BARCLAYS

Equity Research
28 August 2018

Energy

Inaugural Global Price Deck

We are introducing our inaugural global energy equity research commodity price forecasts. We believe this uniformity will allow investors to better compare estimates between teams and enable us to facilitate more cross-sector content going forward.

Global Oil Prices (Brent): We are bullish on the oil market and think near-to-medium risks are biased to the upside.

- Assumptions: $74/bl in 4Q18, $80/bl in 2019-2020 and $70/bl in 2021-2022 and long-term.
- Positive Fundamental Drivers: Further Venezuela production declines, production declines in Iran following re-imposing of U.S. sanctions, flat-to-down production from Mexico/Nigeria/Angola/Libya/other OPEC countries, Permian infrastructure constraints, lack of major project sanctions since 2013, stronger than expected demand, limited idle capacity of just 2-3 million b/d, higher light oil demand from IMO 2020.
- Negative Fundamental Drivers: Demand destruction from IMO 2020 product price uplift, accelerated Permian growth by late-2019/2020 as infrastructure constraints are alleviated, trade war impact on demand and global economies, Russia/Saudi production growth intentions.

Brent-WTI Cushing: Widen significantly starting 4Q18 to quarterly peak of $15/bl in 2Q19. ~$8/bl on average in 2020-2022.

- Key Drivers: Significant Cushing builds beginning in 4Q18, limited near-to-medium term solutions to solve infrastructure bottlenecks.

WTI Cushing-WTI Midland: Gradually narrow from 4Q18 onward; Midland to flip to premium by 2020.

- Key Drivers: Lower transportation costs with influx of takeaway, wider Brent-TI differential.

WTI-WCS: WCS to remain under pressure until Enbridge Line 3 comes online (late-2019 at earliest).

- Key Drivers: Marginal Canadian heavy crude to clear by rail cost of $16-$22/bl while in takeaway deficit. Somewhat offset by wide Brent-TI differential.

With this report, we are updating estimates for our Americas Integrated Oil, European Integrated Oil & Refining and U.S. Independent Refiners coverage universes to reflect our global commodity price assumptions.

INDUSTRY UPDATE

Americas Integrated Oil
POSITIVE
Unchanged

European Integrated Oil & Refining
POSITIVE
Unchanged

U.S. Independent Refiners
POSITIVE
Unchanged

For a full list of our ratings, price target and earnings changes in this report, please see table on page 2.

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Summary of our Ratings, Price Targets and Earnings Changes in this Report (all changes are shown in bold)

Company	Rating				Price Target			EPS FY1 (E)			EPS FY2 (E)		
	Old	New	Date	Price	Old	New	%Chg	Old	New	%Chg	Old	New	%Chg
Americas Integrated Oil	Pos	Pos											
Canadian Natural Resources (CNQ CT / CNQ.TO)	OW	OW	27-Aug-2018	46.17	59.00	59.00	-	3.85	3.85	-	4.45	**5.35**	20
Cenovus Energy Inc. (CVE CT / CVE.TO)	OW	OW	27-Aug-2018	12.70	17.00	17.00	-	-0.45	-0.45	-	1.05	**1.30**	24
Chevron Corporation (CVX)	OW	OW	27-Aug-2018	120.35	148.00	148.00	-	7.75	7.75	-	8.55	**10.15**	19
ConocoPhillips (COP)	OW	OW	27-Aug-2018	72.84	84.00	84.00	-	4.40	**4.35**	-1	5.35	**6.65**	24
Exxon Mobil Corp. (XOM)	UW	UW	27-Aug-2018	80.40	87.00	87.00	-	4.45	4.45	-	5.15	**5.90**	15
Hess Corp. (HES)	UW	UW	27-Aug-2018	66.15	66.00	66.00	-	-0.55	-0.55	-	0.45	**1.65**	267
Husky Energy, Inc. (HSE CT / HSE.TO)	OW	OW	27-Aug-2018	21.91	26.00	26.00	-	1.65	1.65	-	2.30	**2.80**	22
Imperial Oil Ltd. (IMO CT / IMO.TO)	EW	EW	27-Aug-2018	41.54	49.00	49.00	-	2.20	**2.15**	-2	3.35	**3.95**	18
Murphy Oil (MUR)	EW	EW	27-Aug-2018	31.23	36.00	36.00	-	1.10	1.10	-	1.55	**2.60**	68
Petroleo Brasileiro S.A. (PBR)	OW	OW	27-Aug-2018	10.50	15.00	15.00	-	1.90	1.90	-	2.70	**3.20**	19
Petroleo Brasileiro S.A. (PBR/A / PBRA)	OW	OW	27-Aug-2018	9.15	15.00	15.00	-	1.90	1.90	-	2.70	**3.20**	19
Suncor Energy (SU CT / SU.TO)	OW	OW	27-Aug-2018	54.16	68.00	68.00	-	3.35	3.35	-	4.45	**5.20**	17
European Integrated Oil & Refining	Pos	Pos											
BP (BP/ LN / BP.L)	OW	OW	24-Aug-2018	5.64	7.05	7.05	-	0.44	0.44	-	0.59	0.59	-
Eni (ENI IM / ENI.MI)	EW	EW	27-Aug-2018	16.43	19.00	19.00	-	1.05	1.05	-	1.44	1.44	-
Equinor (EQNR NO / EQNR.OL)	UW	UW	27-Aug-2018	217.90	240.00	240.00	-	1.83	**1.80**	-2	2.15	2.15	-
Galp Energia (GALP PL / GALP.LS)	UW	UW	27-Aug-2018	17.87	18.00	18.00	-	0.93	**0.94**	1	0.93	0.93	-
Neste (NESTE FH / NESTE.HE)	OW	OW	27-Aug-2018	74.76	78.00	78.00	-	4.06	4.06	-	4.18	4.18	-
OMV (OMV AV / OMVV.VI)	EW	EW	27-Aug-2018	45.82	62.00	62.00	-	4.85	**4.86**	0	5.52	**5.50**	0
Repsol (REP SM / REP.MC)	EW	EW	27-Aug-2018	16.55	19.50	19.50	-	1.68	1.68	-	2.13	**2.12**	0
Royal Dutch Shell A (RDSA LN / RDSa.L)	OW	OW	24-Aug-2018	25.64	33.00	33.00	-	2.81	2.81	-	4.08	**4.07**	0
Royal Dutch Shell B (RDSB LN / RDSb.L)	OW	OW	24-Aug-2018	26.14	33.00	33.00	-	2.81	2.81	-	4.08	**4.07**	0
Saras (SRS IM / SRS.MI)	UW	UW	27-Aug-2018	2.22	1.70	1.70	-	0.11	0.11	-	0.15	0.15	-
Total (FP FP / TOTF.PA)	OW	OW	27-Aug-2018	55.42	66.00	66.00	-	5.46	**5.48**	0	7.54	**7.55**	0
U.S. Independent Refiners	Pos	Pos											
Andeavor (ANDV)	RS	RS	27-Aug-2018	155.38	N/A	N/A	-	N/A	N/A	-	N/A	N/A	-
CVR Refining LP (CVRR)	EW	EW	27-Aug-2018	21.35	24.00	24.00	-	2.60	**2.65**	2	4.10	**4.60**	12
Delek US Holdings Inc. (DK)	OW	OW	27-Aug-2018	53.92	62.00	62.00	-	4.30	4.30	-	5.20	**7.10**	37
HollyFrontier Corp. (HFC)	OW	OW	27-Aug-2018	73.89	90.00	90.00	-	4.10	**4.15**	1	7.15	**8.35**	17
Marathon Petroleum Corp. (MPC)	RS	RS	27-Aug-2018	83.68	N/A	N/A	-	N/A	N/A	-	N/A	N/A	-
PBF Energy Inc. (PBF)	OW	OW	27-Aug-2018	50.00	71.00	71.00	-	2.65	**2.75**	4	4.80	**5.35**	11
Phillips 66 (PSX)	UW	UW	27-Aug-2018	120.03	133.00	133.00	-	8.10	**8.15**	1	10.50	**10.40**	-1
Valero Energy (VLO)	OW	OW	27-Aug-2018	121.21	165.00	165.00	-	6.40	6.40	-	9.65	**11.00**	14

Source: Barclays Research. Share prices and target prices are shown in the primary listing currency and EPS estimates are shown in the reporting currency.
FY1(E): Current fiscal year estimates by Barclays Research. FY2(E): Next fiscal year estimates by Barclays Research.
Stock Rating: OW: Overweight; EW: Equal Weight; UW: Underweight; RS: Rating Suspended
Industry View: Pos: Positive; Neu: Neutral; Neg: Negative

Inaugural Global Price Deck

Please see Figure 1 below for a detailed summary of our commodity price assumptions and the section below for the rationale for key forecasts.

FIGURE 1
Barclays Global Energy Equity Research Commodity Price Assumptions

				2018E					2019E							
	2015	2016	2017	1QA	2QA	3QE	4QE	2018E	1QE	2QE	3QE	4QE	2019E	2020E	2021E	2022E
Commodity Prices																
Brent ($/b)	$52.5	$44.1	$54.4	$66.8	$74.4	$74.0	$74.0	$72.3	$75.0	$85.0	$80.0	$80.0	$80.0	$80.0	$70.0	$70.0
WTI Cushing ($/b)	$48.7	$43.5	$51.0	$63.2	$68.1	$69.7	$64.0	$66.2	$62.0	$70.0	$67.0	$72.0	$67.7	$73.2	$60.4	$62.9
U.S. Natural Gas ($/mcf)	$2.65	$2.54	$3.01	$3.08	$2.90	$2.81	$2.96	$2.94	$3.06	$2.81	$2.86	$3.01	$2.94	$3.06	$3.32	$3.32
Key Crude Oil Differentials ($/b)																
Brent/WTI Cushing	$3.8	$0.6	$3.3	$3.6	$6.3	$4.3	$10.0	$6.1	$13.0	$15.0	$13.0	$8.0	$12.3	$6.8	$9.6	$7.1
LLS/WTI Cushing	$3.8	$1.7	$3.3	$2.9	$5.0	$3.1	$8.8	$4.9	$11.8	$14.0	$12.0	$7.0	$11.2	$5.8	$8.2	$5.7
LLS/Maya	$8.3	$8.4	$7.0	$8.2	$10.8	$7.3	$8.7	$8.7	$8.9	$10.5	$11.1	$11.1	$10.4	$11.0	$13.4	$11.7
LLS/Mars	$4.2	$4.9	$3.4	$3.4	$3.5	$3.6	$4.3	$3.7	$4.3	$5.1	$5.4	$5.4	$5.1	$5.5	$6.7	$5.8
WTI Cushing/WTI Midland	$0.2	$0.0	$0.4	$0.6	$8.1	$10.7	$5.0	$6.1	$0.0	$9.0	($0.3)	($0.3)	$2.1	($2.2)	($4.6)	($2.1)
WTI Cushing/Bakken	$2.8	$1.3	($0.3)	$1.3	$0.1	$0.1	($3.9)	($0.6)	($6.9)	($8.9)	($8.9)	($8.9)	($8.3)	($0.2)	($2.2)	$0.1
WTI Cushing/Syncrude	($0.2)	($0.9)	($1.3)	$0.1	$3.2	$4.2	($0.8)	$1.7	($2.8)	($5.0)	($5.2)	($3.2)	($4.0)	($1.8)	($4.5)	($2.2)
WTI Cushing/WCS	$13.1	$13.7	$12.8	$25.5	$18.5	$23.2	$20.5	$21.9	$17.6	$17.0	$19.6	$14.9	$17.3	$17.5	$25.6	$19.0
WTI Cushing/WTS	($0.3)	$0.8	$1.0	$1.6	$8.5	$11.2	$5.5	$6.7	$0.5	$9.5	$0.2	$0.2	$2.6	($1.7)	($4.1)	($1.6)
Cash Refining Margins($/b)																
Merchant Refining Centers																
U.S. Gulf LLS 6-3-2-1	$8.4	$6.0	$9.3	$8.1	$9.2	$8.4	$7.9	$8.4	$8.4	$9.1	$9.6	$10.0	$9.3	$13.3	$12.0	$10.6
U.S. Gulf WTI Cushing 3-2-1	$20.4	$13.4	$17.4	$15.9	$19.4	$13.7	$14.8	$15.9	$21.3	$26.6	$25.0	$23.4	$24.1	$22.8	$23.7	$19.3
N.W. Europe (medium)	$4.8	$2.9	$4.1	$2.9	$3.6	$2.8	$3.5	$3.2	$3.8	$4.0	$5.5	$6.7	$5.0	$8.3	$8.2	$6.3
Singapore (medium)	$7.4	$6.1	$7.2	$7.1	$7.2	$5.2	$5.9	$6.4	$6.5	$6.1	$8.2	$9.3	$7.5	$11.3	$11.1	$9.1
Niche Refining Markets																
U.S. East Coast	$8.6	$6.6	$7.4	$6.1	$7.1	$6.3	$6.3	$6.5	$7.1	$7.1	$7.6	$8.2	$7.5	$12.0	$10.3	$9.0
U.S. Mid-Continent	$18.9	$12.7	$15.7	$15.0	$17.1	$13.4	$13.5	$8.7	$21.0	$28.0	$25.5	$19.9	$21.5	$24.4	$27.9	$21.5
U.S. Rocky Mountain	$18.7	$12.6	$17.8	$12.8	$26.6	$23.1	$17.9	$20.1	$17.9	$31.6	$24.8	$19.2	$23.4	$22.3	$22.8	$19.5
U.S. Midwest	$22.9	$18.0	$19.6	$22.7	$23.5	$22.0	$21.0	$22.3	$20.6	$26.1	$24.9	$19.5	$22.8	$24.2	$28.2	$22.2
U.S. Southwest	$22.9	$17.1	$23.1	$16.6	$29.5	$17.5	$18.0	$20.4	$20.6	$25.6	$24.2	$24.2	$23.6	$24.2	$24.4	$20.8
U.S. West Coast	$21.7	$12.0	$11.8	$8.1	$9.5	$6.2	$6.7	$7.6	$8.4	$10.2	$10.5	$11.0	$10.0	$15.0	$13.4	$10.8
U.S. Pacific NW	$20.3	$15.4	$17.4	$15.2	$19.8	$12.7	$12.7	$15.1	$14.4	$16.2	$15.5	$15.0	$15.3	$19.0	$17.4	$14.8
Japan (complex)	$8.2	$5.5	$6.7	$4.7	$4.7	$3.7	$5.0	$4.5	$6.0	$5.7	$7.7	$8.8	$7.0	$10.9	$10.7	$8.6
Integrated Marketing Margins ($/gallon)																
PADD I	0.467	0.428	0.441	0.431	0.414	0.397	0.377	0.405	0.365	0.352	0.382	0.361	0.365	0.334	0.362	0.365
PADD II	0.352	0.313	0.332	0.332	0.323	0.307	0.290	0.311	0.290	0.263	0.298	0.291	0.267	0.251	0.227	0.297
PADD III	0.354	0.303	0.313	0.246	0.297	0.275	0.262	0.270	0.246	0.211	0.259	0.242	0.239	0.218	0.243	0.246
PADD IV	0.378	0.334	0.375	0.233	0.411	0.395	0.388	0.357	0.348	0.296	0.356	0.349	0.337	0.321	0.348	0.351
PADD V (excluding CA)	0.345	0.382	0.366	0.275	0.530	0.534	0.517	0.464	0.462	0.425	0.465	0.446	0.447	0.418	0.446	0.450
California	0.827	0.828	0.829	0.968	1.025	1.033	1.002	1.007	0.966	0.938	0.949	0.928	0.945	0.903	0.931	0.937
RINs ($/gallon):																
Ethanol RIN	$0.54	$0.82	$0.69	$0.63	$0.31	$0.31	$0.31	$0.39	$0.31	$0.31	$0.31	$0.31	$0.31	$0.31	$0.31	$0.31
Biodiesel RIN	$0.71	$0.91	$1.01	$0.79	$0.53	$0.53	$0.53	$0.60	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53	$0.53

Source: Bloomberg, Platts, Barclays Research

Global Oil Prices

We are bullish on medium/long-term global oil prices as our 2019-2022 Brent forecasts are an average of 5-10% above the forward curve. Specifically, we forecast average prices will spike to $80/bl in 2019-2020 before settling at $70/bl in 2021-2022 and in the long-term. This compares to the forward curve currently showing ~$70-$75/bl in 2019-2020 and ~$65-$70/bl in 2021+. We think the equity market is more-or-less consistent with the forward curve, pricing in a long-term Brent price of ~$65.

Simply put, we have identified larger and more significant positive drivers than we have negative factors, particularly over the next 1-2 years. **See below for our rationale:**

Positives

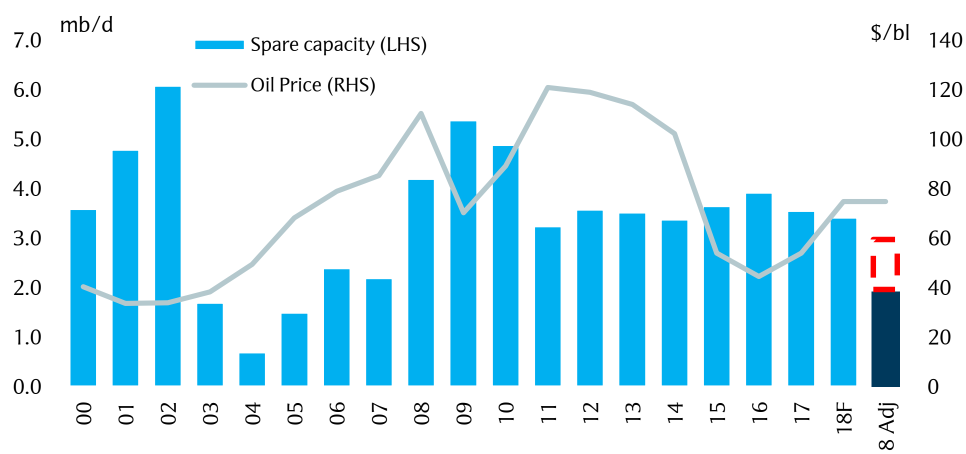
- **Venezuela:** We expect Venezuela oil production will continue to decline. Under the best case scenario, we forecast volumes will drop 200-400 mb/d (000s b/d) annually until plateauing at 500-600 mb/d compared to current production of 1,200-1,300 mb/d. That said, we think the recent assassination attempt clearly demonstrates the political uncertainties and tail risk of more disruptive changes.

- **Iran:** European companies have already stopped taking crude from Iran following the re-imposing of U.S. sanctions and we do not believe many corporations will want to risk falling afoul of these sanctions. Therefore, although China, India and Japan will likely continue to import some Iranian oil, we expect the country's production to decline from here.

- **Permian infrastructure constraints:** We think Permian production growth could slow by 40-50% through late-2019 due to infrastructure constraints (to 500-600 mb/d annually from 800-900 mb/d previously). While this will be fleeting, we believe the Permian will not be capable of serving as the global swing producer in the near-term.

- **Current limited global idle capacity:** We forecast current global idle capacity at ~2-3 million b/d with the bulk of excess capacity in the hands of the Gulf Council countries (Saudi Arabia, Kuwait and UAE). See Figure 2 below.

FIGURE 2
Barclays Spare Capacity Tracker



Source: Barclays Research, IEA, BP Statistical Review

- **Mexico, Nigeria, Angola, Libya and other OPEC countries' (outside the Gulf Cooperation Council) will likely see flat-to-lower production over the next several years.**

- **IMO 2020 could drive up light oil demand and prices by $2-$5/bl:** Higher diesel and lower high-sulphur fuel oil demand will make light oil more attractive on a relative basis.
- **Lack of new major project sanctions since 2013 will begin to take toll by 2020:** Based on our project database, the run-rate of major start ups will drop off significantly beginning in 2019. By 2020, we believe global production ex-shale could decline and do not think the trend will be reversed at least through 2022. Specifically, while we have seen an uptick in FIDs in 2018, we do not expect these projects to have a meaningful contribution to global supply until 2021+ given the multi-year development cycle time. Furthermore, we also think the industry's cutback in exploration spending over the last several years could prove to be problematic. Many recent FIDs have been focused on tieback opportunities and previously-discovered resources. If the industry does not increase exploration spending and refill resource inventory, it is feasible that producers will find it increasingly challenging to adequately supply the market in the long run. See Figure 3 below.

FIGURE 3
Barclays Major Projects Database Summary

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023+
OPEC										
Oil (mb/d)	**2,480**	**810**	**598**	**1,226**	**1,855**	**625**	**1,100**	**806**	**670**	**6,090**
Rolling 3-year Average	**1,985**	**1,822**	**1,296**	**878**	**1,226**	**1,235**	**1,193**	**844**	**859**	-
change (+/-)	15%	(8)%	(29)%	(32)%	40%	1%	(3)%	(29)%	2%	-
Non-OPEC										
Oil (mb/d)	**2,556**	**1,956**	**2,200**	**1,550**	**1,849**	**670**	**1,220**	**1,109**	**1,620**	**3,592**
Rolling 3-year Average	**1,639**	**2,075**	**2,237**	**1,902**	**1,866**	**1,356**	**1,246**	**1,000**	**1,316**	-
change (+/-)	50%	27%	8%	(15)%	(2)%	(27)%	(8)%	(20)%	32%	-
Total OPEC & Non-OPEC										
Oil (mb/d)	**5,036**	**2,766**	**2,798**	**2,776**	**3,704**	**1,295**	**2,320**	**1,915**	**2,290**	**9,682**
Rolling 3-year Average	**3,624**	**3,896**	**3,533**	**2,780**	**3,092**	**2,592**	**2,440**	**1,843**	**2,175**	-
change (+/-)	29%	8%	(9)%	(21)%	11%	(16)%	(6)%	(24)%	18%	-
Regional Breakdown										
Oil										
Africa	340	402	148	599	630	155	110	460	530	775
Asia/Pacific	266	371	14	91	162	0	0	78	40	195
Europe	285	210	180	421	212	103	440	46	410	100
FSU	250	544	885	155	165	85	80	50	260	1,760
Middle East	1,740	250	535	815	1,230	480	990	346	370	3,940
S. America	1,610	290	696	200	1,050	300	520	510	400	1,370
N. America	545	699	340	494	255	173	180	425	280	1,542
Total Oil, mb/d	**5,036**	**2,766**	**2,798**	**2,776**	**3,704**	**1,295**	**2,320**	**1,915**	**2,290**	**9,682**

Source: Company Data, Barclays Research

Negatives

- **IMO 2020:** We forecast the upcoming marine fuel standard could result in an $11-$12/bl average increase in gasoline/distillate margins. Higher product prices will likely have a negative impact on global economies and the corresponding oil demand outlook, starting as early as 2H19. However, according to Barclays' Economics Research team, even an aggressive scenario where global product prices increase by $800bn per year would not be sufficient to de-rail global economies.

- **Resolution of Permian bottlenecks by late-2019/2020:** The Permian bottlenecks will likely be alleviated by 2020 as new takeaway to the Gulf Coast comes online. Given the high amount of DUCs (drilled but uncompleted wells) that the industry will likely build over the next 12-18 months, this could lead to above run-rate growth once the infrastructure bottlenecks are lifted circa-2020. We think the impact of such strong Permian growth will be as much psychological as it will be fundamental.

- **Trade war between U.S. and China heats up:** So far, the trade tensions have had a de minimis impact on the global economy. However, a prolonged and escalating trade war could have a serious medium term impact around the world by 2020/2021 and correspondingly lower global oil demand growth by more than 1 million b/d. Historically, oil demand has grown at 0.45-0.55x GDP growth.

- **Near-term Russia and Saudi intentions:** Both nations can undoubtedly lift volumes that lead to higher production before Iranian supply is impacted. Nevertheless, we think the risk of either country overproducing is relatively minor over the next couple of years, particularly in light of the drastic efforts they took to balance the market.

- **Strong US$ could lead to lower oil prices:** According to our multi-regression model, oil prices are driven by GDP growth, non-OECD liquids demand, North American crude production, OECD crude inventory year-over-year changes, the US$ and the average of the trailing supply-demand balance. See Figure 4 below for a breakdown.

FIGURE 4
Barclays Multi-Regression Oil Price Model

$$[\mathrm{LN}(BRENT_{T2}) - \mathrm{LN}(BRENT_{T1})] = -0.08 + 7.78*[\mathrm{LN}(GDP_{T2}) - \mathrm{LN}(GDP_{T1})] + 3.06*[\mathrm{LN}(DEM_{T2}) - \mathrm{LN}(DEM_{T1})] - 1.11*[\mathrm{LN}(NAP_{T2}) - \mathrm{LN}(NAP_{T1})] - 0.97*[INV_{T2} - INV_{T1}] - 1.84*[USD_{T2} - USD_{T1}] - 0.14*[LAG_{T2} - LAG_{T1}]$$

BRENT = Inflation-adjusted Brent price, $/bl
GDP = Real global GDP index, SAAR
DEM = Non-OECD liquids demand, mmb/d
NAP = North American (U.S. + CA) crude production, mb/d
INV = OECD crude oil inventory, Y/Y % Change
USD = Trade-Weighted USD Index (Broad), Q/Q % Change
LAG = Average of trailing 3 quarter global supply/demand balance, R4Q, mmb/d

Regression Statistics	
Multiple R	0.816
R Square	0.665
Adjusted R Square	0.624
Standard Error	0.099
Observations	56

ANOVA	df	SS	MS	F	Significance F
Regression	6	0.96	0.16	16.23	0.00
Residual	49	0.48	0.01		
Total	55	1.45			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.08	0.03	-2.83	0.01	-0.14	-0.02
GDP Index (ln) (first-dif)	7.78	2.85	2.73	0.01	2.05	13.50
Non-OECD Demand (ln) (first-dif)	3.06	1.04	2.96	0.00	0.98	5.15
U.S.+CA Production (ln) (first-dif)	-1.11	0.54	-2.06	0.05	-2.20	-0.03
OECD Crude Inventory Y/Y (first-dif)	-0.97	0.49	-1.97	0.05	-1.95	0.02
Trade-Wtd. USD Index Q/Q (first-dif)	-1.84	0.49	-3.76	0.00	-2.82	-0.86
S/D Trailing 3Q Avg. (first-dif)	-0.14	0.06	-2.18	0.03	-0.26	-0.01

Source: Company Data, Barclays Research

Key Commodity Price Differentials

Brent-WTI Cushing

We believe that Brent-TI should largely reflect the transportation cost between Cushing and Northwestern Europe, the quality difference between the two crudes and a financial incentive to encourage European refiners to run US-sourced crude. We expect Cushing to flip to a takeaway deficit beginning in 4Q18, which we think will mark the start of a period of sustained and growing inventory builds. Specifically, we estimate inventories could approach working capacity of 77.5 mmbls by February/March 2019 unless the Brent-TI differential widens significantly to provide the needed incentive to divert oil away from reaching Cushing (eg: railing oil directly from the DJ basin to the Gulf Coast, etc).

Beginning in late-2019 and throughout 2020, the various Permian pipeline start ups will likely divert volumes away from Cushing while Enbridge's Line 3 expansion project will send an additional 375 mb/d to the U.S. Midwest. Beyond that, the proposed Transmountain Expansion will send 590 mb/d to the Canadian West Coast (and therefore divert volumes away from Cushing) while the proposed Keystone XL project would add 830 mb/d of additional takeaway to the U.S. Midwest. We currently assume a late-2019 start-up date for Line 3, mid-2022 for Transmountain and sometime between 2022-2024 for Keystone XL. We have broken out our 2019-2022 Brent-TI component assumptions in Figure 5 below.

See our 8/24/18 report, "*Brent-TI: Brace Yourselves, Big Builds Are Coming*", for more detail on this outlook.

FIGURE 5

Barclays Brent-TI Differential Derivation: 2019-2022E

	2019			2020			2021			2022		
Transportation Cost												
Cushing to Houston	8.00	-	12.00	3.70	-	3.70	6.00	-	6.00	3.70	-	3.70
Financial Incentive	0.50	-	1.25	0.25	-	1.25	0.25	-	1.50	0.25	-	1.00
Total Cushing to Houston	8.50	-	13.25	3.95	-	4.95	6.25	-	7.50	3.95	-	4.70
Houston to NW Europe	2.00	-	2.25	2.00	-	2.25	2.00	-	2.50	2.00	-	2.50
Financial Incentive	0.75	-	1.50	0.50	-	1.50	0.50	-	2.00	0.50	-	2.00
Total Houston to NW Europe	2.75	-	3.75	2.50	-	3.75	2.50	-	4.50	2.50	-	4.50
Total Transportation Cost	*11.25*	-	*17.00*	*6.45*	-	*8.70*	*8.75*	-	*12.00*	*6.45*	-	*9.20*
WTI Quality Premium	*0.50*	-	*1.00*	*0.50*	-	*1.00*	*0.50*	-	*1.00*	*0.50*	-	*1.00*
Total	**10.25**	-	**16.50**	**5.45**	**-**	**8.20**	**7.75**	**-**	**11.50**	**5.45**	**-**	**8.70**
Barclays Price Deck Assumption	**$12.3**			**$6.8**			**$9.6**			**$7.1**		

Source: Barclays Research

WTI Cushing-WTI Midland

We believe that the highly topical Cushing-Midland differential should be driven by a) the quality difference between the two crudes (Midland has historically traded at a $1/bl quality premium), b) whether marginal Permian production will be cleared at Cushing or the Gulf Coast and c) whether Cushing's takeaway capacity is in a surplus or deficit. For essentially all of 2015-2017, marginal Permian barrels cleared at Cushing through Basin and the two crudes traded near parity as the $0.60-$0.80/bl Basin tariff was largely offset by the Midland quality premium. However, the sharp widening of the Midland-Cushing and Midland-Gulf Coast differentials this year suggests that Basin is now full and incremental production is being shipped to the Gulf Coast via either truck/rail.

Therefore, until the Permian Basin's takeaway deficit is eliminated with new pipeline projects in late-2019/2020, we believe the Cushing-Midland differential will either trade near parity (ie: a ~$0.2-$0.4/bl Midland premium) when marginal Permian production clears at Cushing or reflect the relative transportation cost to the Gulf Coast between the two hubs when Permian production clears at the Gulf Coast. Given the high number of moving pieces over the next 12-18 months, we have laid out a quarter-by-quarter roadmap of our outlook below:

- 4Q18: While the status quo from Midland-to-Gulf Coast should be largely unchanged between now and year-end, we expect the Cushing-to-Gulf Coast transportation cost to blow out significantly in the fourth quarter and therefore forecast the Midland-Cushing spread to contract to $5/bl.

- 1Q19: We expect Permian Express III will come online near year-end 2018 (adding 50 mb/d of Permian-to-Gulf Coast takeaway) while the Sunrise expansion will add 220 mb/d of takeaway (120 mb/d to Cushing and 100 mb/d to Wichita Falls). Assuming 40-50 mb/d of monthly Permian production growth, 1Q19 production will be 240-300 mb/d higher than it is today. This suggests that Permian production and takeaway will be largely balanced and that marginal volumes will be cleared via Basin/Sunrise. We therefore forecast the two crudes will trade near parity during 1Q19.

- 2Q19: Further production growth will likely overwhelm existing takeaway and return the Midland-to-Gulf Coast spread to its current level of +/- $20/bl (which we estimate is reflective of small trucking economics). Assuming a $12.75/bl transportation cost from Cushing to the Gulf Coast, we calculate a sharp widening of the Midland-Cushing differential to $9/bl.

- 3Q19: At least some of the 2H19 scheduled pipelines (Gray Oak, Cactus II and EPIC) should come online, but this will likely be inadequate to fully eliminate the need for crude by truck/rail and spot Midland-to-Cushing pipeline volumes. Our base assumption is that trucking (the most costly option) and manifest train outlets will no longer be necessary, but unit train railing (the cheaper of the two railing options, ~$8-$10/bl) and Midland-Cushing pipelines will still be required to clear the market. While the Midland-to-Gulf Coast transportation cost will likely fall lower than the Cushing-to-Gulf Coast cost, we estimate that WTI Midland will trade at a $0.3-$0.4/bl premium to WTI Cushing as we think Cushing will serve as the final outlet for incremental production (as we assume that rail volumes will be relatively fixed).

- 4Q19: While enough incremental takeaway will likely be online to divert Permian production away from Cushing, we expect Cushing to remain in a takeaway deficit as the start-up of Line 3 (we assume an end of 3Q19 in-service date) will likely be sufficient to offset any lost Permian volumes. We therefore expect the Brent-TI differential to remain quite wide (we assume $8/bl). Marginal Permian transportation costs, on the other hand, will likely fall to the average long-haul spot tariffs $6-$8/bl. Again, however, we still believe that the Midland-to-Cushing pipelines will serve as the market clearing mechanism and therefore forecast the same $0.3-$0.4/bl Midland-Cushing differential in 4Q19 that we do in 3Q19.

- 2020+: Once 2020 hits, the ramp up of nearly 3 million b/d of Permian takeaway capacity suggests that Cushing will no longer be required as an outlet, at least through 1H21. Therefore, the barrels that ship through Basin and Sunrise will likely be take-or-pay contracted volumes as opposed to spot production and WTI Midland pricing will be based on Gulf Coast export economics and trade at Brent less $4-$5/bl. WTI Cushing, on the other hand, will likely remain takeaway constrained and continue to trade at a

$6-$10/bl discount to Brent. We therefore forecast Midland will trade at a $2-$5/bl premium to Cushing from 2020 to 2022.

We have broken out our 2019-2022 WTI Cushing- WTI Midland component assumptions in Figure 6 below.

FIGURE 6

Barclays WTI Cushing-WTI Midland Differential Derivation: 2019-2022

	2019			2020			2021			2022		
Scenario 1: Barrels clear at Gulf Coast												
Transportation Cost												
Cushing to Houston	8.00	-	12.00	3.70	-	3.70	6.00	-	6.00	3.70	-	3.70
Financial Incentive	0.50	-	1.25	0.25	-	1.25	0.25	-	1.50	0.25	-	1.00
Midland to Houston	13.00	-	13.00	3.00	-	3.50	3.00	-	3.50	3.00	-	3.50
Financial Incentive	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00
Variance	*(0.25)*	-	*4.50*	*(1.95)*	-	*(0.45)*	*(4.50)*	-	*(2.75)*	*(1.70)*	-	*(0.45)*
Midland Quality Premium	*0.75*	-	*1.25*	*0.75*	-	*1.25*	*0.75*	-	*1.25*	*0.75*	-	*1.25*
Total	**3.75**	**-**	**(1.50)**	**(1.20)**	**-**	**(3.20)**	**(3.50)**	**-**	**(5.75)**	**(1.20)**	**-**	**(2.95)**
Scenario 2: Barrels clear at Cushing												
Transportation Cost												
Midland to Cushing	0.50	-	0.80	0.50	-	0.80	0.50	-	0.80	0.50	-	0.80
Midland Quality Premium	*0.75*	-	*1.25*	*0.75*	-	*1.25*	*0.75*	-	*1.25*	*0.75*	-	*1.25*
Total	(0.75)	-	0.05	(0.75)	-	0.05	(0.75)	-	0.05	(0.75)	-	0.05
Barclays Price Deck Assumption	**$2.1**			**($2.2)**			**($4.6)**			**($2.1)**		

Source: Barclays Research

WTI Cushing-WCS

We think the WTI-WCS discount should reflect a) the transportation cost from Hardisty to the Gulf Coast, b) a quality premium between Maya heavy crude and WCS, c) the LLS-Maya light-heavy differential (note that unlike many differentials, the Maya discount has historically tracked LLS on a percentage rather than a dollar basis) and d) the WTI-LLS differential. Importantly, since incremental WCS barrels clear at the Gulf Coast (regardless if they are shipped via pipe or rail), the WTI-WCS discount will narrow as the Cushing-to-Gulf Coast transportation cost increases.

Over the next few years, we expect all of the components to be quite volatile. The Hardisty-to-Gulf Coast transportation cost will be dictated by the Line 3, Transmountain and Keystone pipeline projects, the LLS-Maya discount could widen significantly due to IMO 2020 and the Cushing-to-Gulf Coast transportation cost will likely fluctuate with the takeaway deficit. See below for a summary of our key assumptions:

- All-in rail costs from Hardisty to the Gulf Coast will total US$20/bl.
- Line 3 will start-up at the end of 3Q19, Transmountain will start-up in mid-2022 and Keystone XL will not come online until sometime between 2022 and 2024.

– Rail will therefore serve as the clearing mechanism 25% of the time in 2020, 100% of the time in 2021 and 50% of the time in 2022.

- LLS-Maya will widen by 2-3% in 2020+ given the start-up of IMO 2020.

We have broken out our 2019-2022 WTI Cushing- WCS component assumptions in Figure 7 below.

FIGURE 7

Barclays WTI Cushing-WCS Differential Derivation: 2019-2022

	2019	2020	2021	2022
Brent	80.00	80.00	70.00	70.00
Brent-LLS	1.15	1.03	1.40	1.40
LLS	78.85	78.98	68.60	68.60
WCS Transportation Cost				
Hardisty to Gulf Coast via pipe	9.00	9.00	9.00	7.00
Rail Incremental Cost	11.00	11.00	11.00	11.00
% of rail used to clear	95%	25%	100%	50%
Financial Incentive	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Total Trans. Cost to GC	*19.45*	*11.75*	*20.00*	*12.50*
LLS Over WCS Quality Premium				
Maya over WCS	0.50	0.50	0.50	0.50
LLS/Maya Diff	10.64	12.64	11.66	11.66
LLS/Maya Diff % of LLS	14%	16%	17%	17%
LLS Quality Premium	*11.14*	*13.14*	*12.16*	*12.16*
LLS/WCS @ GC	*30.59*	*24.89*	*32.16*	*24.66*
LLS/WTI	*12.23*	*5.80*	*8.23*	*5.68*
Barclays Price Deck Assumption	**$17.3**	**$17.5**	**$25.6**	**$19.0**

Source: Barclays Research

Estimate Update Section

With this report, we are updating estimates for our Americas Integrated Oil, European Integrated Oil & Refining and U.S. Independent Refiners coverage universes to reflect our global commodity price assumptions. See Figures 8 and 9 below for a breakdown of changes in 2018-2022 earnings estimates. Note that all price targets remain unchanged.

FIGURE 8

EPS Changes – European Integrated Oil & Refining

New forecast EPS (local currency)						Change in local EPS, %				
	2018F	2019F	2020F	2021F	2022F	2018F	2019F	2020F	2021F	2022F
BP (GBP)	43.7	58.7	61.9	53.2	54.5	(0)	0	0	1	1
Shell (GBP)	2.81	4.07	4.46	3.91	3.83	(0)	(0)	0	0	3
Total (EUR)	5.48	7.55	8.38	7.07	7.21	0	0	0	2	2
Eni (EUR)	1.05	1.44	1.55	1.28	1.26	(0)	(0)	(0)	2	3
Equinor (NOK)	1.80	2.15	2.31	1.92	1.93	(1)	(0)	(0)	3	4
GALP (EUR)	0.94	0.93	1.03	0.99	1.03	0	0	(0)	2	2
OMV (EUR)	4.86	5.50	6.17	6.23	6.18	0	(0)	(0)	1	2
Repsol (EUR)	1.68	2.12	2.36	1.86	1.83	0	(0)	(0)	2	1
Average integrateds						**(0)**	**(0)**	**0**	**1**	**2**

Source: Company Data, Barclays Research

FIGURE 9

EPS Changes – Americas Integrated Oil & U.S. Independent Refiners (USD unless otherwise noted)

EPS Revisions	Annual Estimates														
	2018E			2019E			2020E			2021E			2022E		
	Old	New	%	Old	New	%	Old	New	%	Old	New	%	Old	New	%
Americas Major Oil Companies															
CNQ-TSE (C$)	$3.85	$3.85	0%	$4.45	$5.35	20%	$4.55	$6.10	34%	$6.05	$4.15	-31%	$5.15	$5.20	1%
CVE-TSE (C$)	-$0.45	-$0.45	0%	$1.05	$1.30	24%	$1.40	$1.95	39%	$1.65	$0.55	-67%	$1.20	$1.25	4%
CVX	$7.75	$7.75	0%	$8.55	$10.15	19%	$10.05	$11.55	15%	$12.10	$10.20	-16%	$9.75	$9.75	0%
COP	$4.40	$4.35	-1%	$5.35	$6.65	24%	$5.60	$7.20	29%	$7.60	$5.30	-30%	$6.05	$5.75	-5%
XOM	$4.45	$4.45	0%	$5.15	$5.90	15%	$6.45	$7.20	12%	$7.55	$6.95	-8%	$6.35	$6.35	0%
HES	-$0.55	-$0.55	0%	$0.45	$1.65	267%	$1.50	$3.40	127%	$3.25	$1.65	-49%	$2.30	$2.10	-9%
HSE-TSE (C$)	$1.65	$1.65	0%	$2.30	$2.80	22%	$2.25	$3.20	42%	$3.20	$2.15	-33%	$2.45	$2.60	6%
IMO-TSE (C$)	$2.20	$2.15	-2%	$3.35	$3.95	18%	$4.95	$5.60	13%	$4.80	$2.75	-43%	$4.65	$4.70	1%
MUR	$1.10	$1.10	0%	$1.55	$2.60	68%	$0.95	$2.55	168%	$2.90	$1.10	-62%	$1.40	$1.30	-7%
PBR/PBR.A	$1.90	$1.90	0%	$2.70	$3.20	19%	$2.35	$3.45	47%	$4.25	$2.40	-44%	$2.25	$2.20	-2%
SU-TSE (C$)	$3.35	$3.35	0%	$4.45	$5.20	17%	$5.25	$6.10	16%	$7.20	$6.00	-17%	$5.85	$6.10	4%
Median			*0%*			*20%*			*34%*			*-33%*			*0%*
U.S .Independent Refiners															
CVRR	$2.60	$2.65	2%	$4.10	$4.60	12%	$3.25	$3.35	3%	$4.60	$4.15	-10%	$2.40	$2.75	15%
DK	$4.30	$4.30	0%	$5.20	$7.10	37%	$3.70	$5.85	58%	$5.70	$5.75	1%	$5.75	$5.70	-1%
HFC	$4.10	$4.15	1%	$7.15	$8.35	17%	$6.45	$6.10	-5%	$6.45	$6.75	5%	$2.95	$3.00	2%
MPC	RS	RS		RS	RS		RS	RS		RS	RS		RS	RS	
PBF	$2.65	$2.75	4%	$4.80	$5.35	11%	$9.75	$9.95	2%	$10.85	$11.50	6%	$6.35	$6.55	3%
PSX	$8.10	$8.15	1%	$10.50	$10.40	-1%	$14.15	$13.45	-5%	$15.75	$17.85	13%	$11.85	$12.00	1%
VLO	$6.40	$6.40	0%	$9.65	$11.00	14%	$15.45	$16.25	5%	$16.35	$16.70	2%	$13.65	$14.00	3%
Median			*1%*			*13%*			*3%*			*3%*			*2%*

Source: Company Data, Barclays Research

Americas Integrated Oil — **Industry View: POSITIVE**

Canadian Natural Resources (CNQ.TO)

Stock Rating: OVERWEIGHT

Income statement (CADmn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	7,739	12,261	15,181	16,496	28.7%
EBIDA (adj)	7,050	10,420	12,416	13,417	23.9%
Net income (op basis)	1,403	4,710	6,596	7,433	74.3%
EPS (adj) (CAD)	1.19	3.85	5.35	6.10	72.6%
Diluted shares (mn)	1,182.8	1,227.6	1,229.3	1,221.6	1.1%
DPS (CAD)	1.06	1.34	1.40	1.60	14.8%

Return data					Average
ROACE (%)	3.8	9.6	12.5	13.1	9.7
ROAE (%)	4.8	14.3	18.0	17.8	13.7
ROMC (%)	2.7	6.9	9.3	10.6	7.3

Balance sheet and cash flow (CADmn)					CAGR
Shareholders' equity	31,653	34,324	39,028	44,316	11.9%
Net debt/(funds)	22,321	19,432	14,301	9,327	-25.2%
Total debt	22,458	20,843	19,843	17,943	-7.2%
Market capital employed	75,590	77,067	76,147	73,892	-0.8%
Cash flow from operations	7,262	10,925	13,100	14,463	25.8%
Capital expenditure	-4,661	-4,595	-5,247	-5,534	N/A
Dividends paid	-1,252	-1,645	-1,721	-1,955	N/A
Free cash flow	2,601	6,330	7,852	8,929	50.9%
Net cash surplus/(deficit)	120	1,274	4,131	3,074	194.8%

Valuation and leverage metrics					Average
P/E (adj) (x)	38.9	12.0	8.6	7.6	16.8
EV/EBITDA (adj) (x)	10.2	6.2	4.7	4.0	6.3
EV/EBIDA (adj) (x)	11.2	7.3	5.7	4.9	7.3
Equity FCF yield (%)	4.8	11.2	13.8	15.8	11.4
Dividend yield (%)	2.3	2.9	3.0	3.5	2.9
Total debt/capital (%)	41.5	37.8	33.7	28.8	35.5
Total debt/equity (%)	71.0	60.7	50.8	40.5	55.8
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	685.2	833.7	875.2	928.7
Gas production (000 cf/d)	1,662.0	1,553.9	1,558.3	1,563.0
Total production (000 boe/d)	962.2	1,092.7	1,134.9	1,189.2
Realisations ($/boe)	43.8	54.2	62.5	65.6
Downstream				
Refining capacity (000 b/d)	N/A	N/A	N/A	N/A
Refining throughput (000 b/d)	N/A	N/A	N/A	N/A

Price (27-Aug-2018)	CAD 46.17
Price Target	CAD 59.00

Why Overweight? We expect CNQ to outperform given the company's diversified, long-lived asset base and exceptionally strong free cash flow outlook. However, we also believe that management will need to be more committal to returning cash to investors for the shares to outperform.

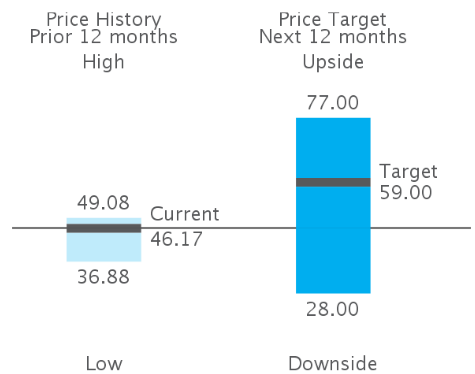
Upside case CAD 77.00

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case CAD 28.00

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil | **Industry View: POSITIVE**

Cenovus Energy Inc. (CVE.TO)

Stock Rating: OVERWEIGHT

Income statement (CADmn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	3,620	2,130	5,012	6,044	18.6%
EBIDA (adj)	3,356	2,098	4,332	5,094	14.9%
Net income (op basis)	889	-577	1,656	2,392	39.1%
EPS (adj) (CAD)	0.81	-0.45	1.30	1.95	34.2%
Diluted shares (mn)	1,102.5	1,229.2	1,251.2	1,224.3	3.6%
DPS (CAD)	0.20	0.20	0.25	0.42	27.2%

Return data					Average
ROACE (%)	5.9	-0.3	7.4	9.7	5.7
ROAE (%)	5.6	-3.0	8.5	11.6	5.7
ROMC (%)	6.2	-0.3	8.8	12.0	6.7

Balance sheet and cash flow (CADmn)					CAGR
Shareholders' equity	19,981	18,897	20,240	20,918	1.5%
Net debt/(funds)	8,903	8,669	7,212	6,942	-8.0%
Total debt	9,513	9,500	7,869	7,869	-6.1%
Market capital employed	22,170	24,571	23,209	22,879	1.1%
Cash flow from operations	3,059	1,925	4,022	4,935	17.3%
Capital expenditure	-1,670	-1,927	-2,452	-3,001	N/A
Dividends paid	-225	-246	-313	-514	N/A
Free cash flow	1,389	-2	1,570	1,934	11.7%
Net cash surplus/(deficit)	-3,110	221	-174	270	N/A

Valuation and leverage metrics					Average
P/E (adj) (x)	15.8	N/A	9.8	6.5	10.7
EV/EBITDA (adj) (x)	6.8	11.4	4.6	3.7	6.6
EV/EBIDA (adj) (x)	7.3	11.6	5.3	4.4	7.1
Equity FCF yield (%)	9.9	-0.0	9.9	12.4	8.1
Dividend yield (%)	1.6	1.6	2.0	3.3	2.1
Total debt/capital (%)	32.3	33.5	28.0	27.3	30.3
Total debt/equity (%)	47.6	50.3	38.9	37.6	43.6
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	360.7	407.0	414.8	436.3
Gas production (000 cf/d)	659.0	545.7	518.7	495.9
Total production (000 boe/d)	470.5	498.0	501.2	518.9
Realisations ($/boe)	36.0	37.5	44.2	51.3
Downstream				
Refining capacity (000 b/d)	239.0	239.0	239.0	239.0
Refining throughput (000 b/d)	221.0	216.0	222.2	220.1

Price (27-Aug-2018)	**CAD 12.70**
Price Target	**CAD 17.00**

Why Overweight? Despite strong recent share price performance, we still see attractive fundamental value in CVE shares highlighted by a steep discount to net asset value.

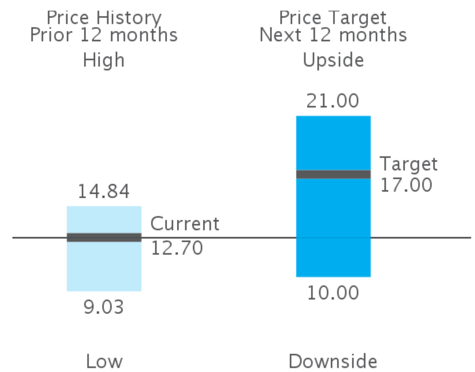
Upside case **CAD 21.00**

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case **CAD 10.00**

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil — **Industry View: POSITIVE**

Chevron Corporation (CVX)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	31,326	39,050	44,825	47,766	15.1%
EBIDA (adj)	26,559	32,612	37,386	39,865	14.5%
Net income (op basis)	7,026	14,807	19,253	21,495	45.2%
EPS (adj) ($)	3.70	7.75	10.15	11.55	46.1%
Diluted shares (mn)	1,897.6	1,914.8	1,894.7	1,865.0	-0.6%
DPS ($)	4.29	4.54	4.70	4.90	4.6%

Return data					Average
ROACE (%)	3.8	8.2	10.6	11.6	8.5
ROAE (%)	4.8	9.8	12.3	13.2	10.0
ROMC (%)	2.7	5.7	7.7	8.8	6.2

Balance sheet and cash flow ($mn)					CAGR
Shareholders' equity	148,124	152,742	159,090	167,447	4.2%
Net debt/(funds)	33,950	24,083	15,468	4,710	-48.2%
Total debt	38,763.0	32,041.0	27,041.0	21,987.0	-17.2%
Market capital employed	276,328	259,748	252,354	243,776	-4.1%
Cash flow from operations	20,515	30,352	37,019	40,397	25.3%
Capital expenditure	-13,404	-12,800	-17,500	-17,500	N/A
Dividends paid	-8,132	-8,693	-8,905	-9,139	N/A
Free cash flow	7,111	17,552	19,519	22,897	47.7%
Net cash surplus/(deficit)	-2,175	3,145	3,614	5,705	N/A

Valuation and leverage metrics					Average
P/E (adj) (x)	32.5	15.5	11.9	10.4	17.6
EV/EBITDA (adj) (x)	8.5	6.5	5.5	4.9	6.4
EV/EBIDA (adj) (x)	10.0	7.8	6.6	5.9	7.6
Equity FCF yield (%)	3.1	7.6	8.6	10.2	7.4
Dividend yield (%)	3.6	3.8	3.9	4.1	3.8
Total debt/capital (%)	20.7	17.3	14.5	11.6	16.1
Total debt/equity (%)	26.2	21.0	17.0	13.1	19.3
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	1,723.0	1,755.5	1,803.9	1,830.1
Gas production (000 cf/d)	6,032.0	6,818.5	7,110.9	7,203.2
Total production (000 boe/d)	2,728.3	2,892.0	2,989.1	3,030.6
Realisations ($/boe)	32.1	38.3	40.8	41.9
Downstream				
Refining capacity (000 b/d)	N/A	N/A	N/A	N/A
Refining throughput (000 b/d)	1,661.0	1,603.0	1,556.3	1,550.0

Price (27-Aug-2018)	USD 120.35
Price Target	USD 148.00

Why Overweight? We believe Chevron holds strong upside vs. its mega major peers, especially Exxon, on a forward production profile, which includes a leading Permian position, as well as on a free cash flow and unit profitability basis.

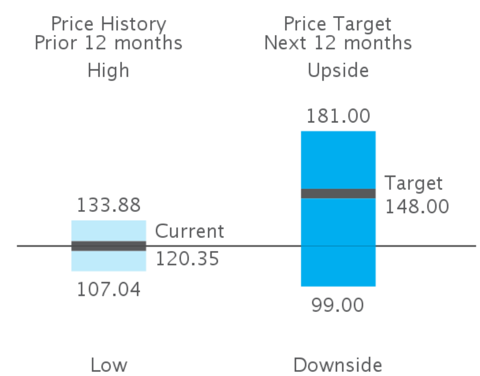
Upside case — **USD 181.00**

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case — **USD 99.00**

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil | **Industry View: POSITIVE**

ConocoPhillips (COP)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	10,130	14,189	18,005	18,343	21.9%
EBIDA (adj)	8,064	11,312	14,340	14,665	22.1%
Net income (op basis)	739	5,135	7,503	7,814	119.5%
EPS (adj) ($)	0.60	4.35	6.65	7.20	128.9%
Diluted shares (mn)	1,221.0	1,173.8	1,132.2	1,081.7	-4.0%
DPS ($)	1.07	1.14	1.24	1.32	7.3%
Return data					**Average**
ROACE (%)	2.6	11.8	16.9	16.9	12.1
ROAE (%)	2.3	16.4	22.4	21.6	15.6
ROMC (%)	1.7	6.2	8.3	9.0	6.3
Balance sheet and cash flow ($mn)					**CAGR**
Shareholders' equity	30,607	32,058	35,053	37,334	6.8%
Net debt/(funds)	13,378	9,478	2,828	-796	N/A
Total debt	19,703.0	14,809.0	14,025.0	12,432.0	-14.2%
Market capital employed	86,726	99,323	95,543	90,314	1.4%
Cash flow from operations	7,077	12,612	16,359	16,593	32.8%
Capital expenditure	-4,591	-6,500	-7,200	-7,272	N/A
Dividends paid	-1,305	-1,338	-1,404	-1,428	N/A
Free cash flow	2,486	6,112	9,158	9,321	55.4%
Net cash surplus/(deficit)	2,715	-994	5,866	2,031	-9.2%
Valuation and leverage metrics					**Average**
P/E (adj) (x)	N/A	16.7	11.0	10.1	12.6
EV/EBITDA (adj) (x)	9.8	6.7	4.9	4.6	6.5
EV/EBIDA (adj) (x)	12.3	8.4	6.2	5.8	8.2
Equity FCF yield (%)	2.8	7.1	11.1	11.8	8.2
Dividend yield (%)	1.5	1.6	1.7	1.8	1.6
Total debt/capital (%)	39.2	31.6	28.6	25.0	31.1
Total debt/equity (%)	64.4	46.2	40.0	33.3	46.0
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A
Selected operating metrics					
Upstream					
Oil production (000 b/d)	831.0	811.8	933.2	958.7	
Gas production (000 cf/d)	3,270.0	2,804.5	2,973.7	2,964.4	
Total production (000 boe/d)	1,376.0	1,279.2	1,428.8	1,452.8	
Realisations ($/boe)	30.1	36.3	41.4	41.9	
Downstream					
Refining capacity (000 b/d)	N/A	N/A	N/A	N/A	
Refining throughput (000 b/d)	N/A	N/A	N/A	N/A	

Price (27-Aug-2018)	USD 72.84
Price Target	USD 84.00

Why Overweight? We believe the long-term fundamental outlook for Conoco is clicking on all cylinders, highlighted by an inexpensive valuation on both an NAV and EV/After-Tax Cash Flow basis, strong free cash flow generation from the existing asset base and dividends/buybacks as the core focus of management's value proposition.

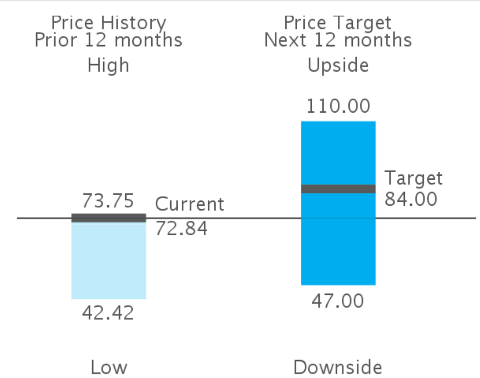
Upside case USD 110.00

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case USD 47.00

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

U.S. Independent Refiners — **Industry View: POSITIVE**

CVR Refining LP (CVRR)

Stock Rating: EQUAL WEIGHT

Income statement ($)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj) ($mn)	373	507	890	763	27.0%
Net income (op basis) ($mn)	89	389	680	497	77.6%
DPS	1.39	2.10	4.55	3.70	38.5%
Reported EPU	0.60	2.65	4.60	3.35	77.2%
Diluted shares (mn)	147.6	147.6	147.6	147.6	0.0%
Cash distribution per unit	1.39	2.10	4.55	3.70	38.5%
Return data					**Average**
ROACE (%)	7.5	23.8	38.8	29.4	24.9
ROAE (%)	7.0	30.2	51.2	38.0	31.6
ROMC (%)	3.5	11.6	18.5	13.5	11.8
Balance sheet and cash flow ($mn)					**CAGR**
Shareholders' equity	1,247	1,325	1,334	1,285	1.0%
Net debt/(funds)	369	269	287	361	-0.8%
Total debt	542.9	542.9	542.9	542.9	0.0%
Market capital employed	2,986	3,687	3,687	3,687	7.3%
Cash flow from operations	178	542	835	655	54.4%
Capital expenditure	-100	-130	-180	-180	N/A
Distributable cash flow	204	307	670	543	38.6%
Valuation and leverage metrics					**Average**
EV/EBITDA (adj) (x)	9.4	6.7	3.9	4.6	6.2
Total debt/capital (%)	30.3	29.1	28.9	29.7	29.5
Total debt/equity (%)	43.5	41.0	40.7	42.2	41.9
P/DCF (x)	11.9	10.1	4.7	5.8	8.1
Dividend yield (%)	6.5	9.8	21.3	17.3	13.8
Selected operating metrics					
Refining throughput (000 b/d)	204.7	197.0	199.0	194.2	
Refining mgn realis (per bl) ($)	10	12	18	16	

Price (27-Aug-2018)	USD 21.35
Price Target	USD 24.00

Why Equal Weight? Although we see value in CVRR's underlying assets, we believe the risk of a scenario leading to privatization by the GP and its affiliates, at market price, puts a ceiling on the unit price, inhibiting the ability to fully reflect a fair fundamental value. Our PT implies a 12.5% distribution yield.

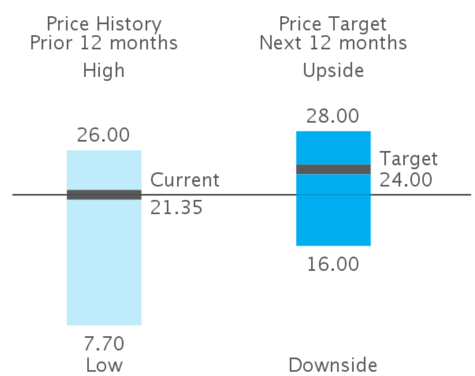
Upside case — **USD 28.00**

Our upside case assumes the MLP will trade at a long-term 8% distribution yield, +/- a potential premium/discount (and assuming CVI does not roll up the company).

Downside case — **USD 16.00**

Our downside case assumes the MLP will trade at a long-term 17.5% distribution yield, +/- a potential premium/discount (and assuming CVI does not roll up the company).

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

U.S. Independent Refiners — **Industry View: POSITIVE**

Delek US Holdings Inc. (DK)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	371	791	1,060	900	34.4%
EBIDA (adj)	303	647	868	744	34.9%
Net income (op basis)	91	371	585	464	72.1%
EPS (adj) ($)	1.26	4.30	7.10	5.85	66.9%
Diluted shares (mn)	72.3	86.4	82.3	79.2	3.1%
DPS ($)	0.61	0.86	1.10	1.30	28.8%

Return data					Average
ROACE (%)	6.5	13.9	18.5	14.3	13.3
ROAE (%)	6.9	22.4	32.4	22.8	21.1
ROMC (%)	5.1	9.0	10.9	9.2	8.5

Balance sheet and cash flow ($mn)					CAGR
Shareholders' equity	1,651	1,659	1,954	2,115	8.6%
Net debt/(funds)	524	582	255	95	-43.3%
Total debt	1,465.6	1,882.9	1,731.5	1,734.2	5.8%
Market capital employed	3,992	6,340	5,974	5,818	13.4%
Cash flow from operations	332	423	859	749	31.1%
Capital expenditure	-178	-232	-250	-250	N/A
Dividends paid	-44	-74	-90	-103	N/A
Free cash flow	119	162	576	462	57.2%
Net cash surplus/(deficit)	253	359	176	162	-13.8%

Valuation and leverage metrics					Average
P/E (adj) (x)	42.8	12.5	7.6	9.2	18.0
EV/EBITDA (adj) (x)	14.2	6.7	4.7	5.4	7.7
EV/EBIDA (adj) (x)	17.3	8.2	5.7	6.5	9.4
Equity FCF yield (%)	3.0	3.5	13.0	10.8	7.6
Dividend yield (%)	1.1	1.6	2.0	2.4	1.8
Total debt/capital (%)	47.0	53.2	47.0	45.1	48.1
Total debt/equity (%)	88.8	113.5	88.6	82.0	93.2

Selected operating metrics					Average
Refining throughput (000 b/d)	297.1	291.8	297.3	299.1	296.3
Refining mgn realis (per bl) ($)	9	11	15	13	12

Price (27-Aug-2018)	USD 53.92
Price Target	USD 62.00

Why Overweight? We think DK is poised to benefit from the growing US refiner cost and crude input advantage, as well as potentially benefit from integrating Alon. However, we also see its margin capture as continuously challenged vs. its peers and an expensive valuation in anticipation of the guided merger synergies.

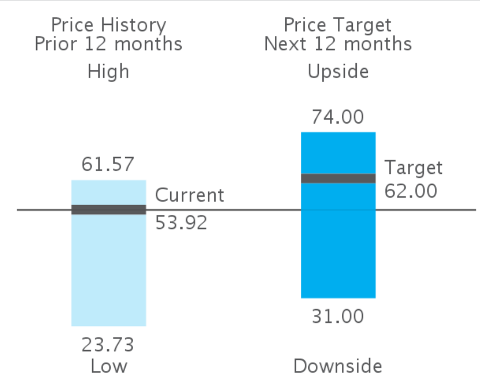
Upside case — **USD 74.00**

Our upside case assumes the company will trade at our high case scenario in our SOTP analysis (higher multiples across refining & non-refining segments).

Downside case — **USD 31.00**

Our downside case assumes the company will trade at our low case scenario in our SOTP analysis (lower multiples across refining & non-refining segments).

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil | **Industry View: POSITIVE**

Exxon Mobil Corp. (XOM)

Stock Rating: UNDERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	43,085	48,962	58,814	66,046	15.3%
EBIDA (adj)	35,274	38,416	45,346	50,912	13.0%
Net income (op basis)	15,042	18,899	25,198	30,338	26.3%
EPS (adj) ($)	3.53	4.45	5.90	7.20	26.8%
Diluted shares (mn)	4,256.0	4,270.7	4,258.1	4,220.5	-0.3%
DPS ($)	3.05	3.18	3.43	3.63	5.9%

Return data					Average
ROACE (%)	N/A	N/A	N/A	N/A	N/A
ROAE (%)	8.5	10.0	12.9	14.8	11.5
ROMC (%)	3.8	5.0	6.8	8.3	6.0

Balance sheet and cash flow ($mn)					CAGR
Shareholders' equity	187,688	192,013	199,603	209,608	3.8%
Net debt/(funds)	39,159	32,098	27,188	22,772	-16.5%
Total debt	42,336.0	37,570.0	33,820.0	32,320.0	-8.6%
Market capital employed	398,308	379,054	374,295	369,795	-2.4%
Cash flow from operations	30,066	37,635	44,819	50,349	18.8%
Capital expenditure	-15,402	-19,000	-25,300	-28,600	N/A
Dividends paid	-13,001	-13,581	-14,605	-15,321	N/A
Free cash flow	14,664	18,635	19,519	21,749	14.0%
Net cash surplus/(deficit)	-480	2,295	1,161	2,915	N/A

Valuation and leverage metrics					Average
P/E (adj) (x)	22.8	18.1	13.6	11.2	16.4
EV/EBITDA (adj) (x)	8.9	7.7	6.3	5.5	7.1
EV/EBIDA (adj) (x)	10.8	9.8	8.2	7.2	9.0
Equity FCF yield (%)	4.3	5.4	5.7	6.4	5.5
Dividend yield (%)	3.8	4.0	4.3	4.5	4.1
Total debt/capital (%)	18.4	16.4	14.5	13.4	15.7
Total debt/equity (%)	22.6	19.6	16.9	15.4	18.6
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	2,282.5	2,248.3	2,324.3	2,405.4
Gas production (000 cf/d)	10,209.0	9,347.3	9,320.3	9,334.6
Total production (000 boe/d)	3,984.0	3,806.1	3,877.6	3,961.2
Realisations ($/boe)	35.5	47.5	53.4	55.1
Downstream				
Refining capacity (000 b/d)	5,111.0	5,111.0	5,111.0	5,111.0
Refining throughput (000 b/d)	4,281.0	4,215.0	4,057.4	4,162.5

Price (27-Aug-2018)	USD 80.40
Price Target	USD 87.00

Why Underweight? We believe Exxon's long-held historical premium to its integrated peers could be called into question, as the company's upstream advantage, particularly over CVX, has deteriorated over the last ~10 years.

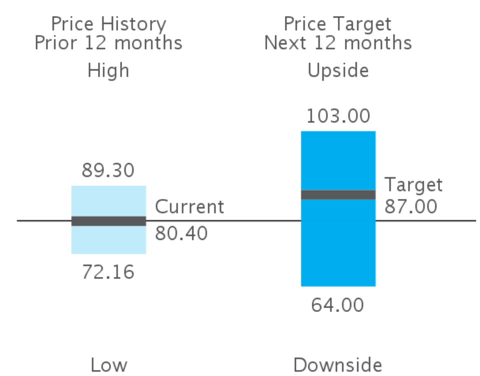
Upside case USD 103.00

Our upside scenario assumes a long-term oil price deck of $80/bl Brent in our NAV plus a potential premium/discount.

Downside case USD 64.00

Our downside scenario assumes a long-term oil price deck of $55/bl Brent in our NAV plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil — **Industry View: POSITIVE**

Hess Corp. (HES)

Stock Rating: UNDERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	1,368	2,528	3,417	4,271	46.2%
EBIDA (adj)	1,782	2,109	2,869	3,673	27.3%
Net income (op basis)	-1,401	-110	537	1,098	N/A
EPS (adj) ($)	-4.61	-0.55	1.65	3.40	N/A
Diluted shares (mn)	314.1	296.4	324.3	324.7	1.1%
DPS ($)	1.16	1.16	1.00	1.00	-4.7%

Return data					Average
ROACE (%)	-5.5	1.5	5.9	9.1	2.8
ROAE (%)	-11.0	-1.1	5.8	11.3	1.3
ROMC (%)	-4.3	1.1	3.3	5.2	1.3

Balance sheet and cash flow ($mn)					CAGR
Shareholders' equity	11,051	9,101	9,313	10,087	-3.0%
Net debt/(funds)	2,130	4,521	5,047	4,523	28.5%
Total debt	6,977.0	6,397.0	6,346.0	6,331.0	-3.2%
Market capital employed	21,887	25,718	27,486	27,497	7.9%
Cash flow from operations	945	1,520	2,529	3,304	51.8%
Capital expenditure	-1,788	-2,579	-2,830	-2,556	N/A
Dividends paid	-363	-342	-324	-325	N/A
Free cash flow	-843	-1,059	-301	748	N/A
Net cash surplus/(deficit)	2,115	-2,971	-576	508	-37.8%

Valuation and leverage metrics					Average
P/E (adj) (x)	N/A	N/A	40.1	19.5	29.8
EV/EBITDA (adj) (x)	15.9	9.6	7.2	5.7	9.6
EV/EBIDA (adj) (x)	12.2	11.5	8.6	6.6	9.7
Equity FCF yield (%)	-4.1	-5.4	-1.4	3.5	-1.8
Dividend yield (%)	1.7	1.7	1.5	1.5	1.6
Total debt/capital (%)	38.7	41.3	40.5	38.6	39.8
Total debt/equity (%)	63.1	70.3	68.1	62.8	66.1
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	219.3	183.3	199.3	237.5
Gas production (000 cf/d)	519.8	541.9	538.8	601.3
Total production (000 boe/d)	305.9	273.6	289.1	337.8
Realisations ($/boe)	37.1	45.4	52.0	51.3
Downstream				
Refining capacity (000 b/d)	N/A	N/A	N/A	N/A
Refining throughput (000 b/d)	0.0	0.0	0.0	0.0

Price (27-Aug-2018)	**USD 66.15**
Price Target	**USD 66.00**

Why Underweight? Despite a highly successful reorganization effort and a large stake in one of the most profitable offshore projects globally (Guyana), we view HES shares as fundamentally overvalued. Notably, our Guyana valuation estimate would need to move significantly higher for Hess to trade in-line with diversified large-cap E&Ps.

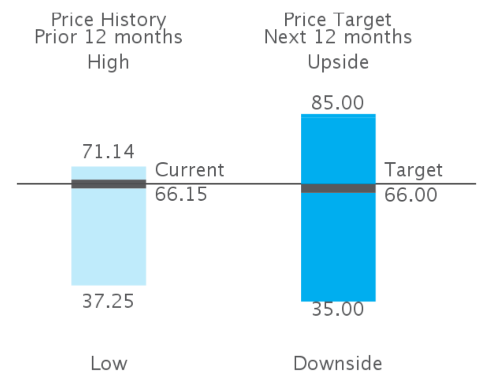
Upside case — **USD 85.00**

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case — **USD 35.00**

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

U.S. Independent Refiners — **Industry View: POSITIVE**

HollyFrontier Corp. (HFC)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	1,137	1,469	2,350	1,838	17.4%
EBIDA (adj)	894	1,237	1,950	1,551	20.2%
Net income (op basis)	408	736	1,441	1,036	36.4%
EPS (adj) ($)	2.30	4.15	8.35	6.10	38.4%
Diluted shares (mn)	177.2	177.0	172.7	169.6	-1.4%
DPS ($)	1.33	1.33	1.38	1.46	3.2%
Return data					**Average**
ROACE (%)	6.5	10.1	17.2	11.8	11.4
ROAE (%)	8.1	13.0	22.6	14.7	14.6
ROMC (%)	6.3	7.6	12.2	9.2	8.8
Balance sheet and cash flow ($mn)					**CAGR**
Shareholders' equity	5,371	5,916	6,808	7,291	10.7%
Net debt/(funds)	1,869	1,515	869	619	-30.8%
Total debt	2,499.0	2,499.0	2,499.0	2,499.0	0.0%
Market capital employed	11,575	15,138	14,832	14,611	8.1%
Cash flow from operations	951	1,297	1,818	1,469	15.6%
Capital expenditure	-272	-333	-400	-425	N/A
Dividends paid	-236	-235	-238	-248	N/A
Free cash flow	679	965	1,418	1,044	15.4%
Net cash surplus/(deficit)	-81	355	646	249	N/A
Valuation and leverage metrics					**Average**
P/E (adj) (x)	32.1	17.8	8.8	12.1	17.7
EV/EBITDA (adj) (x)	13.2	10.0	6.0	7.5	9.2
EV/EBIDA (adj) (x)	16.8	11.9	7.2	8.9	11.2
Equity FCF yield (%)	4.3	6.5	10.1	7.2	7.0
Dividend yield (%)	1.8	1.8	1.9	2.0	1.9
Total debt/capital (%)	31.8	29.7	26.9	25.5	28.5
Total debt/equity (%)	46.5	42.2	36.7	34.3	39.9
Selected operating metrics					**Average**
Refining throughput (000 b/d)	472.0	459.2	498.5	502.2	483.0
Refining mgn realis (per bl) ($)	11	13	18	15	14

Price (27-Aug-2018)	**USD 73.89**
Price Target	**USD 90.00**

Why Overweight? As a pure-play inland refiner, we think HFC is poised to benefit from the widening of North American crude oil differentials as much as - if not more than - any other refiner.

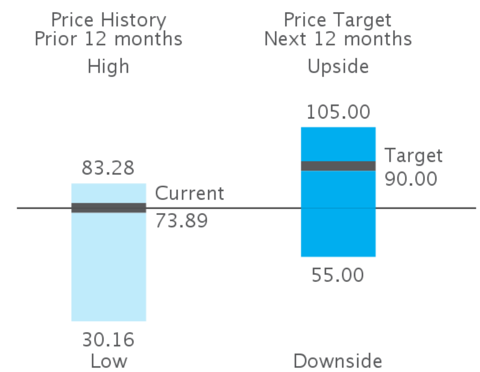
Upside case **USD 105.00**

Our upside case assumes the company will trade at our high case scenario in our SOTP analysis (higher multiples across refining & non-refining segments).

Downside case **USD 55.00**

Our downside case assumes the company will trade at our low case scenario in our SOTP analysis (lower multiples across refining & non-refining segments).

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil — **Industry View: POSITIVE**

Husky Energy, Inc. (HSE.TO)

Stock Rating: OVERWEIGHT

Income statement (CADmn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	3,851	5,247	6,875	7,480	24.8%
EBIDA (adj)	3,540	4,430	5,666	6,159	20.3%
Net income (op basis)	446	1,709	2,831	3,241	93.7%
EPS (adj) (CAD)	0.41	1.65	2.80	3.20	98.7%
Diluted shares (mn)	1,005.3	1,005.6	1,006.6	1,007.6	0.1%
DPS (CAD)	0.03	0.36	0.59	0.66	168.6%

Return data					Average
ROACE (%)	1.9	7.1	11.3	12.2	8.1
ROAE (%)	2.5	9.2	13.9	14.2	9.9
ROMC (%)	2.9	7.7	11.6	13.5	8.9

Balance sheet and cash flow (CADmn)					CAGR
Shareholders' equity	17,967	19,290	21,531	24,111	10.3%
Net debt/(funds)	2,927	1,863	870	-1,524	N/A
Total debt	5,440.0	5,240.0	3,925.0	3,525.0	-13.5%
Market capital employed	23,284	26,770	25,476	25,098	2.5%
Cash flow from operations	3,704	4,352	5,572	6,929	23.2%
Capital expenditure	-2,220	-3,033	-3,714	-3,598	N/A
Dividends paid	-34	-363	-590	-661	N/A
Free cash flow	1,484	1,319	1,857	3,330	30.9%
Net cash surplus/(deficit)	1,194	864	-322	1,995	18.7%

Valuation and leverage metrics					Average
P/E (adj) (x)	53.7	13.3	7.8	6.8	20.4
EV/EBITDA (adj) (x)	6.5	4.6	3.3	2.7	4.3
EV/EBIDA (adj) (x)	7.0	5.4	4.0	3.3	5.0
Equity FCF yield (%)	6.7	6.0	8.4	15.1	9.1
Dividend yield (%)	0.2	1.6	2.7	3.0	1.9
Total debt/capital (%)	23.2	21.4	15.4	12.8	18.2
Total debt/equity (%)	30.3	27.2	18.2	14.6	22.6
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	233.0	227.0	250.5	260.2
Gas production (000 cf/d)	539.1	496.8	520.9	583.5
Total production (000 boe/d)	322.9	309.8	337.3	357.5
Realisations ($/boe)	42.6	47.5	54.7	58.3
Downstream				
Refining capacity (000 b/d)	252.0	252.0	252.0	252.0
Refining throughput (000 b/d)	265.5	247.0	240.6	269.7

Price (27-Aug-2018)	CAD 21.91
Price Target	CAD 26.00

Why Overweight? We view Husky's steep discount to NAV as overpronounced and believe the market has failed to fully appreciate the benefit of its integrated busienss model. While free cash flow will likely lag peers over the next several years, we expect Husky's FCF yield to improve significantly in 2020 and beyond.

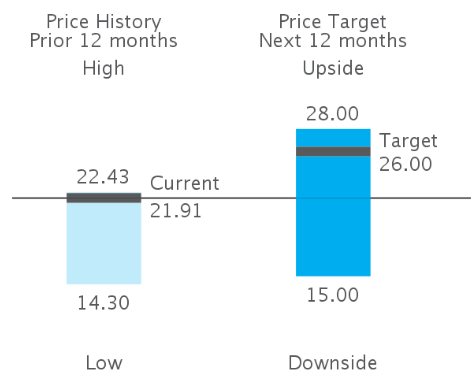
Upside case — **CAD 28.00**

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case — **CAD 15.00**

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil | **Industry View: POSITIVE**

Imperial Oil Ltd. (IMO.TO)

Stock Rating: EQUAL WEIGHT

Income statement (CADmn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	3,770	4,020	5,912	7,439	25.4%
EBIDA (adj)	3,078	3,285	4,678	5,791	23.5%
Net income (op basis)	863	1,735	3,089	4,201	69.5%
EPS (adj) (CAD)	1.02	2.15	3.95	5.60	76.4%
Diluted shares (mn)	846.0	813.6	781.6	752.6	-3.8%
DPS (CAD)	0.62	0.73	0.82	0.90	13.3%

Return data					Average
ROACE (%)	3.0	6.1	10.6	13.8	8.4
ROAE (%)	3.5	7.2	12.7	16.2	9.9
ROMC (%)	2.2	4.6	8.3	11.7	6.7

Balance sheet and cash flow (CADmn)					CAGR
Shareholders' equity	24,435	23,899	24,906	26,988	3.4%
Net debt/(funds)	4,012	4,276	3,832	2,448	-15.2%
Total debt	5,207.0	5,139.0	5,071.0	4,603.0	-4.0%
Market capital employed	38,396	38,617	37,233	35,571	-2.5%
Cash flow from operations	2,763	3,503	4,769	5,984	29.4%
Capital expenditure	-993	-1,489	-2,244	-2,481	N/A
Dividends paid	-524	-594	-641	-677	N/A
Free cash flow	1,770	2,014	2,525	3,503	25.6%
Net cash surplus/(deficit)	804	-332	375	917	4.5%

Valuation and leverage metrics					Average
P/E (adj) (x)	40.7	19.3	10.5	7.4	19.5
EV/EBITDA (adj) (x)	10.2	9.7	6.5	5.0	7.8
EV/EBIDA (adj) (x)	12.5	11.8	8.2	6.4	9.7
Equity FCF yield (%)	5.0	6.0	7.8	11.2	7.5
Dividend yield (%)	1.5	1.8	2.0	2.2	1.8
Total debt/capital (%)	17.6	17.7	16.9	14.6	16.7
Total debt/equity (%)	21.3	21.5	20.4	17.1	20.1
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	315.6	317.9	347.0	343.5
Gas production (000 cf/d)	111.9	116.8	106.0	98.0
Total production (000 boe/d)	334.2	337.4	364.7	359.9
Realisations ($/boe)	42.7	49.0	59.3	65.1
Downstream				
Refining capacity (000 b/d)	423.0	423.0	423.0	423.0
Refining throughput (000 b/d)	383.0	392.8	397.9	389.9

Price (27-Aug-2018)	CAD 41.54
Price Target	CAD 49.00

Why Equal Weight? While asset reliability remains a key long-term concern, we estimate that Imperial shares trade at a sizeable discount to net asset value and believe the company's downstream operations may support the shares in the near-term. We therefore view an EW rating as appropriate.

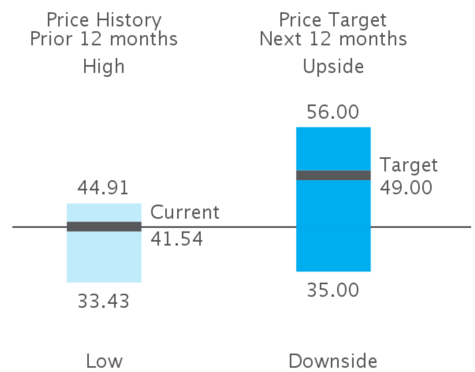
Upside case — CAD 56.00

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case — CAD 35.00

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil | **Industry View: POSITIVE**

Murphy Oil (MUR)

Stock Rating: EQUAL WEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	1,141	1,447	1,867	1,947	19.5%
EBIDA (adj)	1,036	1,260	1,583	1,670	17.2%
Net income (op basis)	-35	190	452	450	N/A
EPS (adj) ($)	-0.21	1.10	2.60	2.55	N/A
Diluted shares (mn)	172.5	174.5	175.0	175.5	0.6%
DPS ($)	1.00	1.00	1.00	1.04	1.3%

Return data					Average
ROACE (%)	1.1	4.1	7.3	7.1	4.9
ROAE (%)	-0.7	4.1	9.2	8.7	5.3
ROMC (%)	1.1	4.0	6.9	6.9	4.7

Balance sheet and cash flow ($mn)					CAGR
Shareholders' equity	4,620	4,747	5,024	5,292	4.6%
Net debt/(funds)	1,950	2,073	1,990	2,057	1.8%
Total debt	2,916.4	2,906.5	2,896.1	2,885.1	-0.4%
Market capital employed	7,281	8,296	8,301	8,305	4.5%
Cash flow from operations	1,130	1,230	1,590	1,671	13.9%
Capital expenditure	-1,010	-1,179	-1,332	-1,556	N/A
Dividends paid	-173	-175	-175	-183	N/A
Free cash flow	120	51	259	116	-1.2%
Net cash surplus/(deficit)	94	-133	73	-78	N/A

Valuation and leverage metrics					Average
P/E (adj) (x)	N/A	28.4	12.0	12.2	17.5
EV/EBITDA (adj) (x)	6.5	5.2	4.0	3.9	4.9
EV/EBIDA (adj) (x)	7.1	6.0	4.7	4.5	5.6
Equity FCF yield (%)	2.2	0.9	4.7	2.1	2.5
Dividend yield (%)	3.2	3.2	3.2	3.3	3.2
Total debt/capital (%)	38.7	38.0	36.6	35.3	37.1
Total debt/equity (%)	63.1	61.2	57.6	54.5	59.1
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	99.6	99.8	109.3	115.2
Gas production (000 cf/d)	383.7	425.0	474.3	565.6
Total production (000 boe/d)	163.5	170.6	188.3	209.5
Realisations ($/boe)	35.2	41.3	44.2	42.0
Downstream				
Refining capacity (000 b/d)	N/A	N/A	N/A	N/A
Refining throughput (000 b/d)	N/A	N/A	N/A	N/A

Price (27-Aug-2018)	USD 31.23
Price Target	USD 36.00

Why Equal Weight? We believe MUR suffers some of the lowest interest among E&P companies. However, the shares are not overly discounted and we expect most key operating metrics to lag peers for the next several years. That said, we think the market is giving Murphy little-to-no credit for any future exploration success and we are therefore EW on the shares.

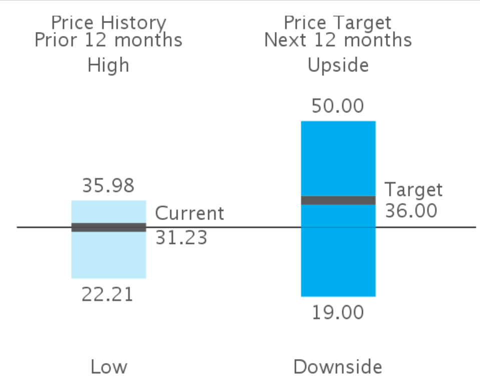
Upside case USD 50.00

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case USD 19.00

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

U.S. Independent Refiners — **Industry View: POSITIVE**

PBF Energy Inc. (PBF)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	700	987	1,447	2,179	46.0%
EBIDA (adj)	523	800	1,135	1,672	47.4%
Net income (op basis)	130	326	658	1,182	108.6%
EPS (adj) ($)	1.14	2.75	5.35	9.95	106.1%
Diluted shares (mn)	113.5	118.9	123.4	119.1	1.6%
DPS ($)	1.16	1.20	1.20	1.60	11.3%
Return data					**Average**
ROACE (%)	4.6	8.4	12.9	19.7	11.4
ROAE (%)	4.8	10.0	16.8	26.4	14.5
ROMC (%)	4.0	6.5	9.9	16.5	9.2
Balance sheet and cash flow ($mn)					**CAGR**
Shareholders' equity	2,903	3,644	4,203	4,748	17.8%
Net debt/(funds)	1,613	1,308	1,025	721	-23.6%
Total debt	2,186.0	2,181.1	2,130.7	2,250.7	1.0%
Market capital employed	6,210	7,832	7,994	7,912	8.4%
Cash flow from operations	686	822	1,024	1,602	32.7%
Capital expenditure	-686	-658	-658	-658	N/A
Dividends paid	-132	-143	-148	-191	N/A
Free cash flow	0	165	366	944	2327.8%
Net cash surplus/(deficit)	-173	300	233	424	N/A
Valuation and leverage metrics					**Average**
P/E (adj) (x)	44.0	18.2	9.3	5.0	19.1
EV/EBITDA (adj) (x)	10.5	7.1	4.7	3.0	6.3
EV/EBIDA (adj) (x)	14.0	8.8	5.9	3.8	8.1
Equity FCF yield (%)	-0.8	1.8	4.8	14.6	5.1
Dividend yield (%)	2.3	2.4	2.4	3.2	2.6
Total debt/capital (%)	43.0	37.4	33.6	32.2	36.5
Total debt/equity (%)	75.3	59.9	50.7	47.4	58.3
Selected operating metrics					**Average**
Refining throughput (000 b/d)	807.5	841.5	834.6	842.2	831.4
Refining mgn realis (per bl) ($)	8	9	10	13	10

Price (27-Aug-2018)	USD 50.00
Price Target	USD 71.00

Why Overweight? Both Chalmette and Torrance have shown notable operational improvements as of late, and while the burden of proof for sustainable strong operations is still squarely on management, PBF also stands to gain disproportionately from the improving US refining fundamental outlook.

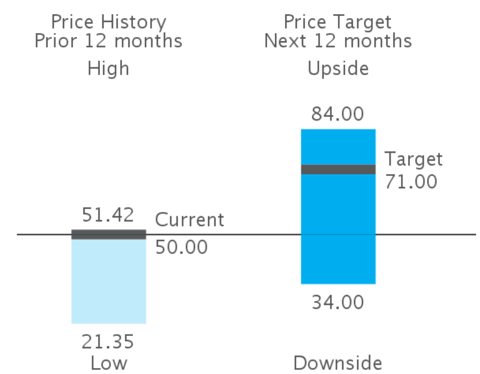
Upside case — **USD 84.00**

Our upside case assumes the company will trade at our high case scenario in our SOTP analysis (higher multiples across refining & non-refining segments).

Downside case — **USD 34.00**

Our downside case assumes the company will trade at our low case scenario in our SOTP analysis (lower multiples across refining & non-refining segments).

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil | **Industry View: POSITIVE**

Petroleo Brasileiro S.A. (PBR)

Stock Rating: OVERWEIGHT

Income statement (BRLmn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	86,947	126,969	172,480	182,575	28.1%
EBIDA (adj)	72,042	99,522	131,374	139,014	24.5%
Net income (op basis)	16,183	45,363	73,865	80,211	70.5%
EPS (adj) ($)	0.78	1.90	3.20	3.45	64.4%
Diluted shares (mn)	6,522.2	6,522.2	6,522.2	6,522.2	0.0%
DPS (BRL)	0.00	0.03	1.69	2.79	N/A
Return data					**Average**
ROACE (%)	5.0	9.6	13.8	14.1	10.6
ROAE (%)	6.3	15.9	21.8	20.1	16.0
ROMC (%)	7.3	14.9	24.6	29.5	19.1
Balance sheet and cash flow (BRLmn)					**CAGR**
Shareholders' equity	263,985	308,238	369,255	429,444	17.6%
Net debt/(funds)	286,989	238,863	189,531	133,984	-22.4%
Total debt	361,483.0	307,208.0	265,476.0	222,895.0	-14.9%
Market capital employed	566,236	517,566	474,964	432,383	-8.6%
Cash flow from operations	86,467	98,839	131,958	138,489	17.0%
Capital expenditure	-42,403	-53,635	-55,873	-51,332	N/A
Dividends paid	0	-195	-11,042	-18,216	N/A
Free cash flow	44,064	45,204	76,086	87,157	25.5%
Net cash surplus/(deficit)	5,386	-6,149	7,600	12,967	34.0%
Valuation and leverage metrics					**Average**
P/E (adj) (x)	13.5	5.5	3.3	3.0	6.3
EV/EBITDA (adj) (x)	6.5	4.1	2.7	2.3	3.9
EV/EBIDA (adj) (x)	7.8	5.2	3.6	3.0	4.9
Equity FCF yield (%)	64.3	66.0	111.1	127.3	92.2
Dividend yield (%)	0.0	0.1	4.0	6.6	2.7
Total debt/capital (%)	57.8	49.9	41.8	34.2	45.9
Total debt/equity (%)	136.9	99.7	71.9	51.9	90.1
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A
Selected operating metrics					
Upstream					
Oil production (000 b/d)	2,218.0	2,166.9	2,489.2	2,655.3	
Gas production (000 cf/d)	3,294.0	3,253.3	3,484.5	3,502.9	
Total production (000 boe/d)	2,767.0	2,709.1	3,069.9	3,239.2	
Realisations ($/boe)	47.1	62.3	69.1	69.6	
Downstream					
Refining capacity (000 b/d)	N/A	N/A	N/A	N/A	
Refining throughput (000 b/d)	1,825.0	1,834.0	1,850.0	1,899.9	

Price (27-Aug-2018)	USD 10.50
Price Target	USD 15.00

Why Overweight? We believe Petrobras' highly inexpensive valuation in terms of NAV, EV/After-Tax Cash Flow and FCF yield more than outweighs the underlying political risk that comes with investing in a state-run oil enterprise.

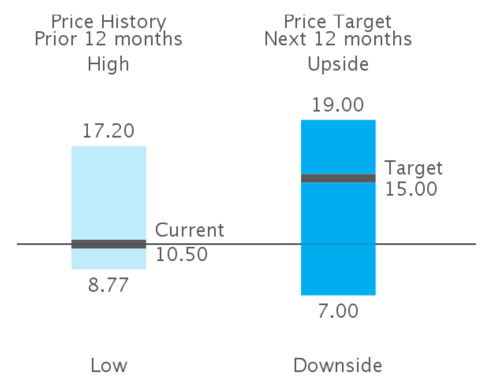
Upside case USD 19.00

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case USD 7.00

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil — **Industry View: POSITIVE**

Petroleo Brasileiro S.A. (PBRA)

Stock Rating: OVERWEIGHT

Income statement (BRLmn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	86,947	126,969	172,480	182,575	28.1%
EBIDA (adj)	72,042	99,522	131,374	139,014	24.5%
Net income (op basis)	16,183	45,363	73,865	80,211	70.5%
EPS (adj) ($)	0.78	1.90	3.20	3.45	64.4%
Diluted shares (mn)	6,522.2	6,522.2	6,522.2	6,522.2	0.0%
DPS	N/A	N/A	N/A	N/A	N/A

Return data					Average
ROACE (%)	5.0	9.6	13.8	14.1	10.6
ROAE (%)	6.3	15.9	21.8	20.1	16.0
ROMC (%)	7.3	14.9	24.6	29.5	19.1

Balance sheet and cash flow (BRLmn)					CAGR
Shareholders' equity	263,985	308,238	369,255	429,444	17.6%
Net debt/(funds)	286,989	238,863	189,531	133,984	-22.4%
Total debt	361,483.0	307,208.0	265,476.0	222,895.0	-14.9%
Market capital employed	566,236	517,566	474,964	432,383	-8.6%
Cash flow from operations	86,467	98,839	131,958	138,489	17.0%
Capital expenditure	-42,403	-53,635	-55,873	-51,332	N/A
Dividends paid	0	-195	-11,042	-18,216	N/A
Free cash flow	44,064	45,204	76,086	87,157	25.5%
Net cash surplus/(deficit)	5,386	-6,149	7,600	12,967	34.0%

Valuation and leverage metrics					Average
P/E (adj) (x)	11.8	4.8	2.9	2.7	5.5
EV/EBITDA (adj) (x)	6.1	3.8	2.5	2.1	3.6
EV/EBIDA (adj) (x)	7.3	4.8	3.3	2.7	4.5
Equity FCF yield (%)	73.8	75.7	127.5	146.0	105.8
Dividend yield (%)	N/A	N/A	N/A	N/A	N/A
Total debt/capital (%)	57.8	49.9	41.8	34.2	45.9
Total debt/equity (%)	136.9	99.7	71.9	51.9	90.1
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	2,218.0	2,166.9	2,489.2	2,655.3
Gas production (000 cf/d)	3,294.0	3,253.3	3,484.5	3,502.9
Total production (000 boe/d)	2,767.0	2,709.1	3,069.9	3,239.2
Realisations ($/boe)	47.1	62.3	69.1	69.6
Downstream				
Refining capacity (000 b/d)	N/A	N/A	N/A	N/A
Refining throughput (000 b/d)	1,825.0	1,834.0	1,850.0	1,899.9

Price (27-Aug-2018)	USD 9.15
Price Target	USD 15.00

Why Overweight? We believe Petrobras' highly inexpensive valuation in terms of NAV, EV/After-Tax Cash Flow and FCF yield more than outweighs the underlying political risk that comes with investing in a state-run oil enterprise.

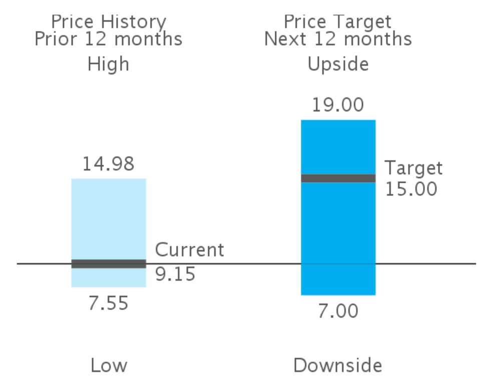
Upside case — USD 19.00

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case — USD 7.00

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

U.S. Independent Refiners | **Industry View: POSITIVE**

Phillips 66 (PSX)

Stock Rating: UNDERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	5,162	6,981	8,366	10,125	25.2%
EBIDA (adj)	3,852	5,592	6,541	7,823	26.6%
Net income (op basis)	2,269	3,864	4,701	5,946	37.9%
EPS (adj) ($)	4.38	8.15	10.40	13.45	45.4%
Diluted shares (mn)	519	475	452	442	-5.2%
DPS ($)	2.69	3.10	3.44	3.79	12.1%

Return data					Average
ROACE (%)	7.2	11.7	14.3	17.0	12.5
ROAE (%)	7.2	11.7	14.3	17.0	12.5
ROMC (%)	4.3	6.7	8.0	10.3	7.3

Balance sheet and cash flow ($mn)					CAGR
Shareholders' equity	27,428	25,620	26,765	29,036	1.9%
Net debt/(funds)	6,991	8,760	7,906	6,940	-0.2%
Total debt	10,110	9,885	9,885	9,610	-1.7%
Market capital employed	62,557	65,420	62,772	61,317	-0.7%
Cash flow from operations	3,648	5,578	6,292	7,058	24.6%
Capital expenditure	-1,832	-2,300	-2,500	-3,000	N/A
Dividends paid	-1,395	-1,471	-1,555	-1,675	N/A
Free cash flow	1,704	3,132	3,610	3,840	31.1%
Net cash surplus/(deficit)	408	-1,994	855	690	19.2%

Valuation and leverage metrics					Average
P/E (adj) (x)	27.4	14.7	11.5	8.9	15.6
EV/EBITDA (adj) (x)	12.3	9.4	7.7	6.3	8.9
EV/EBIDA (adj) (x)	16.5	11.7	9.9	8.1	11.5
Equity FCF yield (%)	2.7	5.5	6.7	7.2	5.5
Dividend yield (%)	2.2	2.6	2.9	3.2	2.7
Total debt/capital (%)	26.9	27.8	27.0	24.9	26.7
Total debt/equity (%)	36.9	38.6	36.9	33.1	36.4

Selected operating metrics					Average
Refining throughput (000 b/d)	1,929.0	1,909.4	1,918.9	1,928.5	1,921.4
Refining mgn realis (per bl) ($)	9	10	13	15	12

Price (27-Aug-2018)	USD 120.03
Price Target	USD 133.00

Why Underweight? We think the shares look expensive and see limited valuation upside vs. large cap peers. Also, given we believe PSX's non-refining segments will likely suffer somewhat from margin degradation going forward, due to its diversification PSX stands to gain less relative to peers from the improving US refining fundamental outlook.

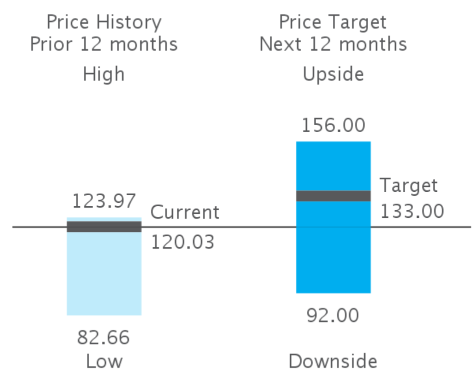
Upside case USD 156.00

Our upside case assumes the company will trade at our high case scenario in our SOTP analysis (higher multiples across refining & non-refining segments).

Downside case USD 92.00

Our downside case assumes the company will trade at our low case scenario in our SOTP analysis (lower multiples across refining & non-refining segments).

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Americas Integrated Oil | **Industry View: POSITIVE**

Suncor Energy (SU.TO)

Stock Rating: OVERWEIGHT

Income statement (CADmn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	10,387	14,252	17,918	19,258	22.9%
EBIDA (adj)	8,952	11,821	14,610	15,659	20.5%
Net income (op basis)	3,189	5,504	8,286	9,277	42.8%
EPS (adj) (CAD)	1.92	3.35	5.20	6.10	47.1%
Diluted shares (mn)	1,665.0	1,635.4	1,599.7	1,524.8	-2.9%
DPS (CAD)	1.28	1.40	1.56	1.72	10.5%

Return data					Average
ROACE (%)	5.6	9.9	14.2	15.7	11.4
ROAE (%)	7.1	12.0	17.4	18.7	13.8
ROMC (%)	3.8	6.2	8.8	10.3	7.3

Balance sheet and cash flow (CADmn)					CAGR
Shareholders' equity	45,383	46,294	48,885	50,539	3.7%
Net debt/(funds)	12,907	11,830	8,685	6,776	-19.3%
Total debt	15,579.0	15,117.0	14,804.0	14,765.0	-1.8%
Market capital employed	92,419	102,286	100,068	96,036	1.3%
Cash flow from operations	8,966	11,658	14,899	16,099	21.5%
Capital expenditure	-6,611	-5,520	-6,059	-6,567	N/A
Dividends paid	-2,124	-2,290	-2,496	-2,623	N/A
Free cash flow	2,355	6,138	8,840	9,532	59.4%
Net cash surplus/(deficit)	-344	615	2,832	1,870	N/A

Valuation and leverage metrics					Average
P/E (adj) (x)	28.3	16.2	10.4	8.9	15.9
EV/EBITDA (adj) (x)	9.8	7.1	5.4	5.0	6.8
EV/EBIDA (adj) (x)	11.4	8.5	6.7	6.1	8.2
Equity FCF yield (%)	2.6	6.9	10.2	11.5	7.8
Dividend yield (%)	2.4	2.6	2.9	3.2	2.7
Total debt/capital (%)	25.6	24.6	23.2	22.6	24.0
Total debt/equity (%)	34.3	32.7	30.3	29.2	31.6
NAV per share	N/A	N/A	N/A	N/A	N/A
EV/boe	N/A	N/A	N/A	N/A	N/A

Selected operating metrics				
Upstream				
Oil production (000 b/d)	683.7	662.7	711.7	738.1
Gas production (000 cf/d)	10.7	8.4	8.0	7.6
Total production (000 boe/d)	685.5	664.1	713.0	739.4
Realisations ($/boe)	68.1	92.1	101.6	101.0
Downstream				
Refining capacity (000 b/d)	462.0	462.0	462.0	462.0
Refining throughput (000 b/d)	441.2	426.3	438.9	438.9

Price (27-Aug-2018)	CAD 54.16
Price Target	CAD 68.00

Why Overweight? Despite recent execution issues, we remain constructive on Suncor given maangement's strong capital allocation and operating track record, the asset's low geological/political risk profile and the company's high FCF yield and oil-price leverage relative to peers.

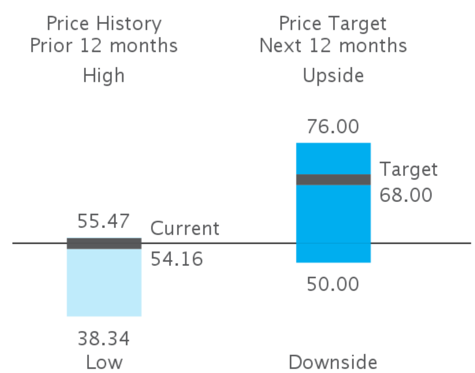
Upside case — **CAD 76.00**

Our upside case assumes a long-term Brent price deck of $80/bl in our NAV analysis plus a potential premium/discount.

Downside case — **CAD 50.00**

Our downside case assumes a long-term Brent price deck of $55/bl in our NAV analysis plus a potential premium/discount.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

U.S. Independent Refiners | **Industry View: POSITIVE**

Valero Energy (VLO)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
EBITDA (adj)	5,533	6,009	8,327	10,854	25.2%
EBIDA (adj)	4,493	5,069	6,920	8,904	25.6%
Net income (op basis)	2,294	2,875	4,715	6,688	42.9%
EPS (adj) ($)	4.96	6.40	11.00	16.25	48.5%
Diluted shares (mn)	444.0	429.3	417.4	402.7	-3.2%
DPS ($)	2.80	3.20	3.40	3.60	8.8%
Return data					**Average**
ROACE (%)	8.8	10.3	16.0	21.2	14.1
ROAE (%)	10.9	13.0	20.5	26.8	17.8
ROMC (%)	5.8	6.1	9.4	13.5	8.7
Balance sheet and cash flow ($mn)					**CAGR**
Shareholders' equity	21,991	22,101	23,796	26,034	5.8%
Net debt/(funds)	3,022	3,769	2,724	973	-31.5%
Total debt	8,872	8,592	8,250	7,556	-5.2%
Market capital employed	49,680	54,213	52,610	50,360	0.5%
Cash flow from operations	5,482	4,723	6,793	8,897	17.5%
Capital expenditure	-1,876	-2,700	-2,700	-2,700	N/A
Dividends paid	-1,242	-1,374	-1,419	-1,450	N/A
Free cash flow	3,606	2,023	4,093	6,197	19.8%
Net cash surplus/(deficit)	1,034	-1,027	703	1,057	0.7%
Valuation and leverage metrics					**Average**
P/E (adj) (x)	24.4	18.9	11.0	7.5	15.4
EV/EBITDA (adj) (x)	9.8	9.2	6.5	4.8	7.6
EV/EBIDA (adj) (x)	12.1	10.9	7.8	5.9	9.2
Equity FCF yield (%)	6.6	3.8	7.9	12.5	7.7
Dividend yield (%)	2.3	2.6	2.8	3.0	2.7
Total debt/capital (%)	28.7	28.0	25.7	22.5	26.2
Total debt/equity (%)	40.3	38.9	34.7	29.0	35.7
Selected operating metrics					**Average**
Refining throughput (000 b/d)	2,940.0	2,931.0	2,887.7	2,922.9	2,920.4
Refining mgn realis (per bl) ($)	9	10	12	14	11

Price (27-Aug-2018)	**USD 121.21**
Price Target	**USD 165.00**

Why Overweight? As the largest pure-play US refiner, we believe VLO is amongst the best positioned to benefit from the improving US refining fundamental outlook.

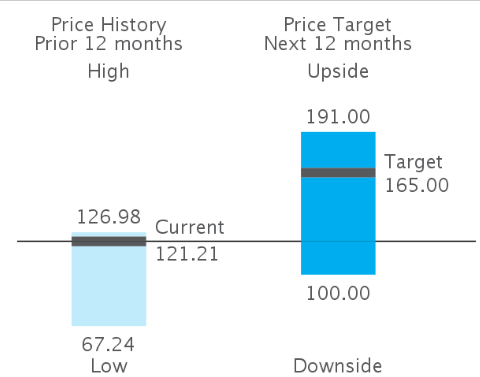
Upside case — **USD 191.00**

Our upside case assumes the company will trade at our high case scenario in our SOTP analysis (higher multiples across refining & non-refining segments).

Downside case — **USD 100.00**

Our downside case assumes the company will trade at our low case scenario in our SOTP analysis (lower multiples across refining & non-refining segments).

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining — **Industry View: POSITIVE**

BP (BP.L)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
Operating profit (adj)	11,833	21,919	27,151	28,261	33.7%
EBITDA (adj)	27,417	37,611	43,484	44,691	17.7%
EBIDA (adj)	21,514	28,818	32,498	33,753	16.2%
Net income (adj)	6,019	12,025	16,158	17,041	41.5%
EPS (adj) (£)	0.24	0.44	0.59	0.62	37.9%
EPS (adj, alt currency) ($)	1.82	3.61	4.86	5.13	41.1%
Diluted shares (mn)	19,800	19,993	19,945	19,945	0.2%
DPS (£)	0.31	0.30	0.30	0.31	-0.4%

Return data					Average
ROACE (%)	5.2	9.4	12.1	12.6	9.8
ROAE (%)	6.2	12.0	15.4	15.5	12.3

Cash flow and balance sheet ($mn)					CAGR
Cash flow from operations	18,931	23,813	29,802	31,180	18.1%
Capital expenditure	-16,501	-15,208	-16,500	-16,500	N/A
Dividends paid	-6,294	-6,947	-6,683	-6,815	N/A
Net cash from operations	-3,864	1,658	6,619	7,865	N/A
Free cash flow	2,430	8,605	13,302	14,680	82.1%
Net cash surplus/(deficit)	2,102	833	3,916	4,735	31.1%
Shareholders' equity	98,470	102,481	107,372	112,977	4.7%
Minorities	1,934	1,934	1,934	1,934	0.0%
Net debt/(funds)	37,644	36,811	32,896	28,161	-9.2%
Total debt	63,230	62,397	58,482	53,747	-5.3%
Capital employed	138,048	141,226	142,202	143,072	1.2%

Valuation and leverage metrics					Average
P/E (adj) (x)	23.9	12.9	9.6	9.1	13.9
EV/EBITDA (adj) (x)	6.7	4.9	4.1	3.9	4.9
EV/EBIDA (adj) (x)	8.6	6.4	5.5	5.2	6.4
Equity FCF yield (%)	1.7	5.9	9.2	10.1	6.7
P/BV (x)	1.4	1.4	1.3	1.3	1.4
Dividend yield (%)	5.5	5.2	5.3	5.4	5.4
Net debt/capital (%)	27.3	26.1	23.1	19.7	24.0
Net debt/equity (%)	37.5	35.3	30.1	24.5	31.8
EV/1P reserves ($/boe)	13.1	N/A	N/A	N/A	13.1

Selected operating metrics				
Upstream				
Oil production (000 b/d)	2,260	2,188	2,260	2,261
Gas production (000 cf/d)	7,740	8,740	9,184	9,796
Total production (000 boe/d)	3,595	3,695	3,843	3,950
Net income ($/boe) ($)	5.1	9.0	11.8	11.9
Reserves (mn boe)	18,180	N/A	N/A	N/A
Reserve life (years)	13.7	N/A	N/A	N/A
F&D cost ($/bl)	8.8	N/A	N/A	N/A
RRR (%)	143.3	N/A	N/A	N/A
Downstream				
Refining capacity (000 b/d)	1,892	1,892	1,892	1,892
Refining throughput (000 b/d)	1,702	1,699	1,689	1,689

Price (24-Aug-2018)	GBP 5.64
Price Target	GBP 7.05

Why Overweight? We expect it to become increasingly evident over the coming 12 months that BP can deliver a material and sustained improvement in free cash flow. This will be helped in part by continued production growth with five new upstream projects on schedule to start up this year but also a sustained control of operating costs.

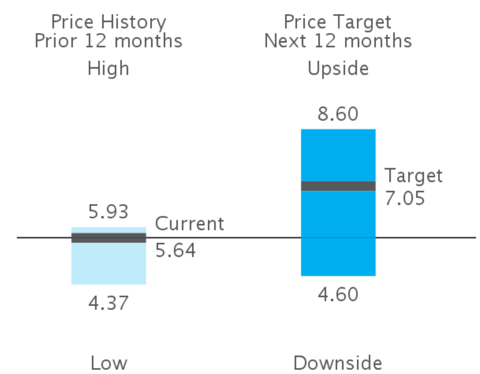
Upside case	GBP 8.60

Our upside case assumes oil prices recover to $90/bl on average long term.

Downside case	GBP 4.60

Our downside case assumes oil prices stay at $40/bl on average long term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining — **Industry View: POSITIVE**

Eni (ENI.MI)

Stock Rating: EQUAL WEIGHT

Income statement (€mn)	2017A	2018E	2019E	2020E	CAGR
Operating profit (adj)	5,795	10,471	13,323	14,165	34.7%
EBITDA (adj)	13,279	17,971	21,437	22,499	19.2%
EBIDA (adj)	10,869	11,912	13,616	14,239	9.4%
Net income (adj)	2,411	3,781	5,169	5,572	32.2%
EPS (adj) (€)	0.67	1.05	1.44	1.55	32.2%
EPS (adj, alt currency) ($)	1.52	2.53	3.45	3.71	34.5%
Diluted shares (mn)	3,601	3,601	3,601	3,601	0.0%
DPS (€)	0.80	0.84	0.85	0.87	2.8%

Return data					Average
ROACE (%)	4.0	7.0	9.6	10.4	7.7
ROAE (%)	4.8	7.8	10.3	10.7	8.4

Cash flow and balance sheet (€mn)					CAGR
Cash flow from operations	10,121	11,347	13,382	14,005	11.4%
Capital expenditure	-7,624	-7,594	-8,000	-8,000	N/A
Dividends paid	-2,880	-2,954	-3,032	-3,106	N/A
Net cash from operations	-383	799	2,351	2,899	N/A
Free cash flow	2,497	3,753	5,382	6,005	34.0%
Net cash surplus/(deficit)	1,689	3,504	2,351	2,899	19.7%
Shareholders' equity	48,096	48,924	51,061	53,527	3.6%
Minorities	49	49	49	49	0.0%
Net debt/(funds)	11,125	7,621	5,270	2,371	-40.3%
Total debt	24,707	21,203	18,852	15,953	-13.6%
Capital employed	59,270	56,594	56,380	55,947	-1.9%

Valuation and leverage metrics					Average
P/E (adj) (x)	24.5	15.6	11.4	10.6	15.5
EV/EBITDA (adj) (x)	5.3	3.7	3.0	2.7	3.7
EV/EBIDA (adj) (x)	6.5	5.6	4.7	4.3	5.3
Equity FCF yield (%)	4.2	6.3	9.1	10.2	7.5
P/BV (x)	1.2	1.2	1.2	1.1	1.2
Dividend yield (%)	4.9	5.1	5.2	5.3	5.1
Net debt/capital (%)	18.8	13.5	9.3	4.2	11.5
Net debt/equity (%)	23.1	15.6	10.3	4.4	13.4
EV/1P reserves ($/boe)	0.0	N/A	N/A	N/A	0.0

Selected operating metrics				
Upstream				
Oil production (000 b/d)	851	894	928	944
Gas production (000 cf/d)	5,203	5,439	5,829	6,272
Total production (000 boe/d)	1,815	1,890	1,995	2,093
Net income ($/boe)	N/A	N/A	N/A	N/A
Reserves (mn boe)	6,667	N/A	N/A	N/A
Reserve life (years)	10.6	N/A	N/A	N/A
F&D cost ($/bl)	14.9	N/A	N/A	N/A
RRR (%)	103	N/A	N/A	N/A
Downstream				
Refining capacity (000 b/d)	548	548	548	548
Refining throughput (000 b/d)	451	448	421	421

Price (27-Aug-2018)	EUR 16.43
Price Target	**EUR 19.00**

Why Equal Weight? The higher oil price benefits Eni more than most and comes at a time of what appears a better operating performance than we had expected, driving up free cash flow. Increased returns to shareholders in the, continued production growth, firm cost savings targets and a value focused new energies strategy are all welcome elements of the outlook.

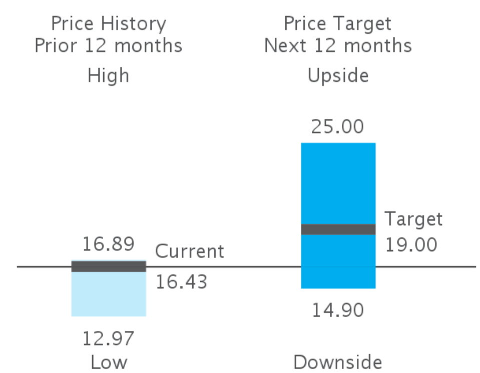
Upside case — **EUR 25.00**

Our upside case assumes oil prices recover to $90/bl on average long term.

Downside case — **EUR 14.90**

Our downside case assumes oil prices stay at $40/bl on average long term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining — **Industry View: POSITIVE**

Equinor (EQNR.OL)

Stock Rating: UNDERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
Operating profit (adj)	12,638	18,337	22,826	24,796	25.2%
EBITDA (adj)	22,337	28,034	33,455	35,554	16.8%
EBIDA (adj)	16,799	19,763	19,723	17,899	2.1%
Net income (adj)	4,276	6,051	7,154	7,697	21.6%
EPS (adj) ($)	1.31	1.80	2.15	2.31	20.8%
EPS (adj, alt currency) (NOK)	10.84	14.36	16.54	17.80	18.0%
Diluted shares (mn)	3,262.8	3,357.1	3,330.0	3,330.0	0.7%
DPS ($)	0.89	0.93	0.95	0.97	2.8%
Return data					**Average**
ROACE (%)	8.3	12.1	14.9	15.7	12.7
ROAE (%)	11.4	14.6	16.1	16.1	14.6
Cash flow and balance sheet ($mn)					**CAGR**
Cash flow from operations	14,364	19,445	19,398	17,574	7.0%
Capital expenditure	-9,321	-10,238	-11,500	-11,500	N/A
Dividends paid	-1,491	-2,675	-3,141	-3,190	N/A
Net cash from operations	3,552	6,532	4,756	2,884	-6.7%
Free cash flow	5,043	9,207	7,898	6,074	6.4%
Net cash surplus/(deficit)	-1,136	7,943	3,456	1,184	N/A
Shareholders' equity	39,861	42,818	46,314	49,289	7.3%
Minorities	24	24	24	24	0.0%
Net debt/(funds)	15,436	7,493	4,036	2,852	-43.0%
Total debt	28,274	20,331	16,874	15,690	-17.8%
Capital employed	55,321	50,335	50,374	52,165	-1.9%
Valuation and leverage metrics					**Average**
P/E (adj) (x)	20.0	14.5	12.2	11.3	14.5
EV/EBITDA (adj) (x)	4.6	3.4	2.7	2.6	3.3
EV/EBIDA (adj) (x)	6.2	4.8	4.7	5.1	5.2
Equity FCF yield (%)	5.9	10.5	9.1	7.0	8.1
P/BV (x)	2.1	2.1	1.9	1.8	2.0
Dividend yield (%)	3.4	3.6	3.6	3.7	3.6
Net debt/capital (%)	27.9	14.9	8.0	5.5	14.1
Net debt/equity (%)	38.7	17.5	8.7	5.8	17.7
EV/1P reserves ($/boe)	4.6	N/A	N/A	N/A	4.6
Selected operating metrics					
Upstream					
Oil production (000 b/d)	1,009.0	1,021.8	1,125.0	1,150.0	
Gas production (000 cf/d)	5,476.5	5,654.5	5,650.0	5,700.0	
Total production (000 boe/d)	1,921.8	1,964.2	2,066.7	2,100.0	
Net income ($/boe) ($)	5	8	9	10	
Reserves (mn boe)	5,193.2	N/A	N/A	N/A	
Reserve life (years)	7.6	N/A	N/A	N/A	
F&D cost ($/bl)	9.2	N/A	N/A	N/A	
RRR (%)	149.4	N/A	N/A	N/A	
Downstream					
Refining capacity (000 b/d)	0.0	0.0	0.0	0.0	
Refining throughput (000 b/d)	0.0	0.0	0.0	0.0	

Price (27-Aug-2018)	NOK 217.90
Price Target	NOK 240.00

Why Underweight? Operationally we see Equinor as a compelling stock. It is also one of the most geared to a rally in oil prices. Yet this already appears to be reflected in the share price. While the emerging scope for share buybacks is encouraging, this is more likely a post-2018 event given the firm's near-term focus on de-leveraging.

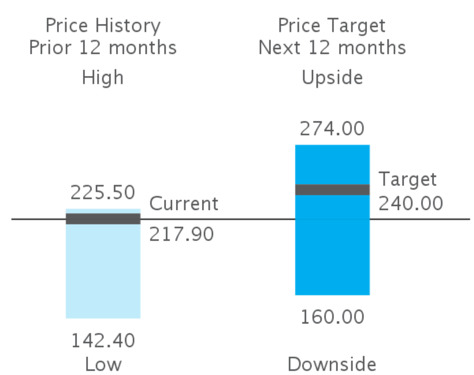
Upside case — **NOK 274.00**

Our upside case assumes oil prices recover to $90/bl on average long term.

Downside case — **NOK 160.00**

Our downside case assumes oil prices stay at $40/bl on average long term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining | **Industry View: POSITIVE**

Galp Energia (GALP.LS)

Stock Rating: UNDERWEIGHT

Income statement (€mn)	2017A	2018E	2019E	2020E	CAGR
Operating profit (adj)	1,058	1,596	1,931	2,140	26.5%
EBITDA (adj)	1,771	2,324	2,812	3,097	20.5%
EBIDA (adj)	1,558	1,942	2,144	2,324	14.3%
Net income (adj)	602	775	775	857	12.5%
EPS (adj) (€)	0.73	0.94	0.93	1.03	12.5%
EPS (adj, alt currency) ($)	0.83	1.13	1.12	1.24	14.5%
Diluted shares (mn)	829	829	829	829	0.0%
DPS (€)	0.55	0.60	0.65	0.70	8.3%

Return data					Average
ROACE (%)	9.0	12.3	13.0	14.8	12.3
ROAE (%)	13.0	15.7	14.9	15.5	14.8

Cash flow and balance sheet (€mn)					CAGR
Cash flow from operations	1,490	1,779	2,117	2,301	15.6%
Capital expenditure	-948	-920	-1,100	-1,100	N/A
Dividends paid	-423	-456	-497	-537	N/A
Net cash from operations	270	399	520	664	35.0%
Free cash flow	693	855	1,017	1,201	20.1%
Net cash surplus/(deficit)	-15	291	520	664	N/A
Shareholders' equity	4,617	4,936	5,214	5,534	6.2%
Minorities	1,461	1,461	1,461	1,461	0.0%
Net debt/(funds)	1,885	1,594	1,074	410	-39.8%
Total debt	3,083	2,792	2,272	1,608	-19.5%
Capital employed	7,963	7,992	7,750	7,406	-2.4%

Valuation and leverage metrics					Average
P/E (adj) (x)	24.6	19.1	19.1	17.3	20.0
EV/EBITDA (adj) (x)	10.3	7.7	6.2	5.4	7.4
EV/EBIDA (adj) (x)	11.7	9.2	8.1	7.2	9.0
Equity FCF yield (%)	4.7	5.8	6.9	8.1	6.4
P/BV (x)	3.2	3.0	2.8	2.7	2.9
Dividend yield (%)	3.1	3.4	3.6	3.9	3.5
Net debt/capital (%)	23.7	19.9	13.9	5.5	15.8
Net debt/equity (%)	31.0	24.9	16.1	5.9	19.5
EV/1P reserves ($/boe)	72	N/A	N/A	N/A	72

Selected operating metrics				
Upstream				
Oil production (000 b/d)	82.2	95.3	117.0	130.0
Gas production (000 cf/d)	55.5	71.1	85.0	100.0
Total production (000 boe/d)	91.4	107.1	131.2	146.7
Net income ($/boe) (€)	7	14	16	16
Reserves (mn boe)	382.8	N/A	N/A	N/A
Reserve life (years)	11.5	N/A	N/A	N/A
F&D cost ($/bl)	5.6	N/A	N/A	N/A
RRR (%)	425.4	N/A	N/A	N/A
Downstream				
Refining capacity (000 b/d)	306	306	306	306
Refining throughput (000 b/d)	284	270	276	276

Price (27-Aug-2018)	EUR 17.87
Price Target	EUR 18.00

Why Underweight? We think the Galp equity story centred on growing upstream production is now well understood. The shares trade at a large premium to peers and we think the risks are now skewed to the downside with uncertainties associated with the unitisation process in Brazil and the timing of a production start-up in Mozambique.

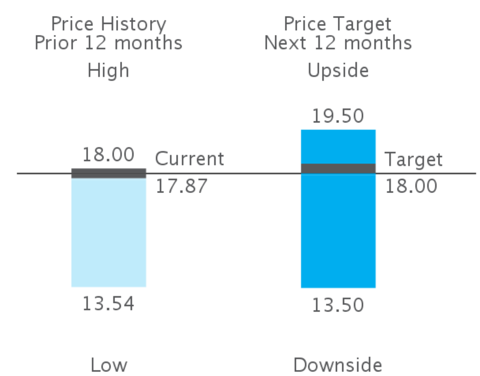
Upside case EUR 19.50

Our upside case assumes oil prices gradually rise to $90/bl by 2020.

Downside case EUR 13.50

Our downside case assumes oil prices stay at $40/bl on average long term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining — **Industry View: POSITIVE**

OMV (OMVV.VI)

Stock Rating: EQUAL WEIGHT

Income statement (€mn)	2017A	2018E	2019E	2020E	CAGR
Operating profit (adj)	2,959	3,464	3,929	4,125	11.7%
EBITDA (adj)	4,720	5,366	5,955	6,128	9.1%
EBIDA (adj)	4,289	4,732	5,294	5,392	7.9%
Net income (adj)	1,622	1,590	1,800	2,018	7.6%
EPS (adj) (€)	4.96	4.86	5.50	6.17	7.6%
EPS (adj, alt currency) ($)	5.64	5.85	6.60	7.40	9.5%
Diluted shares (mn)	327.3	327.3	327.3	327.3	0.0%
DPS (€)	1.50	1.60	1.70	1.80	6.3%

Return data					Average
ROACE (%)	13.0	12.7	14.9	16.5	14.3
ROAE (%)	18.1	17.2	19.1	19.5	18.4

Cash flow and balance sheet (€mn)					CAGR
Cash flow from operations	3,448	4,564	4,361	4,427	8.7%
Capital expenditure	-1,586	-1,902	-2,100	-2,200	N/A
Dividends paid	-668	-822	-867	-914	N/A
Net cash from operations	1,194	1,839	1,394	1,313	3.2%
Free cash flow	1,862	2,662	2,261	2,227	6.1%
Net cash surplus/(deficit)	1,666	-304	1,319	1,263	-8.8%
Shareholders' equity	8,985	9,907	10,884	12,035	10.2%
Minorities	3,118	3,118	3,118	3,118	0.0%
Net debt/(funds)	4,236	4,540	3,221	1,958	-22.7%
Total debt	8,208	7,924	7,924	7,924	-1.2%
Capital employed	16,339	17,565	17,223	17,111	1.6%

Valuation and leverage metrics					Average
P/E (adj) (x)	9.2	9.4	8.3	7.4	8.6
EV/EBITDA (adj) (x)	4.7	4.2	3.6	3.3	4.0
EV/EBIDA (adj) (x)	5.2	4.8	4.0	3.7	4.4
Equity FCF yield (%)	12.4	17.7	15.1	14.8	15.0
P/BV (x)	1.2	1.2	1.1	1.0	1.1
Dividend yield (%)	3.3	3.5	3.7	3.9	3.6
Net debt/capital (%)	35.0	34.9	23.0	12.9	26.4
Net debt/equity (%)	35.0	34.9	23.0	12.9	26.4
EV/1P reserves ($/boe)	8.7	N/A	N/A	N/A	8.7

Selected operating metrics				
Upstream				
Oil production (000 b/d)	179.7	175.7	183.4	183.9
Gas production (000 cf/d)	953.2	1,439.0	1,669.9	1,717.2
Total production (000 boe/d)	338.6	415.5	461.7	470.1
Net income ($/boe) (€)	5	12	15	15
Reserves (mn boe)	1,123.8	N/A	N/A	N/A
Reserve life (years)	9.1	N/A	N/A	N/A
F&D cost ($/bl)	18.7	N/A	N/A	N/A
RRR (%)	66.1	N/A	N/A	N/A
Downstream				
Refining capacity (000 b/d)	359.5	359.5	359.5	359.5
Refining throughput (000 b/d)	378.1	383.2	345.4	352.6

Price (27-Aug-2018)	EUR 45.82
Price Target	EUR 62.00

Why Equal Weight? We are less differentiated versus consensus on OMV than before and although its returns and FCF profile remains advantaged, the rate of improvement from here is now less than peers. OMV does screen as cheap but this can be explained by a higher risk profile than peers and we see fewer catalysts than before.

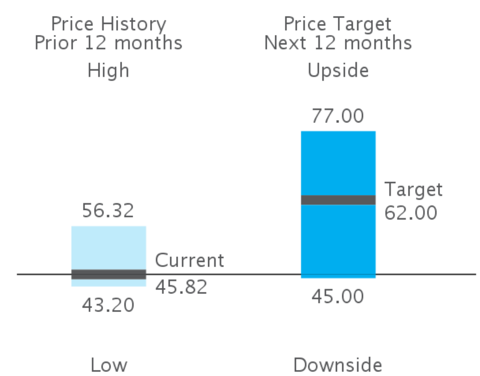
Upside case — **EUR 77.00**

Our upside case assumes oil prices recover to $90/bl on average long term.

Downside case — **EUR 45.00**

Our downside case assumes oil prices stay at $40/bl on average long term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining — **Industry View: POSITIVE**

Repsol (REP.MC)

Stock Rating: EQUAL WEIGHT

Income statement (€mn)	2017A	2018E	2019E	2020E	CAGR
Operating profit (adj)	4,104	5,355	6,540	7,014	19.6%
EBITDA (adj)	6,503	7,617	9,021	9,557	13.7%
EBIDA (adj)	5,961	5,948	6,925	7,293	7.0%
Net income (adj)	2,230	2,588	3,264	3,620	17.5%
EPS (adj) (€)	1.45	1.68	2.12	2.36	17.5%
EPS (adj, alt currency) ($)	1.65	2.03	2.55	2.83	19.6%
Diluted shares (mn)	1,536	1,536	1,536	1,536	0.0%
DPS (€)	0.90	0.95	1.00	1.05	5.3%

Return data					Average
ROACE (%)	6.2	9.8	10.5	10.9	9.3
ROAE (%)	7.2	10.2	10.6	11.0	9.8

Cash flow and balance sheet (€mn)					CAGR
Cash flow from operations	4,962	4,614	6,325	6,743	10.8%
Capital expenditure	-3,030	-3,258	-5,000	-5,000	N/A
Dividends paid	-664	-1,383	-1,460	-1,536	N/A
Net cash from operations	1,268	-27	-135	206	-45.4%
Free cash flow	1,932	1,356	1,325	1,743	-3.4%
Net cash surplus/(deficit)	-2,089	3,959	15	356	N/A
Shareholders' equity	29,793	30,998	32,802	34,885	5.4%
Minorities	270	270	270	270	0.0%
Net debt/(funds)	7,508	4,573	4,558	4,202	-17.6%
Total debt	14,286	11,351	11,336	10,980	-8.4%
Capital employed	37,571	34,817	36,606	38,333	0.7%

Valuation and leverage metrics					Average
P/E (adj) (x)	11.4	9.8	7.8	7.0	9.0
EV/EBITDA (adj) (x)	5.1	4.0	3.4	3.1	3.9
EV/EBIDA (adj) (x)	5.6	5.1	4.4	4.1	4.8
Equity FCF yield (%)	7.6	5.3	5.2	6.9	6.2
P/BV (x)	0.9	0.8	0.8	0.7	0.8
Dividend yield (%)	5.4	5.7	6.0	6.3	5.9
Net debt/capital (%)	22.7	13.1	12.5	11.0	14.8
Net debt/equity (%)	25.0	14.6	13.8	12.0	16.3
EV/1P reserves ($/boe)	10.1	N/A	N/A	N/A	10.1

Selected operating metrics				
Upstream				
Oil production (000 b/d)	256	264	259	257
Gas production (000 cf/d)	2,468	2,572	2,715	2,815
Total production (000 boe/d)	667	692	712	726
Net income ($/boe)	0.0	0.0	0.0	0.0
Reserves (mn boe)	2,243	N/A	N/A	N/A
Reserve life (years)	9.3	N/A	N/A	N/A
F&D cost ($/bl)	9.1	N/A	N/A	N/A
RRR (%)	94	N/A	N/A	N/A
Downstream				
Refining capacity (000 b/d)	1,013	1,013	1,013	1,013
Refining throughput (000 b/d)	841	830	832	832

Price (27-Aug-2018)	EUR 16.55
Price Target	EUR 19.50

Why Equal Weight? Repsol is more exposed than most to the deteriorating situation in Venezuela and the reintroduction of Iran sanctions. We remain Equal Weight on a 12-month view given this risk profile, and our forecasts indicate slower-than-average growth in cashflow and a FCF yield that is towards the low end of the peer group in 2020F.

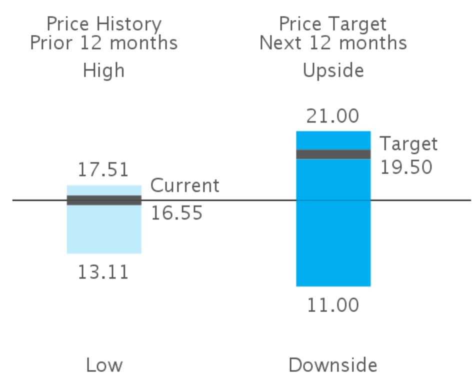
Upside case — **EUR 21.00**

Our upside case assumes oil prices recover to $90/bl on average long term.

Downside case — **EUR 11.00**

Our downside case assumes oil prices stay at $40/bl on average long term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining — **Industry View: POSITIVE**

Royal Dutch Shell (RDSa.L)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
Net operating profit	17,441	25,390	33,397	35,263	26.4%
EBITDA (adj)	52,429	66,552	81,796	84,642	17.3%
EBIDA (adj)	36,700	46,586	57,257	59,249	17.3%
Net income (adj)	15,764	23,364	32,763	34,594	30.0%
EPS (adj) ($)	1.90	2.81	4.07	4.46	32.9%
EPS (adj, alt currency) (£)	1.47	2.04	2.95	3.23	29.9%
Diluted shares (mn)	8,299	8,326	8,059	7,765	-2.2%
DPS (GBp)	146.00	136.46	136.23	136.23	-2.3%

Return data					Average
ROACE (%)	6.2	9.0	12.6	13.4	10.3
ROAE (%)	8.3	11.9	16.3	16.5	13.3

Cash flow and balance sheet ($mn)					CAGR
Cash flow from operations	32,824	40,125	55,257	57,249	20.4%
Capital expenditure	-20,529	-23,079	-24,987	-25,987	N/A
Dividends paid	-11,283	-16,081	-15,774	-15,224	N/A
Net cash from operations	1,012	965	14,496	16,038	151.2%
Free cash flow	12,295	17,046	30,270	31,262	36.5%
Net cash surplus/(deficit)	1,182	382	9,496	11,038	110.6%
Shareholders' equity	194,356	196,981	204,593	214,589	3.4%
Minorities	3,456	3,456	3,456	3,456	0.0%
Net debt/(funds)	65,353	64,971	55,474	44,436	-12.1%
Total debt	85,665	85,283	75,786	64,748	-8.9%
Capital employed	263,165	265,407	263,524	262,482	-0.1%

Valuation and leverage metrics					Average
P/E (adj) (x)	17.4	11.8	8.1	7.4	11.2
EV/EBITDA (adj) (x)	6.5	5.2	4.1	3.8	4.9
EV/EBIDA (adj) (x)	9.4	7.4	5.8	5.4	7.0
Equity FCF yield (%)	4.5	6.2	11.4	12.2	8.6
P/BV (x)	1.4	1.4	1.3	1.2	1.3
Dividend yield (%)	5.7	5.3	5.3	5.3	5.4
Net debt/capital (%)	24.8	24.5	21.1	16.9	21.8
Net debt/equity (%)	33.0	32.4	26.7	20.4	28.1
EV/1P reserves ($/boe)	0.0	N/A	N/A	N/A	0.0

Selected operating metrics				
Upstream				
Oil production (000 b/d)	1,826	1,753	1,785	1,800
Gas production (000 cf/d)	10,668	10,943	10,990	10,990
Total production (000 boe/d)	3,665	3,639	3,680	3,695
Net income ($/boe) ($)	3.8	8.0	10.1	10.1
Reserves (mn boe)	12,001	N/A	N/A	N/A
Reserve life (years)	8.8	N/A	N/A	N/A
F&D cost ($/bl)	8.4	N/A	N/A	N/A
RRR (%)	127	N/A	N/A	N/A
Downstream				
Refining capacity (000 b/d)	2,932	3,086	3,086	3,086
Refining throughput (000 b/d)	2,572	2,657	2,716	2,716

Price (24-Aug-2018)	**GBP 25.64**
Price Target	**GBP 33.00**

Why Overweight? We have been encouraged by the underlying operational performance at Shell and see more to come from the Integrated Gas business through the year. Shell's commitment to its $25bn buyback programme to 2020 remains intact and with cash return yields over the coming three years likely to be close to 8% pa, we continue to see material value in the shares.

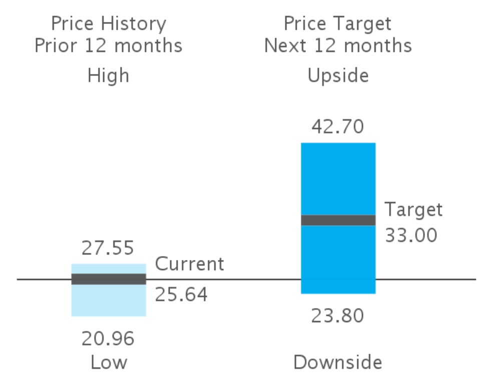
Upside case — **GBP 42.70**

Our upside case assumes oil prices recover to $90/bl on average long term.

Downside case — **GBP 23.80**

Our downside case assumes oil prices stay at $40/bl on average long term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining — **Industry View: POSITIVE**

Royal Dutch Shell (RDSb.L)

Stock Rating: OVERWEIGHT

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
Net operating profit	17,441	25,390	33,397	35,263	26.4%
EBITDA (adj)	52,429	66,552	81,796	84,642	17.3%
EBIDA (adj)	36,700	46,586	57,257	59,249	17.3%
Net income (adj)	15,764	23,364	32,763	34,594	30.0%
EPS (adj) ($)	1.90	2.81	4.07	4.46	32.9%
EPS (adj, alt currency) (£)	1.47	2.04	2.95	3.23	29.9%
Diluted shares (mn)	8,299	8,326	8,059	7,765	-2.2%
DPS (GBp)	146.00	136.46	136.23	136.23	-2.3%

Return data					Average
ROACE (%)	6.2	9.0	12.6	13.4	10.3
ROAE (%)	8.3	11.9	16.3	16.5	13.3

Cash flow and balance sheet ($mn)					CAGR
Cash flow from operations	32,824	40,125	55,257	57,249	20.4%
Capital expenditure	-20,529	-23,079	-24,987	-25,987	N/A
Dividends paid	-11,283	-16,081	-15,774	-15,224	N/A
Net cash from operations	1,012	965	14,496	16,038	151.2%
Free cash flow	12,295	17,046	30,270	31,262	36.5%
Net cash surplus/(deficit)	1,182	382	9,496	11,038	110.6%
Shareholders' equity	194,356	196,981	204,593	214,589	3.4%
Minorities	3,456	3,456	3,456	3,456	0.0%
Net debt/(funds)	65,353	64,971	55,474	44,436	-12.1%
Total debt	85,665	85,283	75,786	64,748	-8.9%
Capital employed	263,165	265,407	263,524	262,482	-0.1%

Valuation and leverage metrics					Average
P/E (adj) (x)	17.7	12.0	8.3	7.5	11.4
EV/EBITDA (adj) (x)	6.7	5.2	4.1	3.9	5.0
EV/EBIDA (adj) (x)	9.5	7.5	5.9	5.5	7.1
Equity FCF yield (%)	4.4	6.1	11.2	12.0	8.4
P/BV (x)	1.4	1.4	1.3	1.2	1.3
Dividend yield (%)	5.6	5.2	5.2	5.2	5.3
Net debt/capital (%)	24.8	24.5	21.1	16.9	21.8
Net debt/equity (%)	33.0	32.4	26.7	20.4	28.1
EV/1P reserves ($/boe)	0.0	N/A	N/A	N/A	0.0

Selected operating metrics				
Upstream				
Oil production (000 b/d)	1,826	1,753	1,785	1,800
Gas production (000 cf/d)	10,668	10,943	10,990	10,990
Total production (000 boe/d)	3,665	3,639	3,680	3,695
Net income ($/boe) ($)	3.8	8.0	10.1	10.1
Reserves (mn boe)	12,001	N/A	N/A	N/A
Reserve life (years)	8.8	N/A	N/A	N/A
F&D cost ($/bl)	8.4	N/A	N/A	N/A
RRR (%)	127	N/A	N/A	N/A
Downstream				
Refining capacity (000 b/d)	2,932	3,086	3,086	3,086
Refining throughput (000 b/d)	2,572	2,657	2,716	2,716

Price (24-Aug-2018)	GBP 26.14
Price Target	GBP 33.00

Why Overweight? Shell is clearly not exempt from the squeeze in earnings and cash flow faced by the industry but with the integration of BG complete, the combined group provides a more competitive base to reset and simplify the business. For us the investment case is in the simplicity – if the dividend is sustainable, then the shares remain meaningfully undervalued.

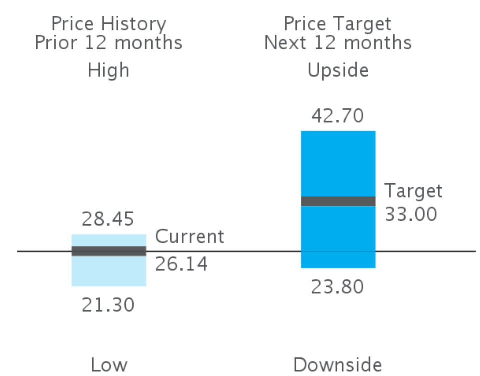
Upside case — **GBP 42.70**

Our upside case assumes oil prices recover to $90/bl on average long term.

Downside case — **GBP 23.80**

Our downside case assumes oil prices to stay at $40/bl on average long term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

European Integrated Oil & Refining	Industry View: POSITIVE
Total (TOTF.PA)	**Stock Rating: OVERWEIGHT**

Income statement ($mn)	2017A	2018E	2019E	2020E	CAGR
Operating profit (adj)	12,853	19,228	26,752	28,611	30.6%
EBITDA (adj)	24,802	31,665	38,948	41,174	18.4%
EBIDA (adj)	24,384	29,293	34,094	36,273	14.2%
Net income (adj)	10,578	14,383	19,750	21,522	26.7%
EPS (adj) ($)	4.24	5.48	7.55	8.38	25.5%
EPS (adj, alt currency) (€)	3.72	4.54	6.29	6.98	23.3%
Diluted shares (mn)	2,496	2,627	2,616	2,569	1.0%
DPS (€)	2.48	2.56	2.64	2.72	3.1%

Return data					Average
ROACE (%)	8.9	11.0	14.1	14.7	12.2
ROAE (%)	10.1	12.6	16.1	16.1	13.7

Cash flow and balance sheet ($mn)					CAGR
Cash flow from operations	22,319	22,688	31,456	33,865	14.9%
Capital expenditure	-14,395	-13,600	-15,000	-16,000	N/A
Dividends paid	-2,784	-6,341	-8,349	-8,452	N/A
Net cash from operations	5,140	2,747	8,107	9,413	22.3%
Free cash flow	7,924	9,088	16,456	17,865	31.1%
Net cash surplus/(deficit)	8,588	-3,061	4,607	6,413	-9.3%
Shareholders' equity	111,556	117,322	127,672	140,217	7.9%
Minorities	2,481	2,606	2,736	2,876	5.1%
Net debt/(funds)	25,751	33,093	28,485	22,072	-5.0%
Total debt	62,763	53,014	48,406	41,993	-12.5%
Capital employed	129,461	142,693	148,567	154,838	6.1%

Valuation and leverage metrics					Average
P/E (adj) (x)	15.3	11.8	8.6	7.7	10.9
EV/EBITDA (adj) (x)	8.0	6.5	5.2	4.7	6.1
EV/EBIDA (adj) (x)	8.1	7.0	5.9	5.4	6.6
Equity FCF yield (%)	4.9	5.3	9.7	10.8	7.7
P/BV (x)	1.4	1.4	1.3	1.2	1.4
Dividend yield (%)	4.5	4.6	4.8	4.9	4.7
Net debt/capital (%)	19.9	23.2	19.2	14.3	19.1
Net debt/equity (%)	22.6	27.6	21.8	15.4	21.9
EV/1P reserves ($/boe)	15.0	N/A	N/A	N/A	15.0

Selected operating metrics				
Upstream				
Oil production (000 b/d)	1,346	1,489	1,594	1,657
Gas production (000 cf/d)	6,663	6,760	7,238	7,525
Total production (000 boe/d)	2,457	2,615	2,800	2,911
Net income ($/boe)	8.8	14.7	20.9	21.9
Reserves (mn boe)	10,868	N/A	N/A	N/A
Reserve life (years)	12.1	N/A	N/A	N/A
F&D cost ($/bl)	12.2	N/A	N/A	N/A
RRR (%)	101	N/A	N/A	N/A
Downstream				
Refining capacity (000 b/d)	2,021	2,011	2,011	2,011
Refining throughput (000 b/d)	1,827	1,801	1,814	1,814

Price (27-Aug-2018)	EUR 55.42
Price Target	EUR 66.00

Why Overweight? Total has consistently reported the highest returns of the sector and is set to generate above average free cash flow growth in the coming three years. This leaves the group with a free cashflow yield above the sector average and in line with our other Overweight stocks.

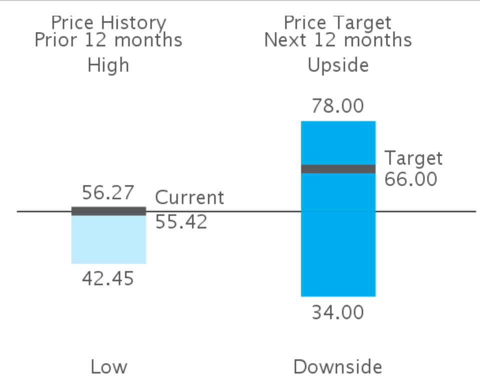
Upside case	EUR 78.00

Our upside case assumes oil prices recover to $90/bl on average long-term.

Downside case	EUR 34.00

Our downside case assumes oil prices stay at $40/bl on average long-term.

Upside/Downside scenarios



Source: Company data, Barclays Research
Note: FY End Dec

Valuation Methodology and Risks

Americas Integrated Oil

Canadian Natural Resources (CNQ CT / CNQ.TO)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Materially different commodity prices, production levels, or leverage from our estimates would pose a risk to the achievement of our price target. The company's production levels are impacted by a variety of factors including drilling success, reservoir performance and future acquisitions. Our target price is based on a forward-year firm value to de-levered cash flow multiple.

Cenovus Energy Inc. (CVE CT / CVE.TO)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on our current commodity price assumptions, which include oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Chevron Corporation (CVX)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

ConocoPhillips (COP)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Exxon Mobil Corp. (XOM)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Hess Corp. (HES)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a ~10% market discount to HES.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Husky Energy, Inc. (HSE CT / HSE.TO)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Valuation Methodology and Risks

Imperial Oil Ltd. (IMO CT / IMO.TO)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Murphy Oil (MUR)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Petroleo Brasileiro S.A. (PBR)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Petroleo Brasileiro S.A. (PBR/A / PBRA)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

Suncor Energy (SU CT / SU.TO)

Valuation Methodology: For the majors, we use our net asset valuation framework, and assume a long-term Brent price of $70/bl and a Brent/WTI spread of $5.0/bl. In addition, when applicable, we assign slightly higher premiums (relative to our standard multiples) for chemicals and refiners when such major has historically shown higher returns compared to peers. We also take into account our estimate of expected free cash flow, balance sheet structure, and EV/after-tax cash flow analysis in our assessment. Finally, we apply a market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

European Integrated Oil & Refining

Equinor (EQNR NO / EQNR.OL)

Valuation Methodology: Our price target for Equinor's shares is derived using a discounted cash flow methodology, using a 7.5% discount rate. Our calculation includes our estimate of value created from future growth based on the company's past and expected future return spread over its cost of capital. The cash flows in our calculation comprise both dollar and local currencies. Our price target is set in local currency, based on the dollar exchange rate on the date the target is initially published. Subsequently, the corresponding ADR price target in US dollars, will move with the prevailing exchange rate on a daily basis. If the dollar exchange rate relative to the local currency moves significantly compared with the rate used when the local currency price target was initially published, we re-calculate and re-publish the local currency price targets using the current dollar exchange rates. Our price targets are not market linked.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our Equinor share price target and recommendation depends upon our estimates of profitability and cash flow and the rate at which we discount the cash flows. These estimates in turn are based on assumptions for oil prices and downstream margins. These assumptions depend on the Barclays European Oil and Gas equity research teams estimates for future energy supply-demand patterns, exchange rates, commodity prices. All of our estimates are subject to revision and may be materially different from eventual outcomes. In addition the company operates on a global basis in many regions with sometimes unstable political regimes and changing fiscal terms. The actions of OPEC can also have a significant influence on the oil market. All estimates assume no marked changes in the current political landscape. Both upstream and downstream operations are subject to planned and unplanned downtime. Equinor is 67% owned by the Norwegian government and its business mix is biased towards upstream operations.

Galp Energia (GALP PL / GALP.LS)

Valuation Methodology and Risks

Valuation Methodology: Our price target for Galp's shares is derived using a discounted cash flow methodology, using a 7.5% discount rate. Our calculation includes our estimate of value created from future growth based on the company's past and expected future return spread over its cost of capital. The cash flows in our DCF calculation comprise both dollar and local currencies. Our price target is set in local currency.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our Galp share price target and recommendation depends upon our estimates of profitability and cash flow and the rate at which we discount the cash flows. These estimates in turn are based on assumptions for oil prices and downstream margins. These assumptions depend on the Barclays European Oil & Gas equity research team's estimates for future energy supply-demand patterns, exchange rates, commodity prices. All of our estimates are subject to revision and may be materially different from eventual outcomes. In addition, individual refineries are subject to crude supply disruptions or operational failures. Galp also faces additional risk to changes in the Brazilian fiscal regime given its significant upstream exposure there.

OMV (OMV AV / OMVV.VI)

Valuation Methodology: Our price target for OMV's shares is derived using a discounted cash flow methodology, using a 7.5% discount rate. The cash flows in our calculation comprise both dollar and local currencies. Our price target is set in local currency, based on the dollar exchange rate on the date the target is initially published. Subsequently, the corresponding ADR price target in US dollars will move with the prevailing exchange rate on a daily basis. If the dollar exchange rate relative to the local currency moves significantly compared with the rate used when the local currency price target was initially published, we re-calculate and re-publish the local currency price targets using the current dollar exchange rates. Our price targets are not market linked.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our OMV share price target and recommendation depends upon our estimates of profitability and cash flow and the rate at which we discount the cash flows. These estimates in turn are based on assumptions for oil prices and downstream margins. These assumptions depend on the Barclays European Oil and Gas equity research team's estimates for future energy supply-demand patterns, exchange rates, commodity prices. All of our estimates are subject to revision and may be materially different from eventual outcomes. In addition the company operates on a global basis in many regions with sometimes unstable political regimes and changing fiscal terms. The actions of OPEC can also have a significant influence on the oil market. All estimates assume no marked changes in the current political landscape. Both upstream and downstream operations are subject to planned and unplanned downtime. OMV owns 51% of Romanian oil and gas company Petrom. Natural gas prices in Romania are subject to government regulation.

Repsol (REP SM / REP.MC)

Valuation Methodology: Our price target for Repsol 's shares is derived using a discounted cash flow methodology with a discount rate of 7.5%. Our calculation includes our estimate of value created from future growth based on the company's past and expected future return spread over its cost of capital. The cash flows in our calculation comprise both dollar and local currencies. Our price target is set in local currency, based on the dollar exchange rate on the date the target is initially published. Subsequently, the corresponding ADR price target in US dollars will move with the prevailing exchange rate on a daily basis. If the dollar exchange rate relative to the local currency moves significantly compared with the rate used when the local currency price target was initially published, we re-calculate and re-publish the local currency price targets using the current dollar exchange rates. Our price targets are not market linked.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our Repsol share price target and recommendation depend on our estimates of profitability and cash flow and the rate at which we discount the cash flows. These estimates in turn are based on assumptions for oil prices and downstream margins. These assumptions depend on the Barclays European Oil & Gas equity research team's estimates for future energy supply-demand patterns, exchange rates, commodity prices. All of our estimates are subject to revision and may be materially different from eventual outcomes. In addition the company operates on a global basis in many regions with sometimes unstable political regimes and changing fiscal terms. The actions of OPEC can also have a significant influence on the oil market. All estimates assume no marked changes in the current political landscape. Both upstream and downstream operations are subject to planned and unplanned downtime.

Royal Dutch Shell A (RDSA LN / RDSa.L)

Valuation Methodology: Our price target for Royal Dutch Shell A shares and Royal Dutch Shell B shares is derived using a discounted cash flow methodology, using a 7.5% discount rate. Our calculation includes our estimate of value created from future growth based on the company's past and expected future return spread over its cost of capital. The cash flows in our calculation comprise both dollar and local currencies. Our price target is set in local currency, based on the dollar exchange rate on the date the target is initially published. Subsequently, the corresponding ADR price target in US dollars will move with the prevailing exchange rate on a daily basis. If the dollar exchange rate relative to the local currency moves significantly compared with the rate used when the local currency price target was initially published, we re-calculate and re-publish the local currency price targets using the current dollar exchange rates. Our primary local currency for Royal Dutch Shell shares is British pence for both the A and B lines. Euro denominated price targets are also available upon request. Our price targets are not market linked.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our Royal Dutch Shell share price targets and recommendations depend upon our estimates of profitability and cash flow and the rate at which we discount the cash flows. These estimates in turn are based on assumptions for oil prices and downstream margins. These assumptions depend on the Barclays European Oil and Gas equity research teams estimates for future energy supply-demand patterns, exchange rates, commodity prices. All of our estimates are subject to revision and may be materially different from eventual outcomes. In addition the company operates on a global basis in many regions with sometimes unstable political regimes and changing fiscal terms. The actions of OPEC can also have a significant influence on the oil market. All estimates assume no marked changes in the current political landscape. Both upstream and downstream operations are subject to planned and unplanned downtime. Shell has significant production exposure to Nigeria relative to other companies.

Royal Dutch Shell B (RDSB LN / RDSb.L)

Valuation Methodology: Our price target for Royal Dutch Shell A shares and Royal Dutch Shell B shares is derived using a discounted cash flow methodology, using a 7.5% discount rate. Our calculation includes our estimate of value created from future growth based on the company's

Valuation Methodology and Risks

past and expected future return spread over its cost of capital. The cash flows in our calculation comprise both dollar and local currencies. Our price target is set in local currency, based on the dollar exchange rate on the date the target is initially published. Subsequently, the corresponding ADR price target in US dollars will move with the prevailing exchange rate on a daily basis. If the dollar exchange rate relative to the local currency moves significantly compared with the rate used when the local currency price target was initially published, we re-calculate and re-publish the local currency price targets using the current dollar exchange rates. Our primary local currency for Royal Dutch Shell shares is British pence for both the A and B lines. Euro denominated price targets are also available upon request. Our price targets are not market linked.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our Royal Dutch Shell share price targets and recommendations depend upon our estimates of profitability and cash flow and the rate at which we discount the cash flows. These estimates in turn are based on assumptions for oil prices and downstream margins. These assumptions depend on the Barclays European Oil and Gas equity research teams estimates for future energy supply-demand patterns, exchange rates, commodity prices. All of our estimates are subject to revision and may be materially different from eventual outcomes. In addition the company operates on a global basis in many regions with sometimes unstable political regimes and changing fiscal terms. The actions of OPEC can also have a significant influence on the oil market. All estimates assume no marked changes in the current political landscape. Both upstream and downstream operations are subject to planned and unplanned downtime. Shell has significant production exposure to Nigeria relative to other companies.

Total (FP FP / TOTF.PA)

Valuation Methodology: Our price target for Total's shares is based our NAV estimate derived from our sum-of-the-parts calculation, which primarily uses a discounted cash flow methodology in which we assume a 7.5% discount. Our calculation includes our estimate of value created from future growth based on the company's past and expected future return spread over its cost of capital. The cash flows in our calculation comprise both dollar and local currencies. Our price target is set in local currency, based on the dollar exchange rate on the date the target is initially published. Subsequently, the corresponding ADR price target in US dollars will move with the prevailing exchange rate on a daily basis.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our Total share price target and recommendation depend on our estimates of profitability and cash flow and the rate at which we discount the cash flows. Our cash flow estimates in turn are based on assumptions for oil prices and downstream margins. These assumptions depend on the Barclays European Oil and Gas equity research team's estimates for future energy supply-demand patterns, exchange rates, commodity prices. All of our estimates are subject to revision and may be materially different from eventual outcomes. In addition, the company operates on a global basis in many regions with sometimes unstable political regimes and changing fiscal terms. The actions of OPEC can also have a significant influence on the oil market. All estimates assume no marked changes in the current political landscape. Both upstream and downstream operations are subject to planned and unplanned downtime. Total has higher-than-average non-OECD exposure. We also assume no significant delays in projects coming on stream.

U.S. Independent Refiners

CVR Refining LP (CVRR)

Valuation Methodology: For refining MLPs, we apply 15-20% long-term yield assumption to our forward 5-year average estimate of annual distributions of $2.94 per unit, in order to derive a fair equity value per unit. However, we see CVRR's upside as limited given the potential scenario of a privatization by the GP and its affiliates.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Risks to our estimates include sustained refining margin weakness and disruptions at its single asset facility. Refining margin weakness would reduce cash flows and combining the variable distribution structure may potentially result in no distribution. In addition, the company faces regulatory risk which may require the company to spend in order to continue operating. Other risks are cost of capital risk, loss of MLP tax status and reduction in refined products demand.

Delek US Holdings Inc. (DK)

Valuation Methodology: Our price target is based on our sum-of-the-parts analysis. We start with the company's 2016 EBITDA and adjust that for our long-term crude differential assumptions and major project impacts. We then apply refining EV/EBITDA multiples depending on the refining region -- 4.5x EC, 6.5x WC, 8.0 GC, and 8.5x Mid-con. From here, we adjust for balance sheet items, a 10% conglomerate discount, and a potential market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment. DK's performance is also particularly subject to the risk of operational upsets and its resulting impact on financial results.

HollyFrontier Corp. (HFC)

Valuation Methodology: Our price target is based on our sum-of-the-parts analysis. We start with the company's 2016 EBITDA and adjusted for our long-term crude differential assumptions and major project impacts. We then apply refining EV/EBITDA multiples depending on the refining region -- 4.5x EC, 6.5x WC, 8.0 GC, and 8.5x Mid-con. From here, we adjust for balance sheet items, a 10% conglomerate discount, and a potential market premium/discount.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Our earnings estimates are based on Barclays Research's current commodity price assumptions, including oil & gas prices, refining and marketing margins as well as chemical product margins. Thus, results will be subject to change due to fluctuations in the macro commodity market environment.

PBF Energy Inc. (PBF)

Valuation Methodology: Our price target is based on our sum-of-the-parts analysis. We start with the company's 2016 EBITDA and adjusted for our long-term crude differential assumptions and major project impacts. We then apply refining EV/EBITDA multiples depending on the refining

Valuation Methodology and Risks

region -- 4.5x EC, 6.5x WC, 8.0 GC, and 8.5x Mid-con. From here, we adjust for balance sheet items, a 10% conglomerate discount, and a potential market premium/discount.

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Phillips 66 (PSX)

Valuation Methodology: Our price target is based on our sum-of-the-parts analysis. We start with the company's 2016 EBITDA and adjusted for our long-term crude differential assumptions and major project impacts. We then apply refining EV/EBITDA multiples depending on the refining region -- 4.5x EC, 6.5x WC, 8.0 GC, and 8.5x Mid-con. From here, we adjust for balance sheet items, a 10% conglomerate discount, and a potential market premium/discount.

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Valero Energy (VLO)

Valuation Methodology: Our price target is based on our sum-of-the-parts analysis. We start with the company's 2016 EBITDA and adjusted for our long-term crude differential assumptions and major project impacts. We then apply refining EV/EBITDA multiples depending on the refining region -- 4.5x EC, 6.5x WC, 8.0 GC, and 8.5x Mid-con. From here, we adjust for balance sheet items, a 10% conglomerate discount, and a potential market premium/discount.

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Source: Barclays Research.

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Canadian Natural Resources (CNQ.TO, 27-Aug-2018, CAD 46.17), Overweight/Positive, CD/CE/D/J/K/L/M/N

Cenovus Energy Inc. (CVE.TO, 27-Aug-2018, CAD 12.70), Overweight/Positive, CD/CE/D/J/K/L/M/R

Chevron Corporation (CVX, 27-Aug-2018, USD 120.35), Overweight/Positive, B/CD/CE/D/J/K/L/M/N

ConocoPhillips (COP, 27-Aug-2018, USD 72.84), Overweight/Positive, CD/CE/D/J/K/L/M/N

CVR Refining LP (CVRR, 27-Aug-2018, USD 21.35), Equal Weight/Positive, CE/J/K/M

Delek US Holdings Inc. (DK, 27-Aug-2018, USD 53.92), Overweight/Positive, D/FA/FB/J/K/L/M/N

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Eni (ENI.MI, 27-Aug-2018, EUR 16.43), Equal Weight/Positive, CD/CE/D/E/J/K/L/M/N

Equinor (EQNR.OL, 27-Aug-2018, NOK 217.90), Underweight/Positive, CD/CE/D/E/J/K/L/M/N

Exxon Mobil Corp. (XOM, 27-Aug-2018, USD 80.40), Underweight/Positive, CD/CE/J/K/M/N

Galp Energia (GALP.LS, 27-Aug-2018, EUR 17.87), Underweight/Positive, CD/D/J/L

Hess Corp. (HES, 27-Aug-2018, USD 66.15), Underweight/Positive, CD/CE/J/K/M

HollyFrontier Corp. (HFC, 27-Aug-2018, USD 73.89), Overweight/Positive, CD/CE/D/J/L

Husky Energy, Inc. (HSE.TO, 27-Aug-2018, CAD 21.91), Overweight/Positive, CD/D/J/K/L/M

Imperial Oil Ltd. (IMO.TO, 27-Aug-2018, CAD 41.54), Equal Weight/Positive, CE/J/K/M/N

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Murphy Oil (MUR, 27-Aug-2018, USD 31.23), Equal Weight/Positive, CD/CE/J

OMV (OMVV.VI, 27-Aug-2018, EUR 45.82), Equal Weight/Positive, CD/D/E/J/K/L/M/N

PBF Energy Inc. (PBF, 27-Aug-2018, USD 50.00), Overweight/Positive, A/CE/D/J/K/L/M

Petroleo Brasileiro S.A. (PBR, 27-Aug-2018, USD 10.50), Overweight/Positive, CD/CE/D/J/K/L/M/N

Petroleo Brasileiro S.A. (PBRA, 27-Aug-2018, USD 9.15), Overweight/Positive, CD/CE/D/J/K/L/M/N

Phillips 66 (PSX, 27-Aug-2018, USD 120.03), Underweight/Positive, A/CD/CE/D/J/K/L/M/N

Repsol (REP.MC, 27-Aug-2018, EUR 16.55), Equal Weight/Positive, D/J/K/L/M/N

Royal Dutch Shell A (RDSa.L, 24-Aug-2018, GBP 25.64), Overweight/Positive, CE/D/J/K/L/M/N

Royal Dutch Shell B (RDSb.L, 24-Aug-2018, GBP 26.14), Overweight/Positive, CE/D/J/K/L/M/N

Suncor Energy (SU.TO, 27-Aug-2018, CAD 54.16), Overweight/Positive, CD/CE/J

Total (TOTF.PA, 27-Aug-2018, EUR 55.42), Overweight/Positive, A/CD/CE/D/E/FA/J/K/L/M/N

Valero Energy (VLO, 27-Aug-2018, USD 121.21), Overweight/Positive, A/CD/CE/D/J/K/L/M

Materially Mentioned Stocks (Ticker, Date, Price)

Andeavor (ANDV, 27-Aug-2018, USD 155.38), Rating Suspended/Positive, CD/CE/E/J/K/L/M

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The ratings, price targets and estimates (as applicable) on Marathon Petroleum Corporation (NYSE: MPC) and Andeavor (NYSE: ANDV), previously issued by the Firm's Research department, have been temporarily suspended due to this potential transaction.

Marathon Petroleum Corp. (MPC, 27-Aug-2018, USD 83.68), Rating Suspended/Positive, A/CD/CE/D/E/J/K/L/M

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The ratings, price targets and estimates (as applicable) on Marathon Petroleum Corporation (NYSE: MPC) and Andeavor (NYSE: ANDV), previously issued by the Firm's Research department, have been temporarily suspended due to this potential transaction.

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Husky Energy, Inc. (HSE.TO)	Imperial Oil Ltd. (IMO.TO)	Murphy Oil (MUR)
Petroleo Brasileiro S.A. (PBR)	Petroleo Brasileiro S.A. (PBRA)	Suncor Energy (SU.TO)
European Integrated Oil & Refining		
BP (BP.L)	Eni (ENI.MI)	Equinor (EQNR.OL)
Galp Energia (GALP.LS)	Neste (NESTE.HE)	OMV (OMVV.VI)
Repsol (REP.MC)	Royal Dutch Shell A (RDSa.L)	Royal Dutch Shell B (RDSb.L)
Saras (SRS.MI)	Total (TOTF.PA)	

IMPORTANT DISCLOSURES CONTINUED

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Andeavor (ANDV)	CVR Refining LP (CVRR)	Delek US Holdings Inc. (DK)
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Phillips 66 (PSX)	Valero Energy (VLO)	

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