value creation is expected from publicly listed companies with stocks owned and traded by private and institutional investors based on company appeal and anticipated profitable returns on investment. The purchase and sale of an oil company or oil service company stock will be influenced by many things, but from an investor point of view the enterprise is a cash flow machine with detailed value drivers and valuation components that are affected by management decisions which ultimately must generate positive shareholder returns (Fig. 1a). Company management must invest in gaining the trust of shareholders and select projects that fulfill their expectations by generating profits that can be paid out as dividends, balanced with reinvestment of retained earnings in the company to fund the growth of future profits [1]. In mature companies cash flow from operations should be large enough to finance growth and reduce the cost of capital [2]. Smaller emergent companies commonly cannot cover growth from operational earnings and are critically dependent on external financing to expand the project portfolio [3, 4].

Shareholders have an important role in enabling corporate

growth and, according to Olsen et al. [5], may impact global economic stability: "Critics argue that managing for shareholder value contributed to the global economic crisis by encouraging executives to overemphasize the short term, oversimplify their company's actual performance, and overpay for dangerous risk taking by corporate management... considering that in late 2008 many investments declined in market value by half or more in the space of a few short weeks". Shareholders, in addition to the pressure exerted on company management for quick returns on investment, may instantly affect the company TSR by buying and selling the company's stock. If more investors sell a stock (supply) than buy it (demand), then the stock price will fall. Conversely, if the demand is bigger than supply, the stock price will move up.

Purchase or sale of a company stock is heavily influenced by its TSR performance (past, current and future expectation). Past TSR is made up of capital gains and dividend payments. Short-term TSR is less meaningful, but when measured over a longer period (such as in our study), TSR is an excellent indicator of investor appreciation of corporate performance. We investigated how the realized annual TSR (2004-2014) in the oil and gas upstream sector was supported by actual profits realized in each year (in terms of retained earnings growth) and quantify the differential between capital gains and retained earnings growth as speculative value (Fig. 1b). Speculative valuation of shares that is higher or lower than any past increase in retained earnings reflects investor expectation about future profits. Our conjecture of speculative valuation is as follows. *If future profits are expected to be higher than reflected by past (retained) earnings, then positive speculative valuations prevail. Reversely, if the majority of investors expect future profits to be lower than reflected by past retained earnings, then negative speculative valuations likely develop.* We test these suggested causalities in our study.



**Fig. 1.** a—Corporate value drivers and valuation components that ultimately lead to the corporate objective of shareholder value creation (after Rappaport [6]). b—Methodology followed in this study using four principal components that affect TSR.

**Table 1.** Peer group companies used in this study. A: Diversified oil and gas majors; B: Canadian oil sands companies; C: US shale oil and gas producers; D: Oil field service companies. Stock prices, market capitalization as of 31 Dec 2014; average production per day is averaged over 2014.

<b>A) Diversified Oil &amp; Gas Majors</b>	<b>NYSE Ticker Symbol</b>	<b>Stock Price (USD)</b>	<b>Market Capitalization (Billion USD)</b>	<b>Total Annual Production (kboe/d)</b>
Exxon	XOM	92.45	388	3,969
Shell	RDS.B	69.56	219	3,080
Chevron	CVX	112.18	211	2,571
British Petroleum	BP	38.12	127	3,151
TOTAL	TOT	51.2	122	2,146
<b>B) Canadian Oil Sands Companies</b>	<b>NYSE Ticker Symbol</b>	<b>Stock Price (USD)</b>	<b>Market Capitalization (Billion USD)</b>	<b>Production (kboe/d)</b>
Suncor Energy	SU	31.78	46	535
Imperial Oil	IMO	43.03	36	263
Canadian Natural Resources	CNQ	30.88	34	790
<b>C) US Shale Oil and Gas Producers</b>	<b>NYSE Ticker Symbol</b>	<b>Stock Price (USD)</b>	<b>Market Capitalization Billion USD</b>	<b>Production (kboe/d)</b>
EOG Resources	EOG	92.07	50	594.79
Anadarko	APC	82.5	42	843
Devon Energy	DVN	61.21	25	673
Chesapeake	CHK	19.57	13	706.84
Encana	ECA	13.87	10	478.5
SW Energy	SWN	27.29	10	420
Range Resources	RRC	53.45	9	232.48
Whiting Petroleum	WLL	33	6	114.52
Carrizo	CRZO	41.6	2	32.81
<b>D) Oilfield Services</b>	<b>NYSE Ticker Symbol</b>	<b>Stock Price (USD)</b>	<b>Market Capitalization (Billion USD)</b>	
Schlumberger	SLB	85	109	
Halliburton	HAL	39	33	
Baker Hughes	BHI	56	24	

Our chosen breakdown of TSR components (Fig. 1b) is a pragmatic one and we are aware that numerous interpretations co-exist on management accounting metrics that attempt to capture the value drivers of past, current and future shareholder returns [7]. For example, our current method differs from an earlier TSR analysis of the oil and gas sector by Weijermars and Watson [8], which used the model for value creation advocated by the Boston Consulting Group (BCG) [5]. The problem with the BCG break down of TSR value is that capital gains is separated in profit growth and growth in invested capital, which leaves essentially no room for any investor speculation priced into share values. That shortcoming is circumvented by our much simpler breakdown of capital gains into growth of retained earnings and speculative valuation (Fig. 1b). An in-depth review of the varying views on TSR value drivers is not attempted here, but suitable references are found in the following studies [7-12].

This study proceeds as follows. Section 2 outlines the peer group companies included in our study, explains the basic theoretical framework and methodology of analysis for TSR and retained earnings, illustrated with a summary of principal trends for all peer groups combined. Section 3 details for

each peer group and for its individual companies, an 11-year time-series of TSR and retained earnings, with TSR broken down in capital gains and dividends. Speculative valuations are also quantified. The discussion of Section 4 places the results in perspective. Section 5 gives conclusions and provides brief recommendations for both company management and investors.

## 2. Peer Groups and Method of Analysis

This section briefly presents for each peer group studied which companies are included in our study (Section 2.1), explains our data sources (Section 2.2), outlines our data analysis methodology (Section 2.3), and summarizes some major results (Sections 2.4 and 2.5).

### 2.1. Peer Groups Used in Our Study

Our TSR analysis of the upstream oil and gas sector uses four peer groups (A-D), as described below. *Peer group A* is composed of diversified oil and gas majors containing two US companies (Exxon and Chevron) and three European companies (Shell, BP and Total) (Table 1, Section A). All of them are multinational companies with large capitalization

stocks that rely on private capital investments, independent of government involvement. They are vertically integrated and have a perceived influence on politics and significant economic power. Their investments are spread worldwide.

*Peer group B*, the unconventional oil sand production companies, are mainly found in Canada (Table 1, Section B). Oil sands are a mixture of sand, clay, and water, saturated with bitumen, a very viscous and dense type of petroleum. According to the Canadian Association of Petroleum Producers, 97% of Canadian reserves are in the oil sands [13]. Shareholder's willingness to invest in these companies is important to support the further development of Canadian oil sand resources. However, the lack of interest among Canadian shareholders has resulted in 71% of the shareholders being foreign [14].

*Peer group C*, the US shale oil and gas producers, have established their production by advances in technology, such as horizontal drilling and high-pressure fracturing of the reservoir rocks (Table 1, Section C). These companies are struggling for profits because of the low oil and gas prices and relatively small flow rates or rapid depletion of each well, creates a need for continual drilling and recompletion. Their investments can only continue if shareholder value is created rather than destroyed; for this reason, these companies should take measures to increase their profits (see later).

*Peer group D* is composed of specialized technology companies that are needed in the complicated process of exploration and production (Table 1, Section D). The specialized equipment needed to perform many of the challenging tasks is commonly not developed and built by the oil companies themselves. Instead, oil and gas companies hire oilfield services companies to provide the infrastructure, equipment, intellectual property and services needed by the oil and gas industry to explore for, extract, and transport hydrocarbons. Shareholders have an important role to keep the profit growing in oilfield services companies.

## 2.2. Data Sources

The results achieved in this study are based on calculations and/or performance analysis using information available from financial websites and company reports. Financial websites used were GuruFocus, Morningstar and Y-Charts, which present time series of financial indicators exhibited annually or quarterly. When divergences were found between the values presented, a detailed comparison was made in order to identify the values matching the primary financial data available from SEC filings of each company. For example, the retained earnings from Total and BP were collected from their annual reports because they were not found in the websites used in this study. Some companies presented negative earnings per share (diluted) that influenced in the negative P/E ratio, in which cases the P/E ratio was calculated by share price divided by earnings per share. The resulting data were used in the final time series used for our analysis.

## 2.3. Conceptual TSR Model

Total shareholder return (TSR) is the return a stock brings to an investor during the holding period of an investment. TSR can be calculated by the sum of any capital gains or losses plus any dividends (Fig. 1b). Capital gains is expressed as a percentage of increase or decline in the share price:

$$\text{Capital gains (\%)} = 100 \times [(P_{\text{end}} - P_{\text{start}}) / P_{\text{start}}], \quad (1a)$$

The ratio of Equation (1a) measures the increase in the value of a share that gives it a higher or lower worth than the purchase price. The dividend yield is calculated by annual dividends per share,  $D_{\text{cum}}$ , normalized by the price per share:

$$\text{Dividends (\%)} = 100 \times (D_{\text{cum}}) / P_{\text{start}}, \quad (1b)$$

The ratio of Equation (1b) measures the profitability of dividends from a company relative to its share price. Stock repurchase programs enhance shareholder value by reducing the number of shares outstanding, which commonly leads to capital gains as fewer stockholders share the same basic company value but via fewer stocks outstanding to share value.

## 2.4. TSR Analysis Preview

A major insight from our analysis below is that the TSR average for oil and gas companies and oil field services outperformed the S&P 500 in the first period (2004-2007), except in 2006. The S&P 500, a US market index comprising 500 company shares, is regarded as the best single gauge of large-cap US equities. The S&P 500 companies are chosen by size, liquidity, industry and other factors. The average TSR for all peer groups combined (as well as maximum and minimum values) and the S&P 500 reference TSR are given in Fig. 2a. As of 2008, the S&P 500 reference TSR surpassed the TSR average for the oil and gas companies in our peer groups. S&P 500 companies present the better TSR throughout most of the second period (2009-2014) except in 2009 and 2010, when the TSR average of oil and gas companies outperformed the S&P 500 TSR.

Although the general trend of the S&P 500 TSR remains flat over the decade studied by us (2004-2014), the TSR of our oil and gas peer group companies shows a general decline (Fig 2a). Some oil and gas companies exhibit large decreases in the TSR. For example, the 2008 recession impacted some companies such that their stock price was halved [15]. The stock price reduction occurred because of a rapid and steep decline in oil prices and company stock worth.

## 2.5. Retained Earnings

Retained earnings are an internal performance indicator that can be used to monitor the relative performance of companies. Such earnings are used by the company to reinvest in the business to keep growing or to pay debt. Retained earnings accumulate from the beginning of the company's existence, and are calculated by the profits that a company earned, less any dividends or other distributions paid to investors:

$$\text{Ending retained earnings} = \text{beginning retained earnings} + \text{net income during the period} - \text{dividends paid}, \quad (2a)$$

$$\text{Increase in retained earnings (\%)} = 100 \times [(\text{RE}_{\text{end}} - \text{RE}_{\text{start}}) / \text{RE}_{\text{start}}], \quad (2b)$$

Fig. 2b shows the average retained earnings for all peer groups (along with maximum and minimum value). The average is closer to the minimum curve, which means that most companies obtained retained earnings over the past decade much smaller than that of the diversified oil and gas majors, which are responsible for all maximum values in Fig. 2b. In contrast, all minimum retained earnings can be attributed to the US shale oil and gas producers (see later section). The growth rate of retained earnings was negatively affected by the 2008 oil price crisis due to a decrease in net

income. Companies which have weak retained earnings historically were affected more by the 2008-2009 decrease in net income. On the other hand, companies that had traditionally higher rates of accumulating retained earnings were less affected by the crisis. For details see our companion study [16]. What stands out is that the accumulation rate of retained earnings has slowed down since 2008 (Fig. 2b), which explains the overall decline in TSR as we move forward.

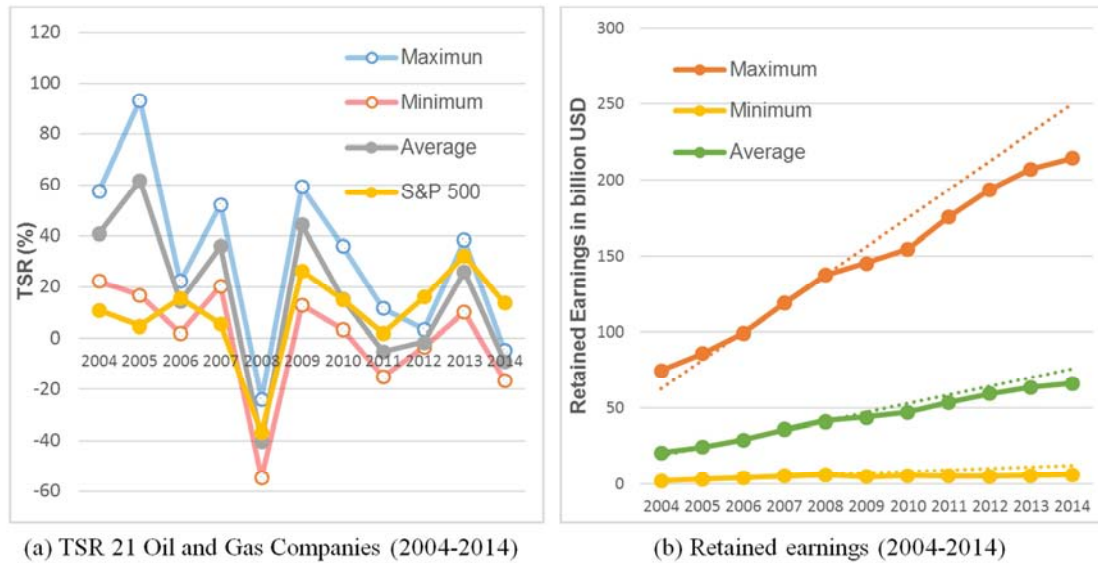


Fig. 2. a—Time-series of the average total shareholder return (TSR) including maximum and minimum value for all peer groups combined compared to the S&P 500 reference TSR. b—Average retained earnings for all peer groups combined (plus maximum and minimum value; billion USD). Trend lines are fit for 2004-2008 data to highlight that the rate of increase in retained earnings has slowed down since 2008.

### 3. Results

Below we discuss the detailed results of our analysis for each of the four peer groups. The study first focuses on TSR and its two components: capital gains and dividends. Subsequently, we argue that the amount of capital gains (or loss) is influenced by an increase (or slowdown/decrease) in retained earnings and speculative valuation. Speculative valuation may be expressed either as a negative or a positive amount (see later).

#### 3.1. Diversified Oil & Gas Majors (Peer Group A)

##### A) Long-term TSR and Retained Earnings (2004-2014)

TSR. The TSR data in Fig. 3a compare the average, maximum and minimum value of diversified oil and gas majors, and the S&P 500 reference. In Period 1 (2004-2007), the oil and gas majors present better results than S&P 500. In contrast, in Period 2 (2009-2013) the S&P 500 reference surpasses the oil and gas majors except in 2011 when the majors obtain a superior TSR. During the 2008 recession, diversified oil and gas majors had a better TSR than the S&P

500, when even the minimum value of the majors in peer group A was greater than the S&P 500 reference. However, in 2014 recession the S&P 500 kept a positive TSR while the majors had a negative TSR.

Retained Earnings. The plot of retained earnings for diversified oil and gas majors shows growth year-after-year over the past decade, except for BP in 2010 and Total in 2014 (Fig. 3b). BP's retained earnings decreased in 2010 because of the Macondo explosion in the Gulf of Mexico. This accident has cost BP billions of dollars. The increase in retained earnings in the past ten years was affected by the 2008 crisis. This recession caused a slower growth in the retained earnings which remained somewhat flat in 2008-2009. In 2014 retained earnings also taper off due to the sharp decline in oil prices. Exxon achieved the largest absolute growth in retained earnings. Total had the lowest retained earnings in the peer group. BP, Shell and Chevron maintained their general growth trends of retained earnings over the study period (2004-2014). Moreover we determine later, retained earnings slowed down for all companies (analyzed in Section 3.1C).



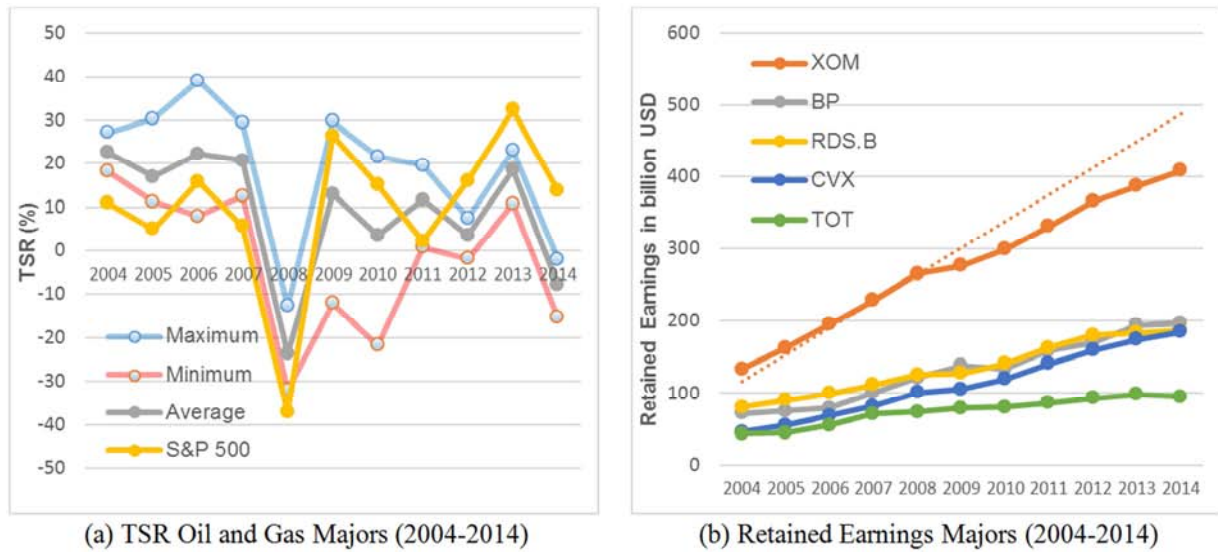


Fig. 3. a—Average TSR including maximum and minimum value for diversified oil and gas majors compared to the S&P 500 reference. b—Annual retained earnings (billion USD) for individual majors peer group of diversified oil and gas majors over the past decade (2004 – 2014). Trend line highlights that accumulation rate of retained earnings has slowed after 2008.

*B) TSR Over Stable Periods (2004-2007) and (2009-2013)*

The TSR for diversified oil and gas majors can be plotted as compound annual growth rate (CAGR, year over year) separately for Period 1 (2004-2007) and Period 2 (2009-2013) (Figs. 4a and 4b). In Period 1, Exxon shows the highest TSR (25.16%). Although Exxon had the lowest dividend (1.80%), their stock price growth yielded significant capital gains (23.35%) which primarily supported the growth in TSR. BP paid in Period 1 the second largest dividend (3.25%), but that was not enough to provide a high TSR; BP showed the smallest TSR (13.71%) of the peer group. In Period 2, Exxon could not maintain its Period 1 growth rate of TSR. Instead Exxon had the second lowest TSR (7.91%) in the peer group. During Period 2 Exxon continued to provide low dividends (2.39%); however, its capital gains

(5.52%) were small too. As in Period 1, BP again achieved in Period 2 the smallest TSR (6.41%) of the peer group due to its lower capital gains (2.23%) caused by the Macondo explosion. In Period 2, Chevron obtained the second smallest dividends (3.17%); however, due to the high capital gains (11.27%), Chevron achieved the highest TSR (14.44%). For Total and BP, the dividends (5.36%) were higher than the capital gains (2.89%). Most diversified oil and gas majors maintained growth stock prices and provided dividends over the studied period. However, the capital gains based on the annual increase in stock prices tend to decline so that TSR diminishes too. Although dividends increased during Period 2 as compared to Period 1, these are not high enough to compensate for the erosion in capital growth, which is why the TSR fell 51% from Period 1 to Period 2.

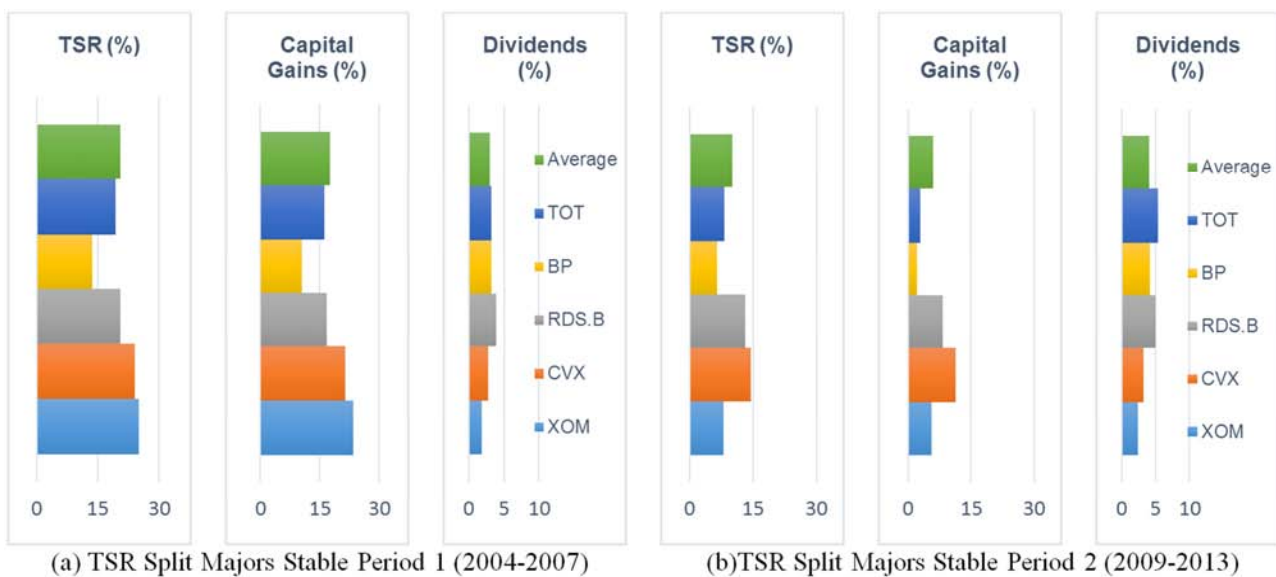


Fig. 4. a&b—TSR for diversified oil and gas majors as compound annual growth rate (CAGR, year over year): (a) 2004-2007 and (b) 2009-2013. Breakdown of TSR contribution by each of the two components: (1) capital gains and (2) dividend yield.

*C) Increase in Retained Earnings and Speculative Valuation Over Stable Periods (2004-2007) and (2009-2013)*

Figs. 5a and 5b split the capital gains of diversified oil and gas majors for Periods 1 and 2 into the two principal components (increase in retained earnings and speculative valuation) as compound annual growth rate (CAGR, year over year). In Period 1, for some companies, the increase in retained earnings was less than their capital gains (Shell and Exxon). This implies investors awarded the shares of both Exxon and Shell with positive speculative valuation for Period 1 (Fig. 5a). Shell had the highest speculative valuation (6.17%) of the group, resulting in high capital gains (16.65%) in spite of a relatively low increase in retained earnings (10.48%). Chevron obtained the highest increase in retained earnings (23.60%), but achieved only the second highest

capital gains (21.33%) due a small degree of negative speculative valuation (-2.27%). In Period 2, Shell shares received a small positive speculative valuation (0.14%) resulting in capital gains (8.19%) being slightly larger than the increase in retained earnings (8.04%). All other companies in peer group A received negative speculative valuations. The largest negative speculative valuation (-7.83%) was obtained by BP resulting in capital gains (2.33%) much smaller than its growth in retained earnings, mainly influenced by investor worries over the impact of the Macondo explosion. All companies saw their speculative valuation decreased from the first to the second period, and as a result the reduction in capital gains was larger than the decrease in retained earnings (compare Figs. 5a and 5b).

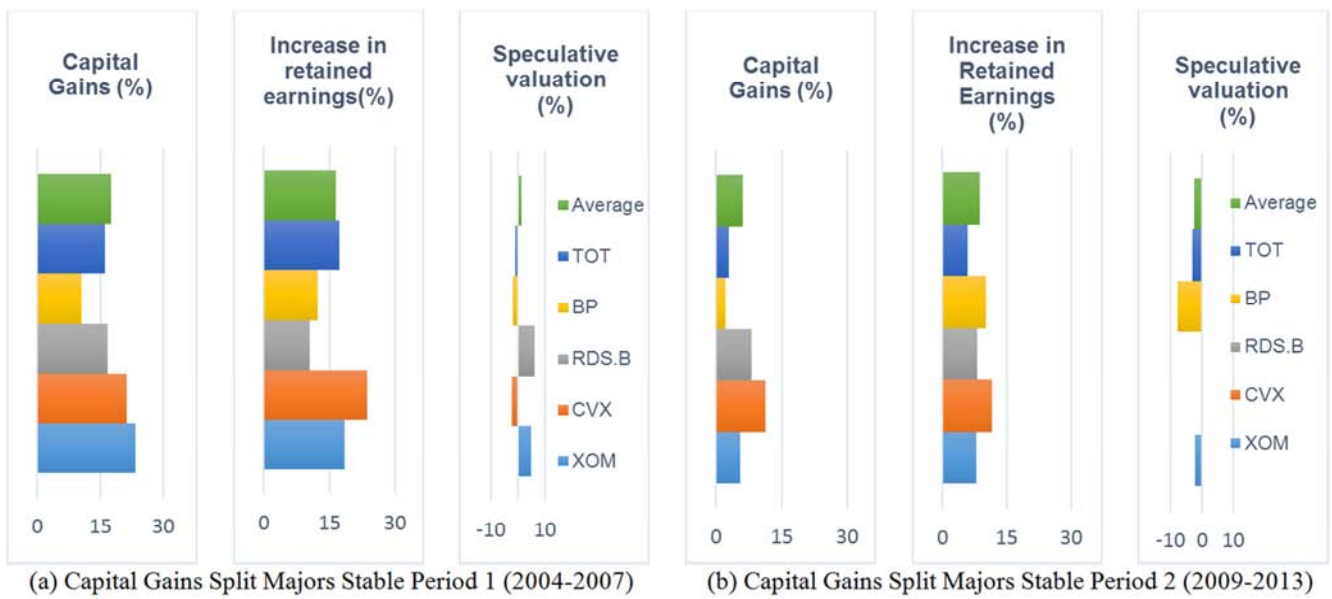


Fig. 5. a&b—Increase in retained earnings and speculative valuation for diversified oil and gas majors as compound annual growth rate (CAGR, year over year): (a) 2004-2007 and (b) 2009-2013. Increase in retained earnings minus capital gains is equal to speculative valuation.

**3.2. Canadian Oil Sands Producers (Peer Group B)**

*A) Long-term TSR and Retained Earnings (2004-2014)*

TSR. A comparison of average TSR delivered by Canadian oil sands producers and that provided by the S&P 500 shows that during Period 1, the Canadian companies had the best results, while the S&P reference had the highest TSR in Period 2 (Fig. 6a). The TSR comparison shows a significant decline in 2008 because of the recession, and Canadian companies realized a negative TSR that year. Although the 2014 recession brought poor results for Canadian companies and S&P 500, both had better TSR in 2014 than in 2008 (and 2011).

Retained Earnings. Retained earnings for the peer group of Canadian oil sands producers rose year-after-year over the

past decade, except for during the recessions (Fig. 6b). In 2008 Imperial Oil and Suncor Energy decreased their retained earnings (due to annual losses) and Canadian Natural Resources only had a small increase. In 2014, Suncor Energy again lowered its retained earnings due to operational losses that year. Canadian Natural Resources had the highest retained earnings most of the time over the past decade, and was only briefly surpassed by Suncor Energy in 2007. However in the 2008 crisis, Suncor Energy retained earnings fell while Canadian Natural Resources maintained its growth. Imperial Oil had the lowest retained earnings during almost all the studied period; however in 2014 the company surpassed Suncor Energy.

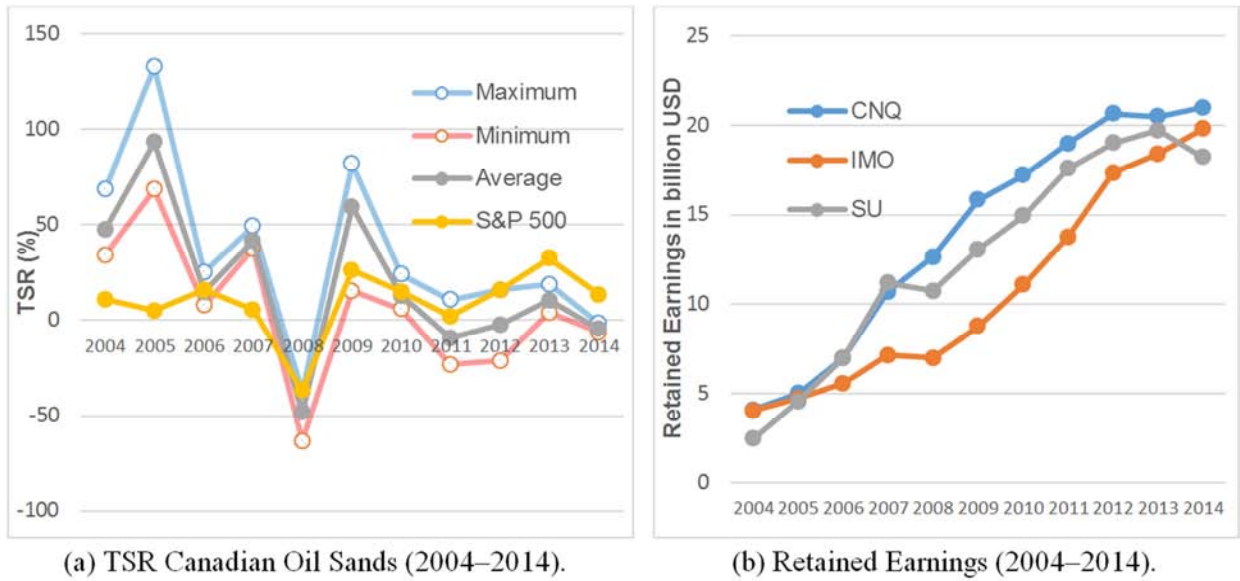


Fig. 6. a—Average TSR including maximum and minimum value for Canadian oil sand producers compared to the S&P 500 reference. b—Annual retained earnings (billion USD) for individual companies peer group of Canadian oil sands producers over the past decade (2004–2014).

*B) TSR Over Stable Periods (2004-2007) and (2009-2013)*

An analysis of TSR for Canadian oil sand companies as compound annual growth rate (CAGR, year over year) shows that in Period 1, Canadian Natural Resources had the highest TSR (61.65%) due to the large capital gains (61.14%) caused by the high increase in share price (Fig. 7a). On the other hand, Imperial Oil, while still outperforming the S&P 500 TSR, shows the lowest TSR (40.86%) in the peer group. Although this company had the highest dividends (0.83%), the lowest TSR is due to the lowest capital gains (40.03%)

(Fig. 7a). Fig. 7b shows that during Period 2, Suncor Energy gave the best TSR (18.46%), combining high capital gains (17.10%) with high dividends (1.36%). In contrast, Imperial Oil again had the smallest TSR (6.78%) due to low capital gains (5.75%) and low dividends (1.03%). Despite of the increase in the dividends average (0.58%) from Period 1 to Period 2 the capital gains average decreased 35.67% and the TSR average declined 35.1%. This shows that the TSR is mainly affected by the capital gains (losses) and less by dividend payments.

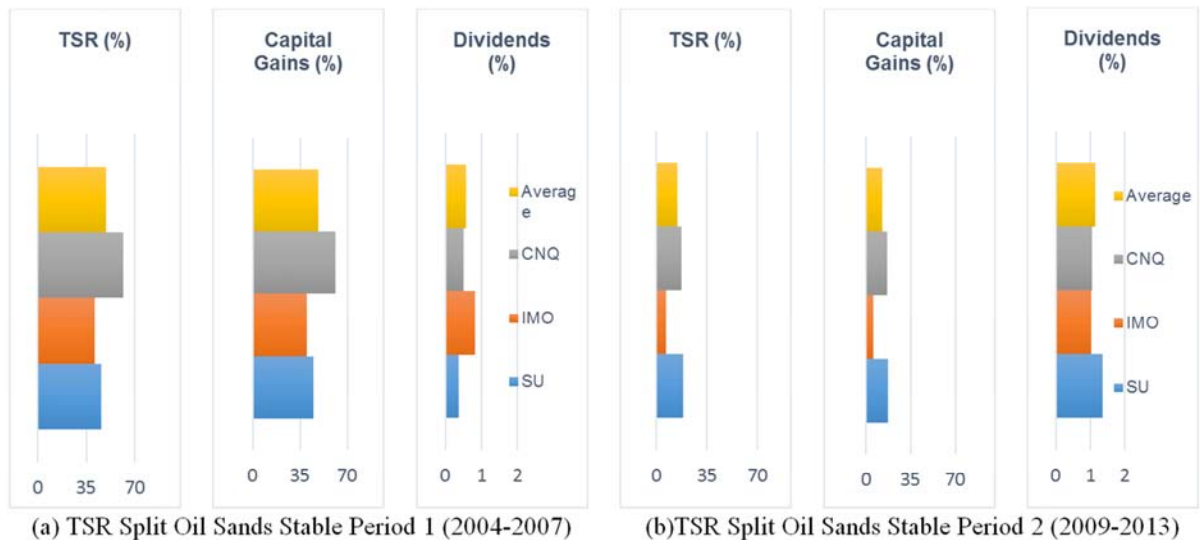


Fig. 7. a&b—TSR for Canadian oil sands producers as compound annual growth rate (CAGR, year over year): (a) 2004-2007 and (b) 2009-2013 Breakdown of TSR contribution by each of the two components: (1) capital gains and (2) dividend yield.

*C) Increase in Retained Earnings and Speculative Valuation Over Stable Periods (2004-2007) and (2009-2013)*

The capital gains and related components (increase/losses in retained earnings and speculative valuation) for Canadian oil sands producers are presented in Fig. 8a (2004-2007) and Fig. 8b (2009-2013). In Period 1, only Suncor had negative

speculative valuation (-3.65%). However, the company avoided presenting the worst capital gains value because of the highest increase in retained earnings (48.75%). Canadian Natural Resources presented highest capital gains (61.14%) due to the largest positive speculative valuation (21.09%). Imperial Oil had the smallest capital gains (40.03%) because



of the lowest increase in retained earnings (23.95%).

In Period 2, despite of the largest increase in retained earnings (21.67%) for Imperial Oil, it was the only company that obtained a negative speculative valuation (-15.92%) which resulted in the smallest capital gains (5.75%). The negative speculative valuation was so large compared to other companies that it resulted in a negative average for the peer group. In contrast, Canadian Natural Resources had the least increase in retained earnings (10.45%) but the highest

positive speculative valuation (5.95%), which resulted in the second highest capital gains (16.41%). Suncor Energy did not obtain the highest increase in retained earnings nor speculative valuation; however combining two good results, the company achieved the highest capital gains (17.10%). For peer group B the capital gains significantly diminished from the first to the second period due to slower increase in retained earnings. The capital gains shows a larger decline than justified by the slower increase in retained earnings.

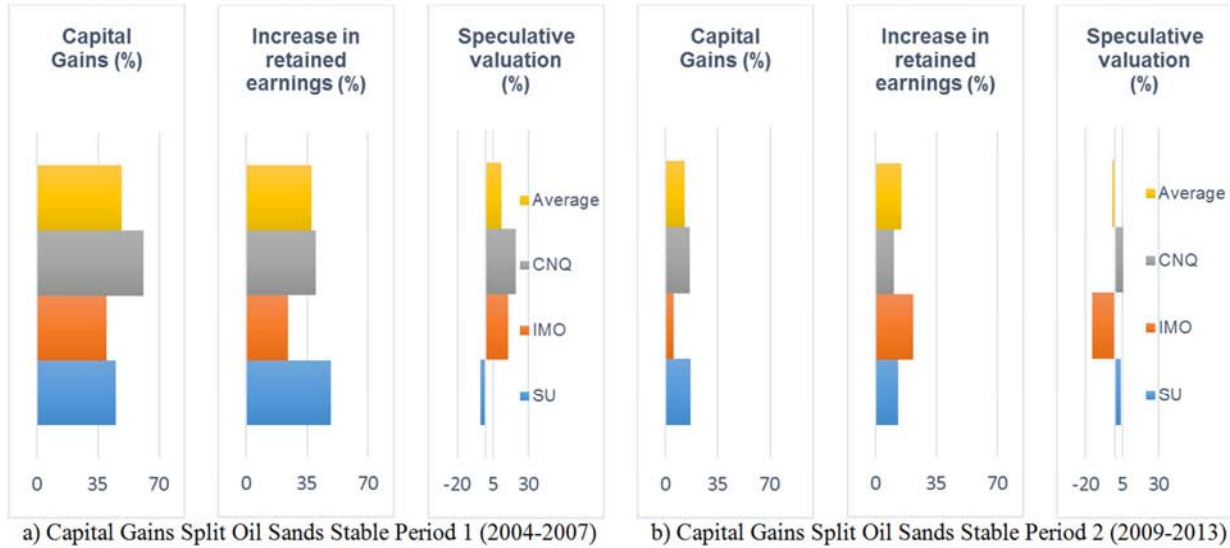


Fig. 8. a&b—Increase in retained earnings and speculative valuation for Canadian oil sands producers as compound annual growth rate (CAGR, year over year): (a) 2004-2007 and (b) 2009-2013. Increase in retained earnings minus capital gains is equal to speculative valuation.

### 3.3. US Shale Oil and Gas Producers (Peer Group C)

#### A) Long-term TSR and Retained Earnings (2004-2014)

TSR. The average TSR for US shale oil and gas producers (including maximum and minimum value) compared to the S&P 500 reference is shown on Fig. 9a. Due to wide diversity among US shale oil and gas producers, there is a broad difference between maximum and minimum values. During Period 1, the US shale producers had the highest TSR, except in 2006 when S&P 500 achieved a total shareholder return 13.8% greater than the average of the US shale oil and gas producers. In Period 2, the S&P reference had the best TSR during 2010, 2011 and 2012. In contrast, US shale oil and gas producers achieved best results in 2009 and 2013. Due to the 2008 recession, the TSR comparison shows a big decline and both US producers and S&P 500 had negative TSR that year. However, in 2008 the TSR of US shale oil and gas producers declined less than S&P 500. In contrast, during the 2014 oil price crisis, S&P 500 maintained a positive TSR while US shale oil and gas producers had negative TSR.

Retained Earnings. The retained earnings are plotted on Fig. 9b for the peer group of US shale oil and gas producers. Several companies experienced temporary or lasting declines in their retained earnings over the study period. For example, Devon achieved the higher retained earnings by the end of 2014, but had a big decline in retained earnings during the first crisis (2008-2009); it recovered well and achieved the

best results in Period 2. Encana initially had high retained earnings in Period 1; however this was diminished due to the crisis (2008-2009) and because this company split into two independent companies: EnCana Corporation, a natural gas company, and Cenovus Energy Inc. (“Cenovus”), an integrated oil company. Some companies in peer group C only accumulated losses (negative retained earnings) over the last 11 years. For example, Chesapeake operated with large negative retained earnings in 2004 because of a large negative net income in 1999 that sustained negative retained earnings in the following years, only becoming positive in 2005. In 2009, Chesapeake again had negative annual net income that exceeded the prior accumulated retained earnings which therefore resulted in negative retained earnings. Range Resources (RRC) operated with negative retained earnings in 2004 due to a big loss in net income in previous years that only was offset in 2005. Carrizo accumulated significant negative retained earnings in 2009, and only became positive in 2013; most of its negative net income resulted from the 2008-2009 recession. All companies were affected by the 2008 crisis; the decrease in net income caused most companies to experience a decline in retained earnings in 2008 and 2009. Some companies had weak retained earnings historically, and therefore the 2008 decrease in net income affected them more deeply. The 2014 crisis affected the companies negatively, but this crisis so far has been less harmful than the 2008-2009 crisis.

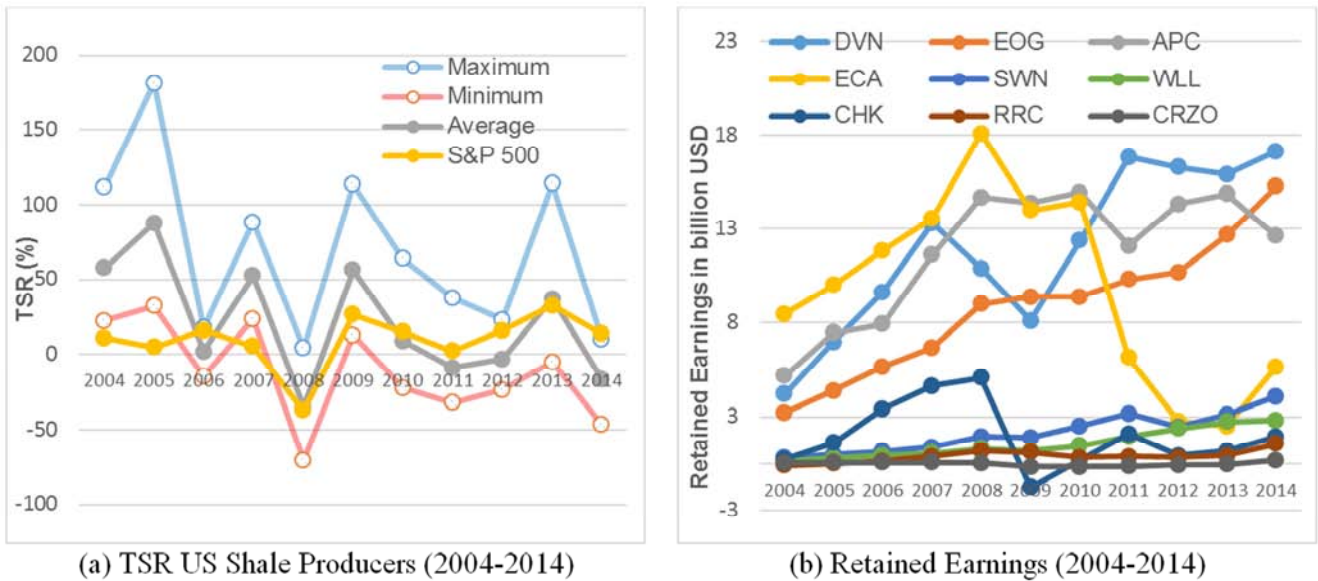


Fig. 9. a—Average TSR including maximum and minimum value for US shale oil and gas producers compared to the S&P 500 reference. b—Annual retained earnings (billion USD) for individual companies peer group of US shale oil and gas producers over the past decade (2004–2014).

*B) TSR Over Stable Periods (2004-2007) and (2004-2013)*

The TSR for US shale oil and gas producers as compound annual growth rate (CAGR, year over year) is shown in Fig. 10a (2004-2007) and Fig. 10b (2009-2013). In Period 1, even though Southwestern Energy did not pay any dividends to reinvest, it achieved the greatest TSR (85.63%) due the highest capital gains (85.53%). Anadarko delivered the lowest TSR (29.40%); they paid a significant dividend (0.75%) compared to the rest of the group but had relatively low capital gains (28.65%). In Period 2, Whiting Petroleum Corporation and Carrizo obtained the best TSR. Neither of these companies paid any dividends, but instead reinvested all profits in their company. With good reinvestment they

achieved the highest capital gains which resulted in the greatest TSR (38.56% and 32.91%, respectively). In contrast, Encana paid the highest dividends (3.83%) but realized the lowest TSR (0.18%) due to the negative capital gains (-3.65%). The TSR for peer group C shows an overall decline from the first period to the second due the decline of capital gains. An exception was Whiting Petroleum, which achieved strong TSR growth of 4.37% corresponding to 4.37% capital gains (no dividends paid). US shale oil and gas producers generally pay low dividends; some companies do not pay any dividends at all. However, the companies that used the tactic to reinvest the dividends obtained the best TSRs over the past decade.

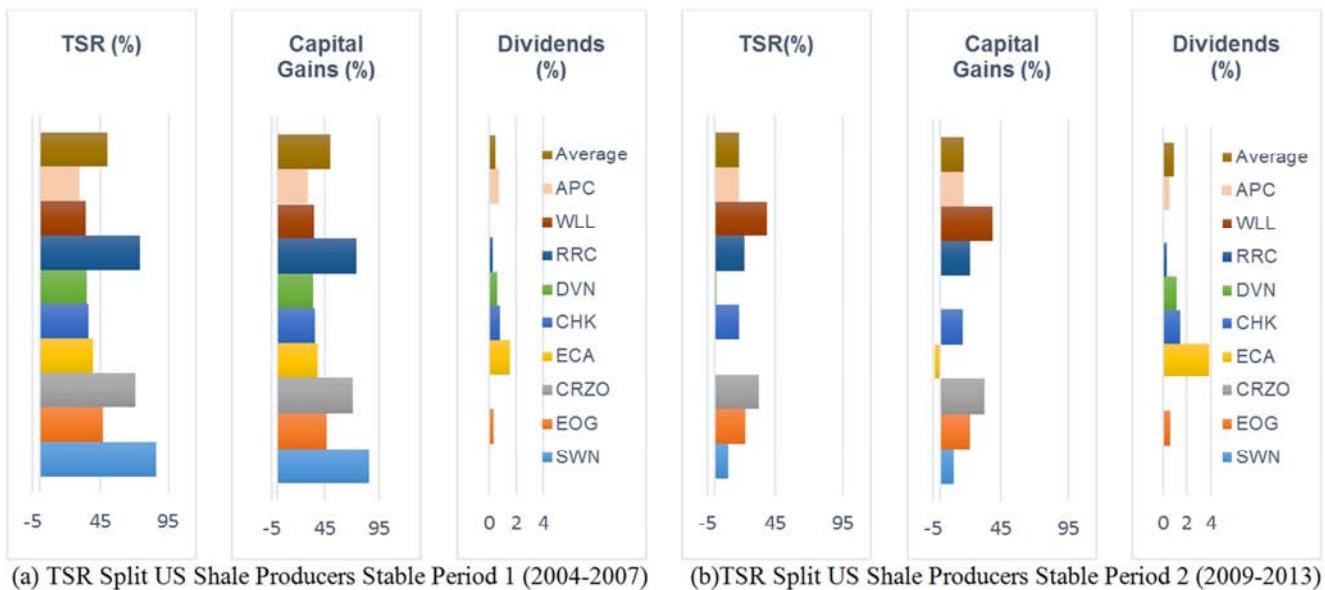


Fig. 10. a&b—TSR for US shale oil and gas producers as compound annual growth rate (CAGR, year over year): (a) 2004-2007 and (b) 2009-2013. Breakdown of TSR contribution by each of the two components: (1) capital gains and (2) dividend yield.

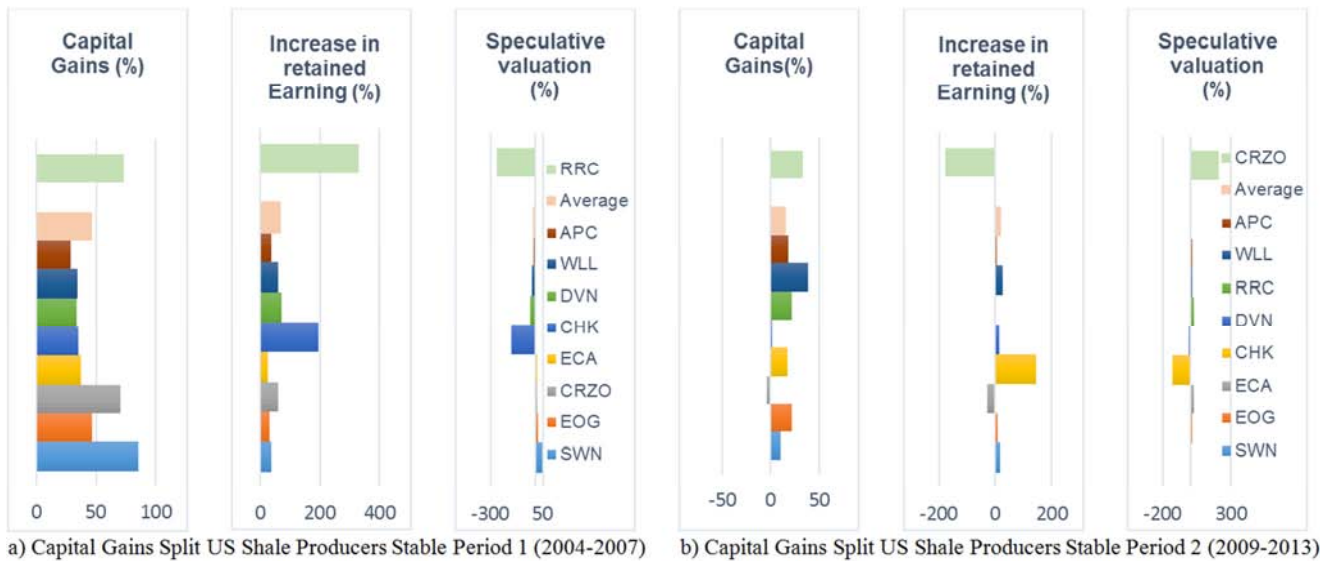
*C) Change in Retained Earnings and Speculative Valuation Over Stable Periods (2004-2007) and (2009-2013).*

The capital gains and its components (change in retained earnings and speculative valuation) for US shale oil and gas producers are shown on Fig. 11a (Period 1) and Fig. 11b (Period 2). In Period 1, all companies of peer group C had large capital gains, mainly caused by the positive increase in retained earnings. Some companies experienced a higher increase in retained earnings than in capital gains which implied a negative speculative valuation. For example, Chesapeake obtained the highest increase in retained earnings (195.41%); however due to the largest negative speculative valuation (-160.35%) the company had a capital gains (35.06%) smaller than the peer group average (46.51%). Anadarko had the lowest capital gains (28.65%), due relatively small increase in retained earnings (37.78%) and negative speculative valuation (-9.13%). The companies that obtained positive speculative valuation also achieved the best capital gains. For example, Southwestern Energy obtained a large positive speculative valuation (48.09%) which resulted in the largest capital gains (85.63%).

In Period 2, only RRC and Encana obtained negative retained earnings. Despite the decline in increase in retained earnings, RRC obtained high capital gains (21.70%) because of the largest positive speculative valuation (26.58%). Encana also achieved a high positive speculative valuation; however due to a significant loss in retained earnings (-

30.15%) because of the split of the company, Encana obtained the largest capital loss (-3.65%). Chesapeake had the largest negative speculative valuation (-126.88%) contrasted by the highest increase in retained earnings (143.68%) and the company obtained a capital gains (16.40%), close to the average (15.42%). RRC presented in Period 1 a similar pattern as Chesapeake in Period 2, because the former company showed a huge increase in retained earnings (329.58%) contrasted by a huge negative speculative valuation (-256.06%) that still resulted in the second highest capital gains (73.52%). Carrizo exhibited a different behavior in Period 2, combining a large decrease in retained earnings (-177.91%) with an enormous positive speculative valuation (210.82%) that resulted in the second greatest capital gains (32.91%). Although the percentages are large, the underlying absolute sums are often relatively small, which explains the volatility of the percentages in peer group C.

Overall, for all companies in peer group C the capital gains and change in retained earnings presented a reduction from the first to the second period, except for Whiting Petroleum that increased capital gains. Most of the companies received improved positive speculative valuations from Period 1 to Period 2, except EOG and Southwestern Energy which saw declines. These companies realized a larger reduction in capital gains than their decline in retained earnings.



**Fig. 11. a&b—**Increase in retained earnings and speculative valuation for US shale oil and gas producers as compound annual growth rate (CAGR, year over year) Increase in retained earnings minus capital gains is equal to speculative valuation. (a) 2004-2007. Due to the different behavior of RRC, the peer group average is calculated without this company. (b) 2009-2013. Due to the different behavior of Carrizo, the peer group average is calculated without this company.

**3.4. Oilfield Services (Peer Group D)**

*A) Long-term TSR and Retained Earnings (2004-2014)*

TSR. The average TSR for the oilfield services (including maximum and minimum values) compared to the S&P 500 shows that in Period 1 (2004-2007), the oilfield services had better TSR than S&P 500. In Period 2 (2009-2013) the S&P

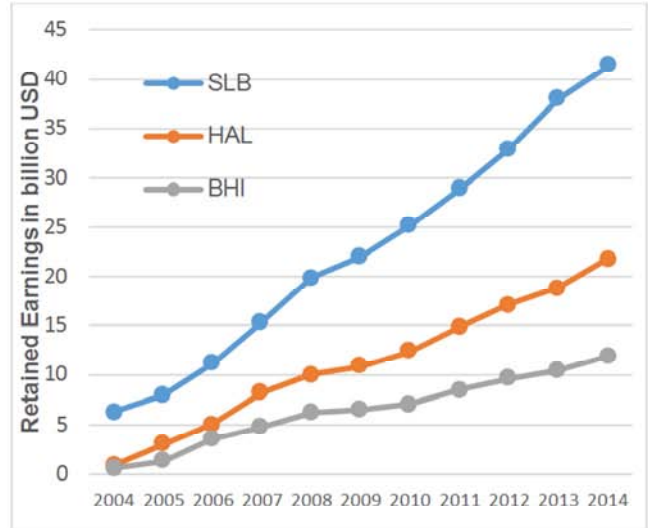
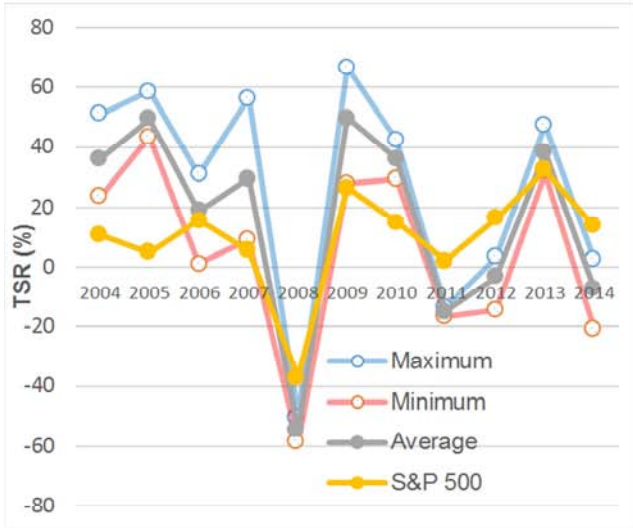
500 reference surpassed the oilfield companies in 2011 and 2012, but in all other years, the oilfield services achieved the better TSR (Fig. 12a). In 2008 and 2014, the TSR of peer group D declined overall and the S&P 500 presented the best TSR. During both crises, the S&P 500 had a TSR 20% higher than oilfield services.

Retained Earnings. Annual retained earnings (billion USD)



for individual companies in the peer group of oilfield services over the past decade (2004 – 2014) are shown in Fig. 12b. The retained earnings increased each year, but the rapid growth was interrupted by the 2008 downturn. Schlumberger, the best performer of the group, has increased the retained earnings at the fastest rate. In 2004, the difference in retained earnings between Schlumberger and Baker Hughes was about

5.5 billion USD, and in 2014 this difference exceeded 40 billion USD. In 2004, Halliburton and Baker Hughes had similar retained earnings, but Halliburton increased retained earnings at a faster ratio. In 2014, the difference in retained earnings between Halliburton and Baker Hughes has grown to 10 billion USD.



(a) TSR Oil Services (2004-2014)

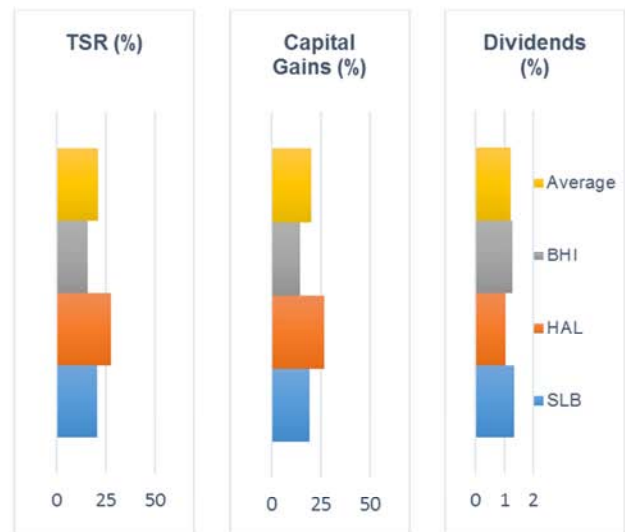
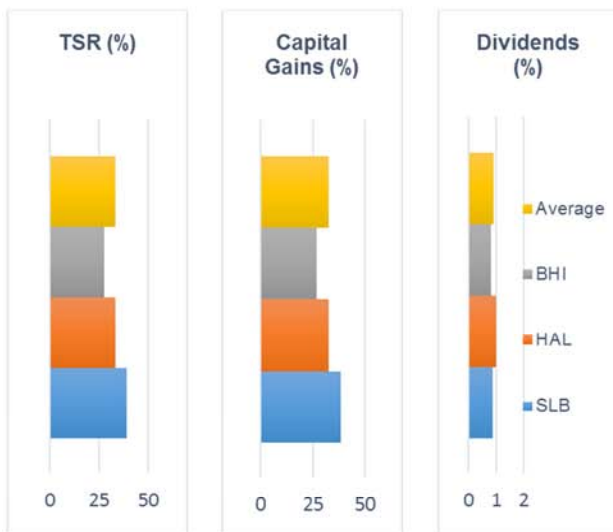
(b) Retained Earnings (2004-2014)

Fig. 12. a—Average TSR including maximum and minimum value for oilfield services compared to the S&P 500. b—Annual retained earnings (billion USD) for individual companies peer group for oilfield services over the past decade (2004 – 2014).

*B) TSR Over Stable Periods (2004-2007) and (2009-2013)*

The TSR is presented for oilfield services as compound annual growth rate (CAGR, year over year) in Period 1 and Period 2 (Fig. 13a and 13b). In Period 1, Schlumberger had the highest capital gains (38.31%) which resulted in the best TSR (39.18%) of the peer group. In contrast, Baker Hughes had the lowest TSR (27.45%) due to the smallest dividends (0.80%) and lowest capitals gains (26.65%). In Period 2,

Baker Hughes remained the low performer, and its low capital gains (14.36%) resulted in the smallest TSR (15.62%). The best results were achieved by Halliburton, which had the lowest dividends (1.04%) and the highest capital gains (26.51%), leading to the highest TSR (27.55%). For all companies in peer group D, despite the growth in dividends from Period 1 to Period 2, the TSR diminished due to the decline in capital gains.



(a) TSR Split Oil Services Stable Period 1 (2004-2007)

(b) TSR Split Oil Services Stable Period 2 (2009-2013)

Fig. 13. a&b—TSR for oilfield services as compound annual growth rate (CAGR, year over year): (a) 2004-2007 and (b) 2009-2013. Breakdown of TSR contribution by each of the two components: (1) capital gains and (2) dividend yield.

*C) Increase in Retained Earnings and Speculative Valuation Over Stable Periods (2004-2007) and (2009-2013)*

The capital gains and its components (increase in retained earnings and speculative valuation) for oilfield services were studied over Period 1 (Fig. 14a) and Period 2 (Fig. 14b). Over Period 1, all companies obtained positive capital gains because of the high increase in retained earnings. The increase in retained earnings exceeded the capital gains for Baker Hughes and Halliburton because of considerable the negative speculative valuation (-114.80% and -46.45%, respectively). Baker Hughes presented the highest percentage increase in retained earnings (141.45%); however due to the largest negative speculative valuation (-114.80%) the company obtained the smallest capital gains (26.65%). Schlumberger achieved the best capital gains (38.31%) due to the positive speculative valuation (8.44%), in spite of the

company having the lowest percentage increase in retained earnings (29.87%). In Period 2, all companies had positive speculative valuation as well as positive increase in retained earnings that resulted in the positive capital gains. Halliburton obtained the greatest capital gains (26.51%) due to the highest positive speculative valuation (13.01%) and the large increase in retained earnings (13.50%). Baker Hughes had the smallest capital gains (14.36%) caused by lowest positive speculative valuation (3.51%) and smallest increase in retained earnings (10.85%). The capital gains diminished from Period 1 to Period 2 due to the slower increase in retained earnings. The speculative valuation, which was negative in the first period (except for Schlumberger that had a small decrease in positive speculative valuation) turned positive in the second period.

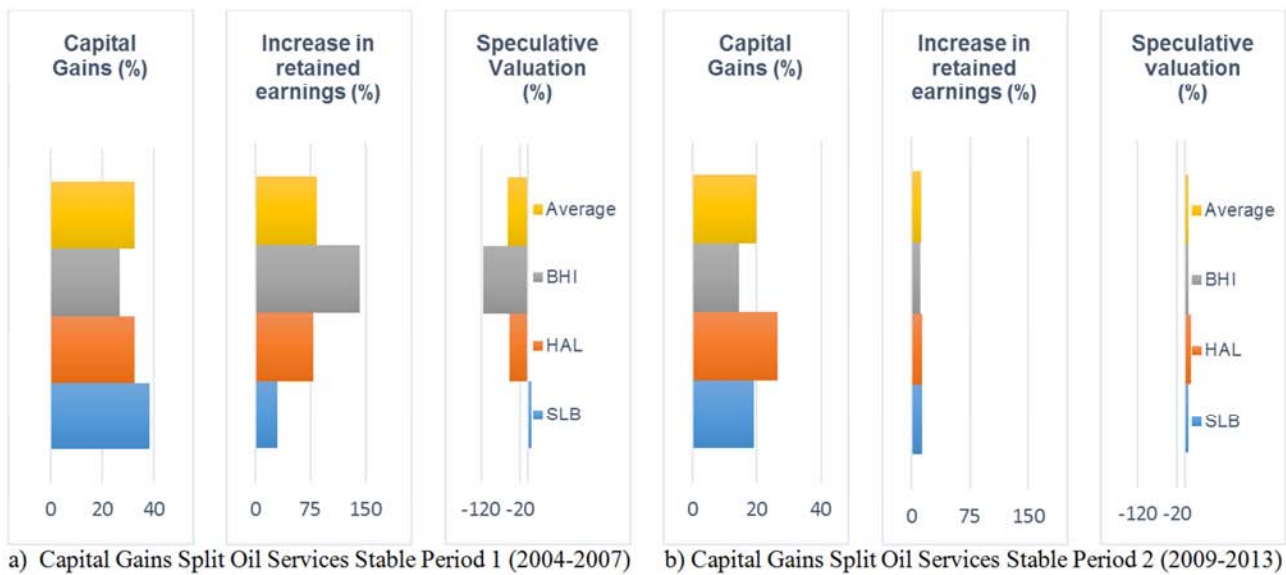


Fig. 14. a&b—Increase in retained earnings and speculative valuation for oilfield services as compound annual growth rate (CAGR, year over year, y.o.y): (a) 2004-2007 and (b) 2009-2013. Increase in retained earnings minus capital gains is equal to speculative valuation.

## 4. Discussion

### 4.1. TSR Results

Total shareholder returns (TSR) were assessed to evaluate the long-term investor appeal of the upstream oil and gas sector and trends for the individual peer groups and companies therein. The TSR is the sum of capital gains and dividends, so it would seem that for obtaining a high TSR it is necessary to ensure either a high increase in stock price (capital gains) or a large dividend payment, or both. This study shows that this line of reasoning is only in part correct because most of the companies that paid the lowest dividends obtained the highest TSR. For example, Exxon and Chevron paid the lowest dividends in their peer group; however these companies obtained the greatest TSR during the studied period due to the highest capital gains. Carrizo and Southwestern Energy achieved the best TSR in their peer group of US shale oil and gas companies (over the studied

period), yet both companies paid zero dividends. Although dividends are important to attract shareholders, some companies prefer to re-invest profits in long-term growth and to obtain higher profits (retained earnings) in the future. Our results show that for oil and gas companies the TSR is mostly supported by the increase in capital gains (or losses) and less so by dividend payments.

US shale oil and gas producers paid the lowest dividends, yet their peer group obtained the best TSR in Period 1 (Fig. 15a) and the second best TSR in Period 2 solely due to gains in stock prices. Companies that paid no dividends and instead used all profit to reinvest in the business were the best performers of their peer group during most of the studied period. Because the TSR is mainly influenced by stock price changes, US shale oil and gas producers are vulnerable to market changes. For example, they had the largest TSR in 2005, and in the next year (2006) both companies obtained the lowest TSR, and experienced a dramatic drop in TSR during the 2008 and 2014 oil price crises when their stock



prices also fell drastically (Fig. 15a). The short-term stock price performance primarily reflects the oil and gas price trends due to changes in oil supply and demand, which influences the concurrent investor expectation about a company's future performance (Rodrigues and Weijermars, 2016).

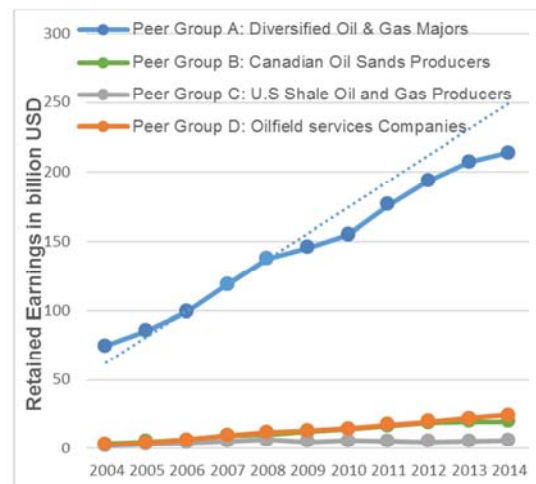
Diversified oil and gas majors pay the highest dividends (Exxon and Chevron). However, our study showed that the companies that yielded the greatest TSR in peer group A were the ones that paid the lowest dividends. The share prices of Peer group A are the most stable, which is why they suffered less impact during the two oil price shock events (Fig. 15a). The S&P 500 average TSR of 9.27% for Period 1 increase to 18.40% for Period 2. In contrast, the trend line shows the decrease in the TSR for oil and gas companies from Period 1 to Period 2. Diversified oil and gas majors comprise the peer group where TSR tracked most closely to

the S&P 500. Peer group A and S&P 500 showed stability over the period; they do not exhibit enormous variations in TSR. This stability is easily seen during the 2008 crisis, when Peer group A had the least decline and obtained the least negative TSR (Fig. 15a). The trend line shows that diversified oil and gas majors (Peer group A) had the least decline in TSR, while unconventional companies (Peer group B and C) obtained the largest decline. On Period 2, oilfield services companies (Peer group D) showed a big vulnerability to market changes.

The capital gains can be broken down in speculative valuations and changes in retained earnings. All peer groups had slower increases in retained earnings in 2009-2013 as compared to 2004-2007 (Fig. 15b). During the two oil price crises of 2008 and 2014 all companies maintained an increase in retained earnings.



(a) TSR Peer Groups 2004-2014



(b) Retained Earnings Peer Groups 2004-2014

Fig. 15. a—TSR averages for each peer group evaluated in our study and S&P reference TSR. Trend lines included show upward trend for S&P500 and downward trend for TSR of all oil peer groups. b—Retained for each peer group averaged. Trend line included to emphasize forward decline in earnings rate.

#### 4.2. Future Industry Outlook

This study has analyzed the shareholder returns of upstream oil and gas sector over a 11-year period (2004-2014), which reveals a declining trend in TSR. The S&P500 TSR outperformed the petroleum sector. The underlying cause of industry's declining performance may be a vicious cycle started by generous credit lines supplied by investors to the conventional oil and gas industry in North America. Falling oil and gas prices due to ample supply and lagging demand have pushed the operational revenues close to or below cash cost of supply. The likely future effect of the declining trend in shareholder returns from oil investments is that credit lines will tighten simultaneous with a restoration of supply/demand which will lead to a steady rise in oil prices as we move toward 2020. As long as total oil consumption continues to grow, oil prices are likely to rebound, which would make 2016 a turning point for both the global petroleum industry and investors in the oil sector alike.

## 5. Conclusion and Recommendations

### 5.1. Recommendations for Investors

The breakdown of TSR into two components, capital gains and dividend yield, is presented for all four peer groups. Our study shows that the TSR is mainly influenced by an increase in capital gains, which is calculated by the increase in stock price over a specified period (annually in this study). Capital gains is in turn influenced by the increase in retained earnings and speculative valuation, which are also analyzed for all peer groups. The TSR for the upstream petroleum sector tends to decrease over the periods studied because of a slowdown in the annual increase of stock prices. Diversified oil and gas majors (Peer group A) presented the lowest TSR both over Period 1 and Period 2. However, due to the stability of these companies, Peer group A also presented the smallest TSR decrease during the two oil price shock events of 2008 and 2014. Therefore, TSR stability is an important factor to evaluate before investing because volatile market

conditions can lead to big losses for the investor. For example, the diversified oil and gas majors group had the lowest TSR decline (-10.53%) from Period 1 to Period 2. In contrast, Canadian oil sands companies (Peer group B) obtained the largest decline (-35.10%). Even though the diversified oil and gas majors obtained the smallest TSR in both periods, the performance of peer group A is the most stable and suffered less impact from the turbulent changes in the business environment over the past decade.

### 5.2. Recommendations for Company Management

All companies analyzed in our study (Table 1) experienced an overall decline in TSR from Period 1 to Period 2 (Fig. 15a). This decline in TSR is caused by a decrease in capital gains. Stock prices increased, but the price increases are becoming smaller, reflecting the slower growth of retained earnings. The capital gains are also influenced by the speculative valuation, which varied from Period 1 to Period 2 for each peer group. For example, diversified oil and gas majors (Peer group A) experienced slight changes in speculative valuation from Period 1 to Period 2. By comparison, oilfield service companies (Peer group D) had a negative speculative valuation in Period 1 and a positive speculative valuation in Period 2. US shale oil and gas companies (Peer group C) experienced a decrease in negative speculative valuation from Period 1 to Period 2.

While TSR decreased for all peer groups over the past decade, the payout of dividends increased from Period 1 to Period 2. All peer groups show a growth in dividends from Period 1 to Period 2. Diversified oil and gas majors (Peer group A) paid the highest dividends over the study period, and US shale oil and gas companies (Peer group C) paid the lowest dividends. Young growth companies such as unconventional producers (Peer groups B&C) commonly need external financing to fund new projects as operational earnings are insufficient to pay for expansion projects [4]. *Rather than paying dividends, reinvestment of operational profits in the business to reduce the need for external financing and reinvestments in projects to generate bigger profits in the future, may increase the share price.* The reinvested dividends may increase the retained earnings, which fuels growth in capital gains that is the primary driver of TSR. Before paying dividends, companies should focus on long-term results. After a company achieves a certain level of maturity with operational income increasing and dependence on external financing reducing [3, 4], it becomes important to pay dividends to attract and retain shareholders. The unconventional producers still have a big growth potential making such companies attractive takeover targets.

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