

# European Chemicals - Focus of the week

## Sub-sector rotation accelerates. UBS conviction remains on Diversifieds

### Equities

Europe including UK  
Chemicals

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### Sector rotation has narrowed valuation dispersion as bond yields rise

When we published our re-launch of sector coverage on the 5<sup>th</sup> of October ([here](#)) we highlighted the valuation dispersion between the chemicals sub-sectors. Since then bond yields in the US and Europe have moved higher and the dispersion within the sector has narrowed (Diversifieds from 14.1x '17E PE in early October to 15.3x now vs Consumer 20.9x to 19.1x). The previous outperformance of the 'compounder' stocks vs cyclicals has been the main theme of the sector (and, arguably, the equity market) since 2011. Although this has reversed recently we see limited further downside risk to the consumer names as our global macro team sees a gradual rise in yields over 2017-18.

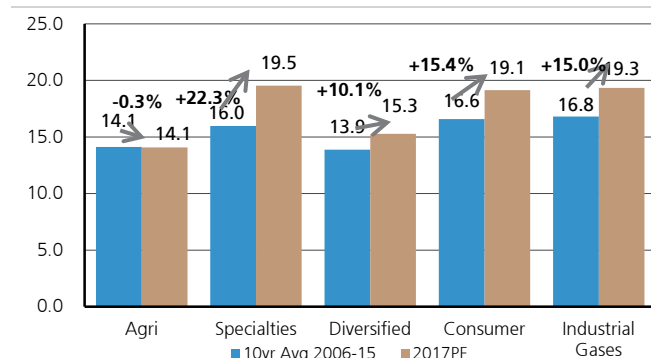
### EPS momentum (and UBS conviction) remains strongest in Diversifieds

However our highest conviction remains in the Diversifieds sub-sector with leverage to 1) improved supply discipline in China in a number of key product categories; 2) ongoing trend growth of 3% globally; 3) an OPEC agreement which augments the argument over pricing growth. As an idea of the extent of recent improvement chemical prices have continued to rise (+7% November on October) with the spreads over raw material prices much stronger into the end of the year vs mid-2016. MDI unit margins ("spreads") in Asia were up by 197% in November, against, for example +69% in September (TDI +238% against +62% in September). Ethylene has moved negatively now down 4% YoY against +72% in September but acrylic acid spreads are "only" -23% in November having been down -43% in Sept. On page 4 of our [Essential guide to the sector](#) we show the stocks' exposure to different chemicals. **We remain Buy-rated on Arkema, BASF and Covestro as well as Lanxess.**

### Uncertainty remains in Ag despite urea prices up 30% from lows

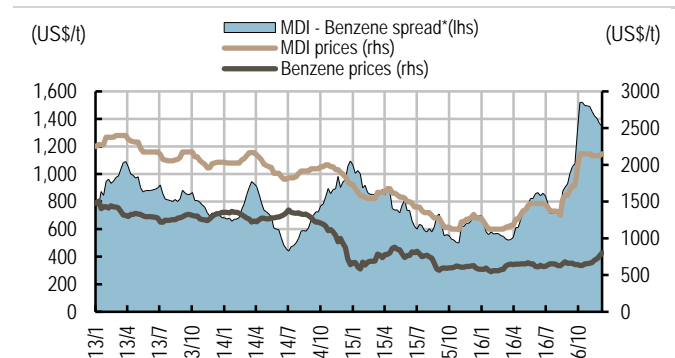
Urea prices have recovered by c.30% since the mid-2016 lows. Higher coal prices in China, a key exporter in 2015 (28% of global urea exports were from the country) have hampered production and the consultant Fertecon is citing an annualised loss of production of around 5m tonnes. But it's not all good news, a recent report from our Asia-based team alluded to a recent 15% decline in thermal coal prices and further risk ahead ([futures tumbling](#)). We also include our US Ag Conference feedback [here](#).

**Figure 1: Valuation dispersion has narrowed (10 year premium/discount versus 2017 PE)**



Source: Thomson, UBS estimates

**Figure 2: MDI spreads are likely not sustainable (supply disruptions) but consensus is still very low on 2017**



Source: Thomson, UBS estimates

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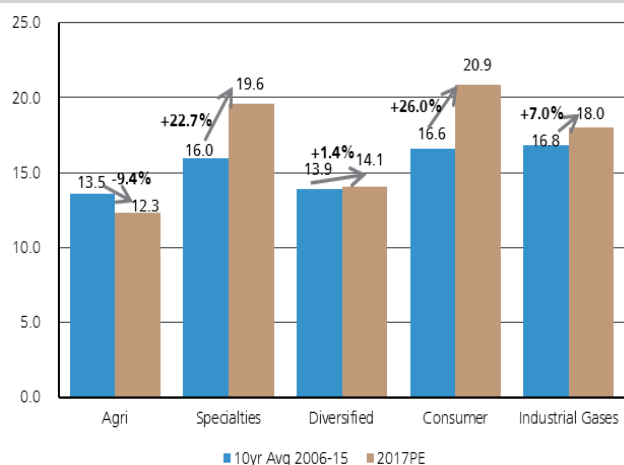
# Focus of the week

## Valuation dispersion narrows within the sector

When we published our re-launch of sector coverage on the 5<sup>th</sup> of October ([here](#)) we highlighted the valuation dispersion between the chemicals sub-sectors. Since then bond yields in the US and Europe have moved higher and the dispersion within the sector has narrowed (Diversifieds from 14.1x '17E PE to 15.3x vs Consumer 20.9x to 19.1x). Since then we have seen a rerating of cyclicals while the valuations in the consumer stocks have contracted. This can clearly be seen in the valuation vs long term history now vs October when we first published.

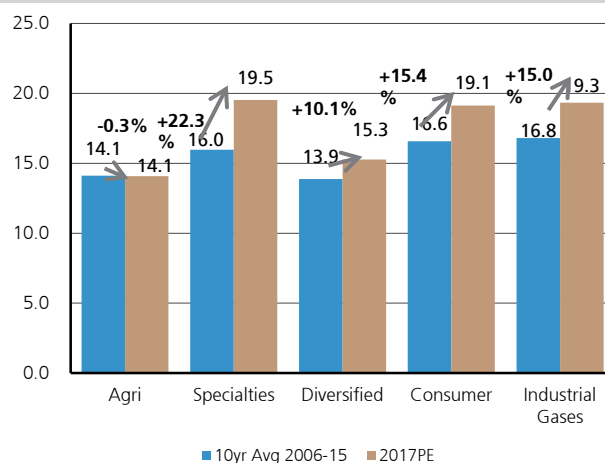
The cyclical end of the sector has outperformed over the Q3 reporting period with strong results and chemical prices continuing to rise (see the next section of this note). While consumer chemicals have seen concern in the market on the sustainability of organic growth and raw material costs, as well as rising bond yields.

**Figure 3: As of Oct-2016 forward PE dispersion was significant vs the 10 year average (2017E PEs of the subsectors against 10-year averages)**



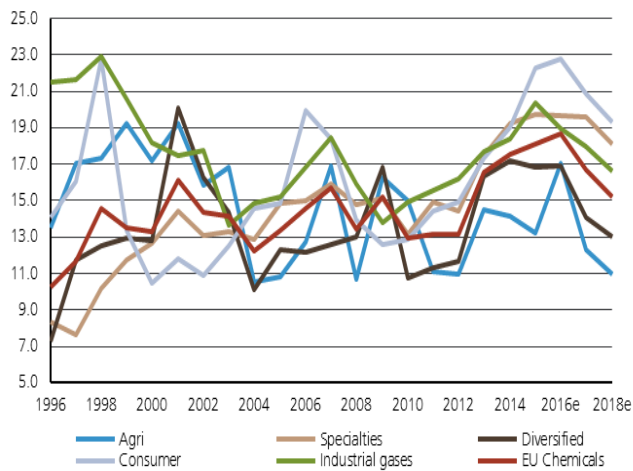
Source: Thomson, UBS estimates

**Figure 4: Now the dispersion looks less extreme, particularly on Consumer vs Diversifieds (2017E PEs of the subsectors against 10-year averages)**



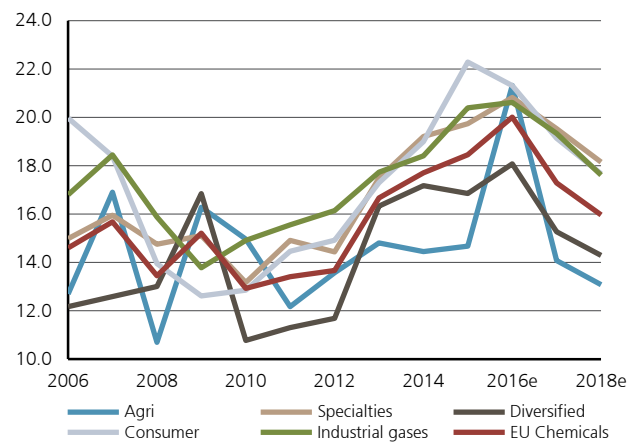
Source: Thomson, UBS estimates

**Figure 5: As of Oct-2016 the outer year valuations in Consumer look near historical highs (20-year PE evolution for European subsectors and estimates)**



Source: Thomson, UBS estimates

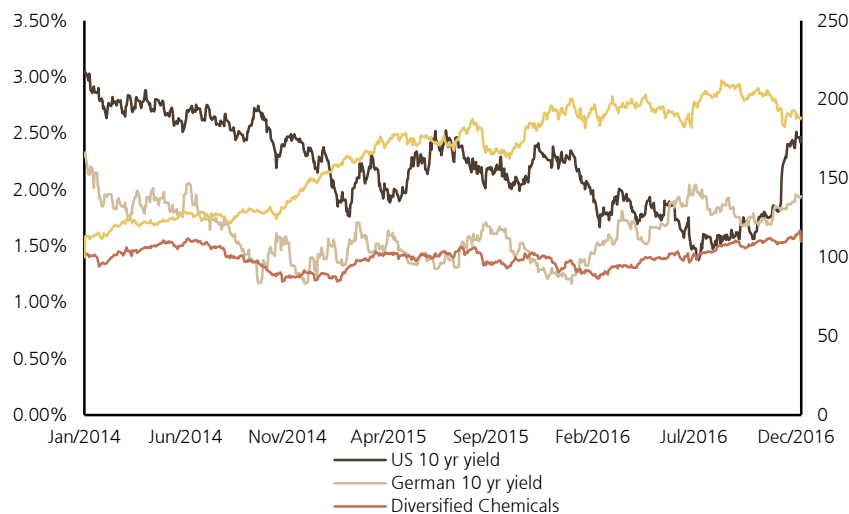
**Figure 6: Now outer year valuations in Consumer look less lofty. Note the spike in Ag for '16e given K+S (20-year PE evolution for European subsectors and estimates)**



Source: Thomson, UBS estimates

We can see from the chart below how US 10 yr bond yields have just recently while the consumer chemicals names have fallen >5% since a high around September this year.

**Figure 7: US bond yields have spiked and the Consumer Chemicals names have fallen from a peak in September**



Source: Datastream

### What is expected to happen to bond yields from here?

Our global macro team forecasts a gradual rise in yields over 2017-18 overall. UBS year-end forecasts for the US 10 year are 2.25% in 2017 and 2.50% in 2018. For Germany, UBS forecasts the 10 year to rise from 0.2% current spot rate to 0.5% 2017 year-end and 0.9% 2018 year-end. This compares to the current 10 year US bond yield of 2.44%.

We see limited further downside risk to the consumer names as we do not see the fundamental investment case weakening and our global macro team forecasting a more gradual rise in yields over 2017-18.

**Figure 8: UBS global rates forecasts – expecting gradual upward pressure to US, UK and GER yields**

	2017				2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>US 10 year Bond Yield</b>	2.15	2.20	2.25	2.25	2.30	2.40	2.45	2.50
<b>UK 10 year Bond Yield</b>	1.20	1.25	1.35	1.40	1.45	1.55	1.60	1.65
<b>German 10 year Bond Yield</b>	0.30	0.35	0.40	0.50	0.60	0.70	0.80	0.90
10y France spread to Germany (bp)	40	35	35	35	30	30	30	30
10y Italy spread to Germany (bp)	160	150	150	150	150	140	130	130
10y Spain spread to Germany (bp)	110	100	90	90	90	80	80	80
<b>Swiss 10 year Bond Yield</b>	-0.15	-0.15	-0.10	-0.05	0.00	0.05	0.10	0.15
<b>Japan 10 year Bond Yield</b>	-0.05	-0.05	0.00	0.00	0.00	0.00	0.00	0.05
<b>Australia 10 year Bond Yield</b>	2.60	2.60	2.60	2.60	2.60	2.70	2.80	2.90
<b>NZ 10 year Bond Yield</b>	3.00	3.00	3.05	3.10	3.10	3.25	3.40	3.55

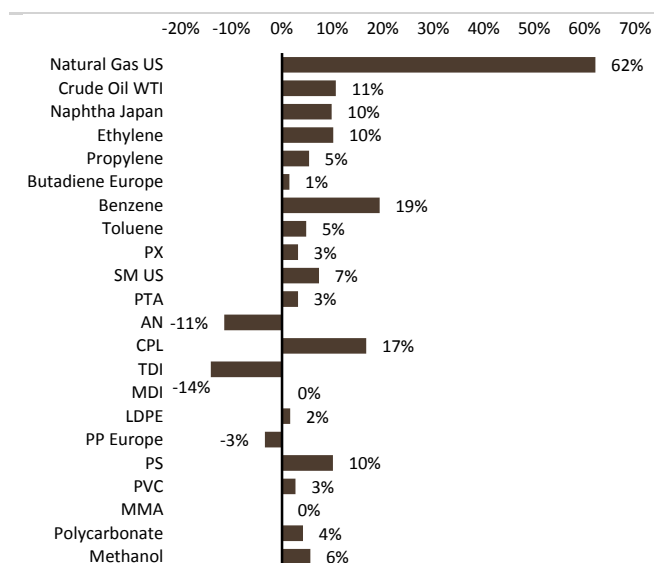
Source: UBS estimates

## Chemicals spreads widen as prices rise

Over the past month chemical prices have continued to rise with the spreads with raw material prices also much stronger into the end of the year vs mid-2016. The biggest MoM movers on price within the major chemicals are Caprolactum (+17%), Ethylene (+10%) and Propylene (+10%) while TDI continues to roll over from the spike in August (-14% MoM) caused by capacity outages and a weak capacity pipeline. QoQ prices are up even more with a 13% increase in prices on average. Here we can see the scale of price increases in MDI and TDI, +57% and +29% respectively.

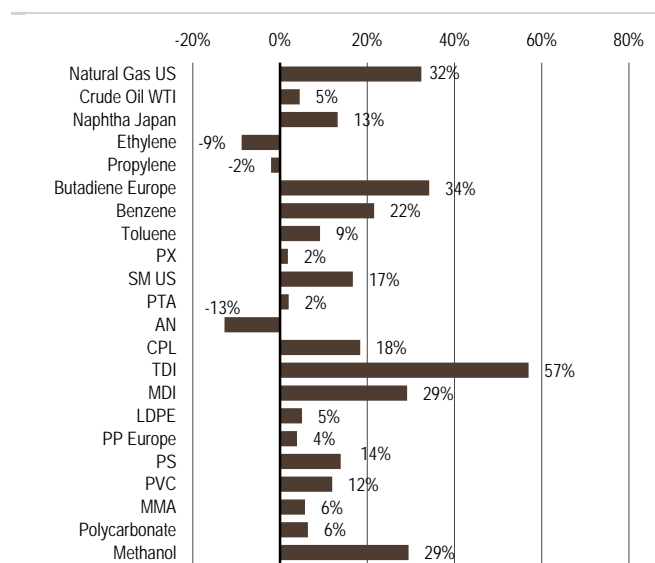
We note that the move up in Polycarbonate and Acrylic Acid spreads over the year should be particularly beneficial for Covestro (c24% of sales) and Arkema (c11% of sales), respectively. On page 4 of our [Essential guide to the sector](#) we show the sector's exposure to different chemicals. MDI & TDI are also major chemicals for Covestro at 30% of sales.

**Figure 9: MoM Chemical prices in Asia have been strong over the past month; +7% on average**



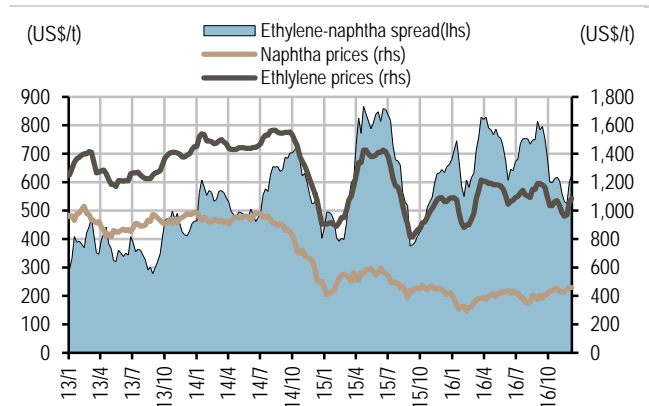
Source: UBS Asian Chemicals Team

**Figure 10: QoQ prices are up by 13% on average**



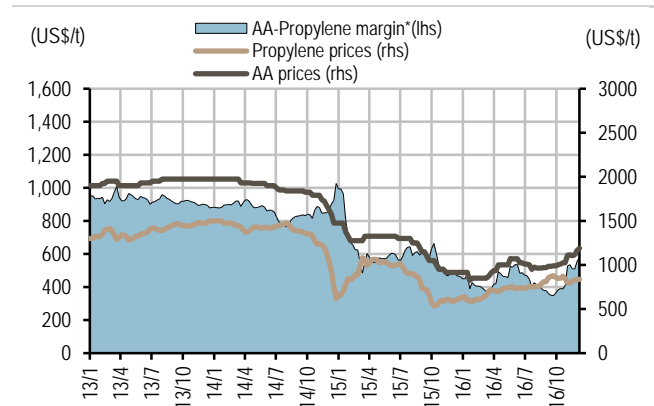
Source: UBS Asian Chemicals Team

**Figure 11: Ethylene price spread looks quite volatile but raw material prices have been slowly trending up from a low at the start of the year**



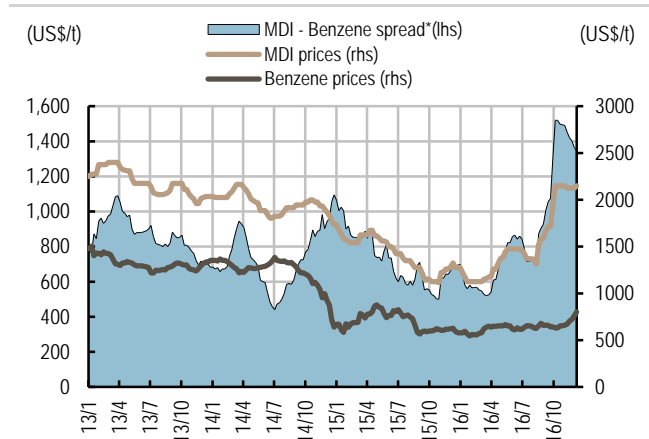
Source: UBS Asian Chemicals Team

**Figure 12: The Acrylic Acid spread has increased over 40% from in the middle of the year**



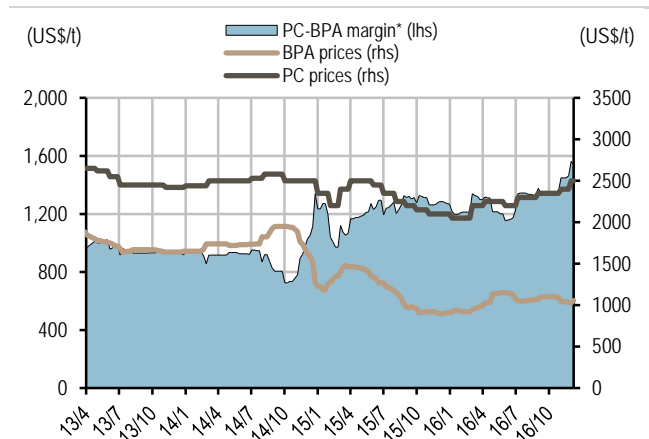
Source: UBS Asian Chemicals Team

**Figure 13: MDI prices are rolling over after the spike caused by the capacity outages (and lack of capacity pipeline) during the year...**



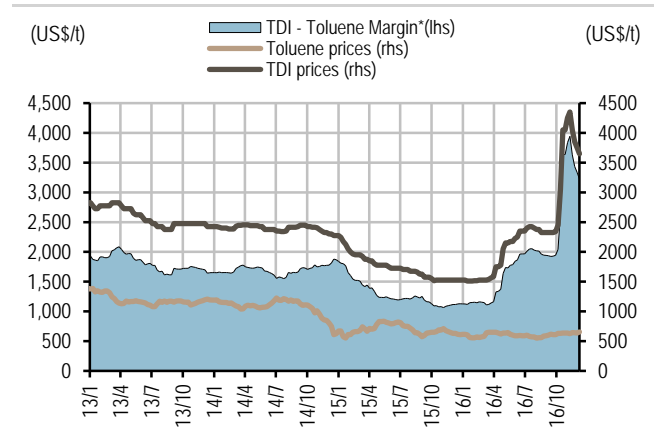
Source:

**Figure 15: Polycarbonate spreads have been improving steadily but particularly recently with a stable raw material price**



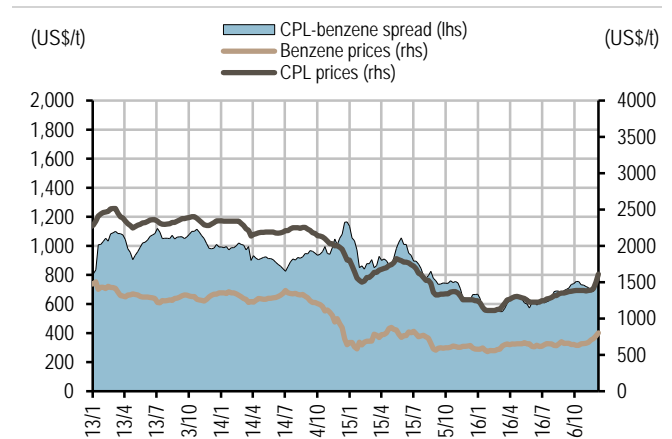
Source: UBS Asian Chemicals Team

**Figure 14: ...and the same is true of TDI**



Source:

**Figure 16: Caprolactam spreads are more steady but have improved over the year since a low at the start of 2016**



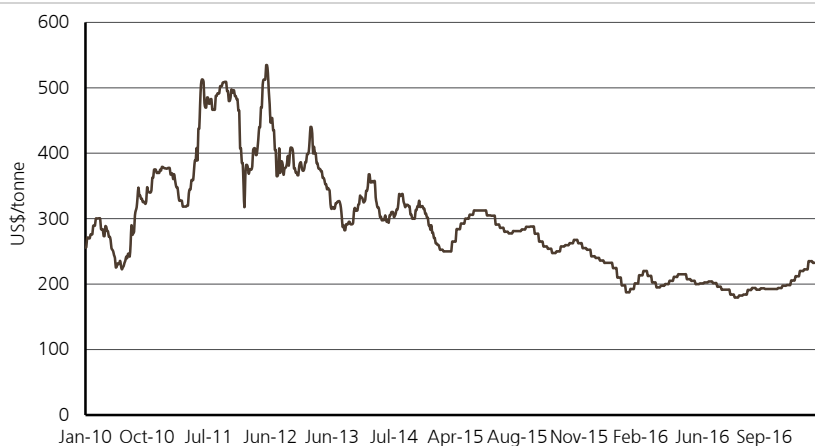
Source: UBS Asian Chemicals Team

## Urea prices strong but coal futures show weakness

### China and seasonal demand lift nitrogen prices off the floor

Urea prices have recovered by c.30% since the mid-2016 lows. Higher coal prices in China, a key exporter in 2015 (28% of global urea exports were from the country) have hampered production and the consultant Fertecon is citing an annualised loss of production of around 5m tonnes. Operating rates in China are, according to a survey from China NFIA for urea producers now average only 52% (from c.70% in 2015). That said a recent report from our Asia-based team alluded to a recent 15% decline in thermal coal prices and further risk to the downside (see [futures tumbling](#)).

**Figure 17: Urea prices have recovered 30% since the mid-2016 low but recent weakness in coal futures are a negative (Urea Prilled Bulk Yuzhny FOB (\$/MT))**



Source: Datastream

### But we still see an oversupplied market into at least 2017

However we refrain from being more constructive on the 12 month outlook for two reasons: 1) despite a likely dramatic drop in China exports in 2017 – we estimate c5m tonnes – the growth in supply from Africa (+3m tonnes YoY), the Middle East (+1m tonnes), SE Asia (+2m tonnes) and LatAm (1m tonnes) should maintain an oversupplied global nitrogen market; 2) even with 2% demand growth we see operating rates globally for urea dropping by a percentage point to 70% to an historical low point.

### North American Agriculture conference – crop markets have bottomed?

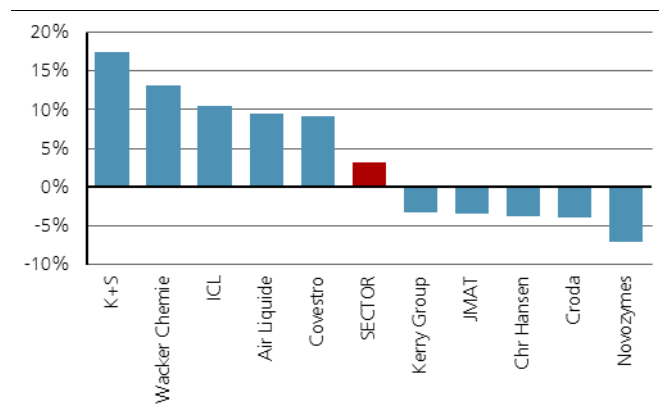
UBS hosted 4 fertilizer stocks, 2 pesticide firms, & 2 seed-tech firms at our US Ag conference in Chicago. Monsanto, Dow Chem. & DuPont, which are all in M&A antitrust reviews, did not participate. There was consensus that crop markets have bottomed. Some companies felt it was one poor harvest away from a crop price recovery, while some still hold to the more consensus view that world grain inventories are high enough to require two poor harvests for recovery. Stocks have recently moved from discounting a deeper bottom, to discounting a firm bottom. No consensus on what recent U.S. Election means for Ag. See the first read from our US colleagues: [here](#).

## Valuation update & Key changes

### Sector up 7.9% YTD/ up 9.2% 12M

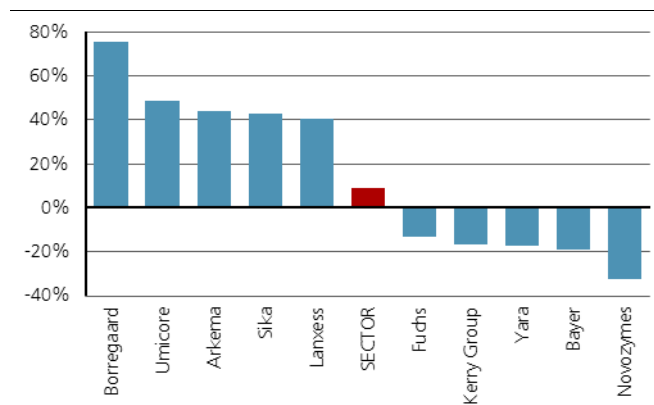
The sector is on average up 7.9% since the beginning of 2016 and up 9.2% on a 12-month basis. Top performers YTD have been Borregaard 67.0%, Lanxess 45.0% and Arkema 44.6%. Worst performers have been Kerry -16.1%, Bayer -19.7% and Novozymes -32.6%.

Figure 18: 10-days Top / Bottom 5 sector performers



Source: Thomson Financial

Figure 19: 12-month Top / Bottom 5 sector performers



Source: Thomson Financial

Figure 20: Estimate changes for the past week

Company	PT	% change	EBITA 16E Revision	EPS 16E Revision	EBITA 16E vs cons	EPS 16E vs cons
Bayer	EUR110	10%	EUR9656 [+22.1%]	EUR7.63 [+4.0%]	11%	3%
Victrex Plc	GBp1800	19%	GBP100 [+3.1%]	GBp96.67 [+5.2%]	0%	0%

Source: UBS estimates

## UBS ratings and target prices

Company	Local Currency	UBS Rating	Share Price (LC)	Price Target (LC)	Potential Upside / (downside) (%)	% of 52 week high	% of 52 week low
<b>Agriculture</b>							
<b>Bayer</b>	EUR	Buy	93.2	110.0	18.0	79	109
<b>ICL</b>	ILS	Neutral	15.9	16.0	0.6	85	117
<b>K+S</b>	EUR	Sell	22.2	15.0	(32.5)	93	138
<b>Syngenta</b>	CHF	Neutral	406.5	430.0	5.8	94	116
<b>Yara</b>	NOK	Neutral	327.0	275.0	(15.9)	82	127
<b>Specialties</b>							
<b>Akzo Nobel</b>	EUR	Neutral	59.1	59.0	(0.2)	91	118
<b>Elementis</b>	GBP	Buy	268.2	270.0	0.7	100	149
<b>Ems-Chemie</b>	CHF	Sell	508.5	415.0	(18.4)	93	127
<b>Fuchs</b>	EUR	Buy	38.1	46.5	22.1	86	114
<b>Johnson Matthey</b>	GBP	Neutral	3,039.0	3,300.0	8.6	86	136
<b>Lonza</b>	CHF	Neutral	175.8	185.0	5.2	93	129
<b>Sika</b>	CHF	Buy	4,957.0	5,140.0	3.7	99	144
<b>Umicore</b>	EUR	Buy	55.0	62.0	12.6	94	170
<b>Victrex Plc</b>	GBP	Neutral	1,857.0	1,800.0	(3.1)	100	136
<b>Diversified Specialties</b>							
<b>Arkema</b>	EUR	Buy	94.1	96.0	2.0	99	193
<b>BASF SE</b>	EUR	Buy	85.6	89.0	4.0	100	149
<b>Borregaard</b>	NOK	Sell	82.5	46.0	(44.2)	96	196
<b>Clariant</b>	CHF	Buy	16.7	19.3	15.8	87	109
<b>Covestro</b>	EUR	Buy	63.9	58.0	(9.3)	100	251
<b>DSM</b>	EUR	Neutral	56.5	60.0	6.2	88	136
<b>Evonik</b>	EUR	Neutral	27.9	26.0	(6.7)	90	113
<b>Lanxess</b>	EUR	Buy	61.9	64.0	3.4	100	186
<b>Solvay</b>	EUR	Sell	111.1	84.0	(24.4)	100	155
<b>Synthomer</b>	GBP	Sell	371.6	325.0	(12.5)	96	135
<b>Wacker Chemie</b>	EUR	Buy	92.6	93.0	0.4	100	158
<b>Consumer Facing Chemicals</b>							
<b>Croda</b>	GBP	Buy	3,165.0	4,000.0	26.4	86	119
<b>Frutarom</b>	ILS	Buy	206.0	245.0	18.9	97	119
<b>Givaudan</b>	CHF	Neutral	1,786.0	2,000.0	12.0	85	104
<b>Kerry Group</b>	EUR	Neutral	64.1	72.0	12.4	76	104
<b>Symrise</b>	EUR	Buy	55.5	72.0	29.7	81	103
<b>Industrial Gases</b>							
<b>Air Liquide</b>	EUR	Sell	102.8	88.0	(14.4)	99	119
<b>Linde</b>	EUR	Neutral	161.9	151.0	(6.7)	100	140
<b>Chemical Distributors</b>							
<b>Brenntag</b>	EUR	Neutral	50.7	50.0	(1.4)	98	126

Source: Share prices as of 9 Dec 2016, UBS estimates

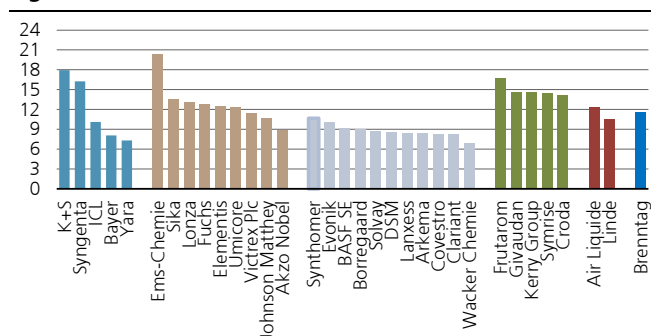


## European Value

Company	Local Currency	Share Price	% of 52 week high	Market Cap	EV/Revenue		EV/EBITDA		EV/Inv. Cap		P/E		EV FCF Yield		Equity FCF Yield		Dividend Yield		P/Book
		(LC)	(%)	(LC)	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e
					(x)	(x)	(x)	(x)	(x)	(x)	(x)	(x)	(%)	(%)	(%)	(%)	(%)	(%)	(x)
<b>Agriculture</b>																			
Bayer	EUR	93	79	77,105	2.1	1.9	7.4	6.9	1.9	1.9	11.6	10.8	8.4	8.8	9.6	9.7	3.0	3.2	2.6
ICL	ILS	16	85	20,240	1.7	1.7	9.0	8.3	1.4	1.4	11.9	10.6	1.2	2.3	1.1	3.2	4.2	4.7	1.7
K+S	EUR	22	93	4,251	2.5	2.3	14.5	9.7	1.1	1.1	NA	13.8	(2.1)	0.0	(7.8)	(3.4)	0.6	3.3	1.0
Syngenta	CHF	407	94	37,585	2.9	2.7	14.1	12.6	3.9	3.9	21.3	18.7	4.5	4.9	4.4	4.7	3.4	3.9	4.4
Yara	NOK	327	82	89,615	1.0	1.0	6.5	6.4	1.2	1.2	11.5	11.5	4.7	7.5	4.1	7.5	3.9	3.9	1.1
				Mean	2.0	1.9	10.3	8.8	1.9	1.9	14.1	13.1	3.3	4.7	2.3	4.3	3.0	3.8	2.1
				Median	2.1	1.9	9.0	8.3	1.4	1.4	11.7	11.5	4.5	4.9	4.1	4.7	3.4	3.9	1.7
<b>Specialties</b>																			
Akzo Nobel	EUR	59	91	14,751	1.2	1.2	8.4	7.9	1.8	1.8	14.2	13.6	5.8	6.3	5.0	6.0	2.8	2.9	2.3
Elementis	Gbp	268	100	1,242	2.3	2.2	11.2	10.4	2.7	2.7	18.1	16.8	5.9	5.8	5.8	5.6	5.0	5.0	2.5
Ems-Chemie	CHF	509	93	11,893	5.5	5.1	19.7	18.9	10.4	10.0	28.6	27.5	3.4	3.4	3.3	3.3	2.8	2.9	8.1
Fuchs	EUR	38	86	5,113	2.1	2.0	11.7	10.8	4.3	4.1	20.2	19.2	3.9	4.5	4.1	4.6	2.4	2.5	3.8
Johnson Matthey	Gbp	3,039	86	6,092	2.0	1.9	10.3	9.9	2.7	2.4	14.7	14.0	4.3	4.4	4.3	4.5	2.6	2.8	2.5
Lonza	CHF	176	93	9,303	2.7	2.5	11.9	10.8	2.0	1.9	19.7	17.9	4.2	5.0	4.4	5.2	1.8	2.0	3.5
Sika	CHF	4,957	99	12,565	2.0	1.8	11.9	10.7	5.3	5.0	20.9	18.9	5.2	5.8	4.9	5.5	1.9	2.1	3.8
Umicore	EUR	55	94	5,995	2.1	1.8	11.1	9.6	2.7	2.5	21.2	18.3	1.8	1.8	1.4	1.5	2.3	2.3	3.4
Victrix Plc	Gbp	1,857	100	1,585	5.8	5.6	12.5	12.0	4.7	4.5	18.2	17.1	5.4	4.9	5.3	4.7	5.4	2.9	3.6
				Mean	2.9	2.7	12.1	11.2	4.1	3.9	19.5	18.2	4.5	4.7	4.3	4.5	3.0	2.8	3.7
				Median	2.1	2.0	11.7	10.7	2.7	2.7	19.7	17.9	4.3	4.9	4.4	4.7	2.6	2.8	3.5
<b>Diversified Specialties</b>																			
Arkema	EUR	94	99	6,937	1.2	1.2	8.0	7.4	1.7	1.6	14.5	13.5	4.5	5.3	4.9	5.9	2.5	2.7	1.6
BASF SE	EUR	86	100	78,594	1.5	1.4	8.2	7.6	1.9	1.8	15.0	14.0	5.2	5.2	5.3	5.4	3.7	4.1	2.3
Borregaard	NOK	83	96	8,250	1.9	1.8	9.6	10.2	3.0	2.9	18.6	21.5	4.5	3.9	4.3	3.6	2.2	2.3	3.1
Clariant	CHF	17	87	5,400	1.2	1.1	7.6	7.0	1.2	1.2	11.5	10.5	6.1	6.7	6.3	7.2	2.9	3.1	1.8
Covestro	EUR	64	100	12,944	1.2	1.1	7.3	6.3	2.0	1.9	15.6	13.7	7.2	8.5	7.4	8.3	2.1	2.4	2.6
DSM	EUR	56	88	9,869	1.3	1.2	7.6	7.3	1.2	1.2	15.0	14.6	5.8	7.4	4.5	7.1	3.1	3.4	1.6
Evonik	EUR	28	90	12,985	1.4	1.4	9.0	8.2	1.4	1.4	15.9	13.8	4.9	5.2	5.7	6.1	4.2	4.4	1.3
Lanxess	EUR	62	100	5,664	1.2	1.0	8.9	6.9	1.8	1.4	16.6	12.1	(0.1)	4.7	(1.5)	7.2	1.8	2.5	1.7
Solvay	EUR	111	100	11,592	1.8	1.7	8.5	8.4	1.3	1.3	13.5	13.3	3.3	4.0	3.8	4.9	3.1	3.3	1.2
Synthomer	Gbp	372	96	1,272	1.3	1.3	10.3	9.9	2.6	2.5	15.0	14.8	4.5	5.2	4.7	5.4	3.0	3.1	3.9
Wacker Chemie	EUR	93	100	4,600	1.2	1.1	5.9	5.4	1.4	1.4	16.9	15.4	7.0	7.3	10.0	9.8	3.0	3.3	2.1
				Mean	1.4	1.3	8.3	7.7	1.8	1.7	15.3	14.3	4.8	5.8	5.0	6.4	2.9	3.1	2.1
				Median	1.3	1.2	8.2	7.4	1.7	1.4	15.0	13.8	4.9	5.2	4.9	6.1	3.0	3.1	1.8
<b>Consumer Facing Chemicals</b>																			
Croda	Gbp	3,165	86	4,289	3.5	3.3	12.6	11.6	4.1	3.9	18.6	17.5	3.7	4.9	3.8	5.0	2.7	2.9	4.8
Frutarom	ILS	206	97	12,008	2.8	2.6	14.0	12.5	3.4	3.3	19.7	18.0	4.1	5.2	4.3	5.3	1.2	1.3	14.6
Givaudan	CHF	1,786	85	16,491	3.6	3.4	13.7	13.0	4.0	4.0	19.0	18.3	4.7	5.0	4.6	4.8	3.3	3.5	5.1
Kerry Group	EUR	64	76	11,231	2.0	1.8	13.7	12.2	2.3	2.2	18.7	17.1	4.3	5.5	4.4	5.6	0.9	1.0	3.0
Symrise	EUR	56	81	7,205	2.8	2.6	12.8	11.5	2.5	2.5	19.7	17.6	4.1	4.5	4.4	4.7	1.8	2.0	3.9
				Mean	2.9	2.7	13.4	12.1	3.3	3.2	19.1	17.7	4.2	5.0	4.3	5.1	2.0	2.1	6.3
				Median	2.8	2.6	13.7	12.2	3.4	3.3	19.0	17.6	4.1	5.0	4.4	5.0	1.8	2.0	4.8
<b>Industrial Gases</b>																			
Air Liquide	EUR	103	99	39,664	2.8	2.7	10.8	10.2	1.8	1.7	18.7	17.6	2.7	3.5	3.0	4.0	2.6	2.7	2.2
Linde	EUR	162	100	30,051	2.3	2.2	9.9	9.1	1.7	1.6	20.0	17.7	3.9	4.9	4.2	5.5	2.3	2.5	1.9
				Mean	2.5	2.4	10.3	9.6	1.7	1.7	19.3	17.6	3.3	4.2	3.6	4.8	2.5	2.6	2.1
				Median	2.5	2.4	10.3	9.6	1.7	1.7	19.3	17.6	3.3	4.2	3.6	4.8	2.5	2.6	2.1
<b>Chemical Distributors</b>																			
Brenntag	EUR	51	98	7,836	0.8	0.7	10.3	9.4	2.0	1.9	18.7	17.4	4.7	5.3	4.6	5.1	2.0	2.1	2.5
<b>European Chemical sector</b>																			
				Mean	2.2	2.0	10.6	9.7	2.7	2.5	17.3	16.0	4.3	5.1	4.2	5.2	2.7	2.9	3.2
				Median	2.1	1.9	10.6	9.8	2.0	1.9	18.6	17.1	4.5	5.0	4.4	5.2	2.6	2.8	2.6

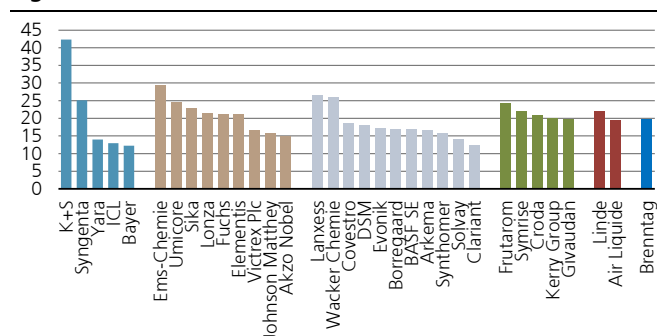
Source: UBS estimates, priced as at 9 Dec 2016; Note: Data for Johnson Matthey (FY-ending March) and Victrix (FY-ending September) are not calendarised.

Figure 21: EV/EBITDA, 2016e



Source: UBS estimates

Figure 22: P/E, 2016e



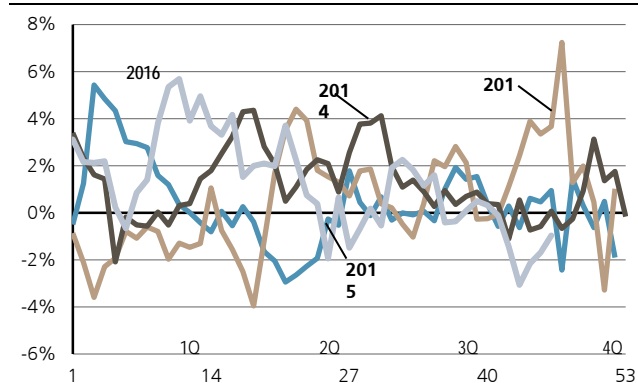
Source: UBS estimates

## European Absolute

Company	Reporting Currency	Revenue			EBITDA				EBITA			EPS			DPS	
		2016e	2017e	2018e	2015	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e	2017e	2018e
		(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)
<b>Agriculture</b>																
Bayer	EUR	46,164	48,010	50,072	11,954	12,888	13,543	14,204	9,656	10,322	10,954	7.63	8.05	8.63	2.80	3.00
ICL	USD	5,534	5,667	5,732	1,208	915	1,077	1,180	555	717	820	0.32	0.35	0.40	0.18	0.20
K+S	EUR	3,456	3,819	4,365	1,058	491	652	1,012	203	207	567	0.53	0.32	1.61	0.14	0.72
Syngenta	USD	12,872	13,762	14,574	2,770	2,503	2,845	3,165	1,957	2,275	2,569	15.91	18.74	21.37	14.00	16.00
Yara	NOK	105,022	108,145	110,435	21,037	14,823	16,758	17,004	8,008	10,403	10,282	23.37	28.48	28.44	12.85	12.84
<b>Specialties</b>																
Akzo Nobel	EUR	14,245	14,744	15,030	2,088	2,071	2,170	2,252	1,583	1,669	1,738	3.95	4.15	4.33	1.66	1.73
Elementis	USD	646	670	695	150	124	137	146	99	110	118	0.16	0.19	0.20	13.48	13.48
Ems-Chemie	CHF	1,982	2,100	2,223	525	568	581	604	512	522	542	17.27	17.76	18.46	14.00	14.50
Fuchs	EUR	2,250	2,330	2,415	363	396	424	451	344	362	382	1.81	1.89	1.99	0.91	0.96
Johnson Matthey	GBP	3,415	3,581	3,816	590	663	682	709	504	525	553	2.06	2.17	2.31	0.84	0.89
Lonza	CHF	4,035	4,245	4,436	793	890	959	1,028	610	657	711	8.26	8.95	9.82	3.13	3.44
Sika	CHF	5,829	6,253	6,675	837	950	1,059	1,144	789	846	922	216.68	236.64	262.86	94.00	104.00
Umicore	EUR	2,716	3,000	3,420	483	506	563	657	333	382	449	2.24	2.59	3.01	1.26	1.26
Victrex Plc	GBP	252	263	273	117	115	123	128	100	108	113	0.97	1.02	1.08	1.01	0.54
<b>Diversified Specialties</b>																
Arkema	EUR	7,473	8,069	8,319	1,057	1,170	1,258	1,327	730	792	846	5.70	6.51	6.96	2.35	2.50
BASF SE	EUR	57,060	60,718	64,209	10,450	10,076	11,049	11,792	6,301	7,169	7,797	5.07	5.72	6.13	3.20	3.50
Borregaard	NOK	4,426	4,510	4,591	751	951	888	819	707	645	576	4.89	4.44	3.85	1.80	1.90
Clariant	CHF	5,939	6,234	6,445	853	899	952	996	691	734	771	1.34	1.44	1.58	0.48	0.52
Covestro	EUR	11,537	12,112	12,628	1,641	1,904	2,051	2,233	1,217	1,373	1,526	3.42	4.11	4.66	1.35	1.53
DSM	EUR	7,985	8,527	8,708	1,075	1,320	1,468	1,482	821	942	949	3.15	3.77	3.88	1.75	1.90
Evonik	EUR	12,521	13,732	14,306	2,465	1,983	2,208	2,412	1,268	1,363	1,542	1.62	1.75	2.02	1.18	1.22
Lanxess	EUR	7,656	8,643	9,849	878	955	1,185	1,501	502	689	962	2.34	3.74	5.10	1.12	1.53
Solvay	EUR	11,682	11,968	12,185	1,942	2,468	2,463	2,441	1,697	1,685	1,661	7.83	8.24	8.34	3.45	3.65
Synthomer	GBP	1,000	1,125	1,149	125	140	145	150	114	115	120	0.23	0.25	0.25	0.11	0.11
Wacker Chemie	EUR	5,414	5,594	5,830	1,049	1,068	1,167	1,197	341	447	487	3.57	5.48	6.02	2.74	3.01
<b>Consumer Facing Chemicals</b>																
Croda	GBP	1,232	1,357	1,400	303	340	375	401	295	324	345	1.53	1.70	1.81	0.85	0.91
Frutarom	USD	1,156	1,270	1,333	162	217	254	275	176	210	229	2.24	2.74	3.01	0.64	0.70
Givaudan	CHF	4,663	4,861	5,055	1,070	1,216	1,272	1,322	1,093	1,138	1,181	90.12	94.00	97.75	59.54	61.91
Kerry Group	EUR	6,084	6,295	6,564	826	878	907	975	703	737	791	3.22	3.42	3.75	0.60	0.65
Symrise	EUR	2,920	3,057	3,264	572	613	673	733	524	582	635	2.52	2.82	3.16	0.98	1.11
<b>Industrial Gases</b>																
Air Liquide	EUR	18,705	21,170	21,833	4,262	4,752	5,456	5,752	3,138	3,634	3,837	5.31	5.49	5.85	2.63	2.73
Linde	EUR	17,246	17,822	18,317	4,119	3,965	4,161	4,436	2,357	2,503	2,750	7.40	8.11	9.17	3.80	4.10
<b>Chemical Distributors</b>																
Brenntag	EUR	10,936	11,189	11,491	807	838	868	912	717	745	785	2.57	2.71	2.91	1.00	1.09

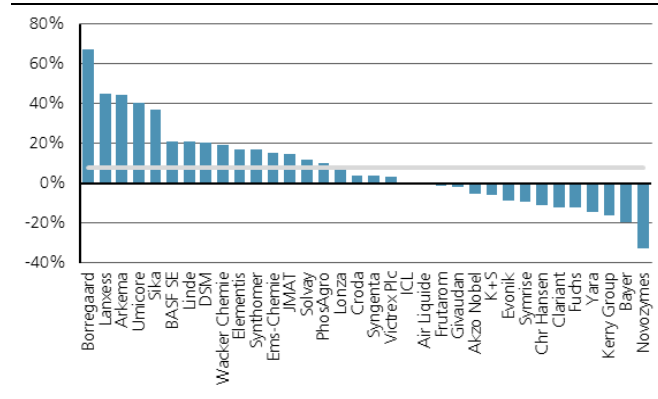
Source: UBS estimates, Note: Data for Johnson Matthey (FY-ending March) and Victrex (FY-ending September) are not calendarised.

**Figure 23: Year-on-year change in US Railcar shipments (four-week moving average)**



Source: Association of American Railroads, UBS

**Figure 24: EU Chemicals YTD absolute performance vs. average**



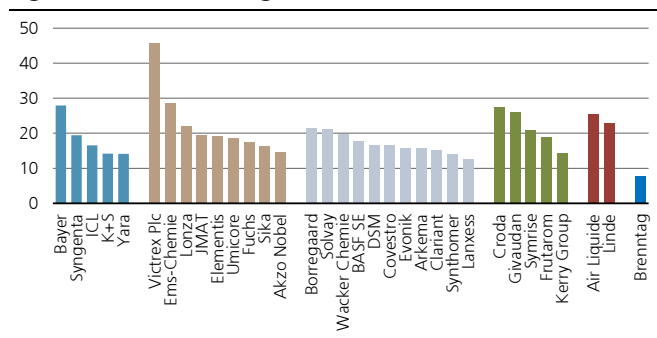
Source: Thomson Financial

## European Profitability

Company	EBITDA margin		EBITA margin		Gross margin		PAT margin		ROIC (pre-tax)		ROIC (post-tax)		ROE	
	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
<b>Agriculture</b>														
Bayer	28.2	28.4	21.5	21.9	58.0	58.0	13.9	14.3	20.0	21.4	15.0	16.1	23.7	23.1
ICL	19.0	20.6	12.6	14.3	29.6	31.3	7.9	8.8	10.6	11.5	7.6	8.0	13.8	15.2
K+S	17.1	23.2	5.4	13.0	37.5	44.8	1.6	7.0	2.4	6.2	1.7	4.5	1.4	6.8
Syngenta	20.7	21.7	16.5	17.6	45.8	46.9	12.6	13.5	21.9	25.4	18.1	20.9	20.4	22.4
Yara	15.5	15.4	9.6	9.3	26.8	26.7	7.1	6.9	11.5	11.0	9.0	8.6	9.5	8.9
Mean	20.1	21.9	13.1	15.2	39.6	41.6	8.6	10.1	13.3	15.1	10.3	11.6	13.7	15.3
Median	19.0	21.7	12.6	14.3	37.5	44.8	7.9	8.8	11.5	11.5	9.0	8.6	13.8	15.2
<b>Specialties</b>														
Akzo Nobel	14.7	15.0	11.3	11.6	40.8	41.1	7.1	7.3	16.7	17.4	11.4	12.0	16.6	16.3
Elementis	20.4	21.1	16.4	17.1	37.0	37.6	12.9	13.3	19.2	20.7	15.6	16.7	13.8	14.5
Ems-Chemie	27.7	27.2	24.9	24.4	44.8	44.3	19.8	19.4	47.2	47.4	39.0	39.1	29.1	28.5
Fuchs	18.2	18.7	15.6	15.8	38.3	38.4	11.2	11.4	31.6	32.0	22.0	22.2	20.0	18.9
Johnson Matthey	19.1	18.6	14.7	14.5	24.6	23.7	11.6	11.6	19.6	19.0	16.5	15.8	20.5	18.9
Lonza	22.6	23.2	15.5	16.0	29.9	30.4	11.0	11.6	11.5	12.4	9.2	10.0	18.7	18.4
Sika	16.9	17.1	13.5	13.8	55.0	54.8	9.6	10.0	35.6	37.7	26.7	28.3	19.4	19.1
Umicore	18.8	19.2	12.7	13.1	34.9	36.3	9.3	9.5	16.7	17.9	12.7	13.4	16.5	17.4
Victrex Plc	46.7	46.8	41.0	41.3	65.8	66.1	33.2	33.8	32.8	33.3	26.6	27.3	21.1	21.0
Mean	22.8	23.0	18.4	18.6	41.2	41.4	14.0	14.2	25.7	26.4	20.0	20.5	19.5	19.2
Median	19.1	19.2	15.5	15.8	38.3	38.4	11.2	11.6	19.6	20.7	16.5	16.7	19.4	18.9
<b>Diversified Specialties</b>														
Arkema	15.6	15.9	9.8	10.2	21.2	21.5	5.9	6.2	13.5	13.6	9.0	9.1	11.1	11.1
BASF SE	18.2	18.4	11.8	12.1	30.2	30.3	8.6	8.8	14.7	15.8	11.3	12.0	15.9	16.1
Boregaard	19.7	17.8	14.3	12.5	19.7	17.8	9.8	8.4	22.9	19.8	16.7	14.1	17.3	13.7
Clariant	15.3	15.5	11.8	12.0	32.4	32.1	7.5	7.9	12.7	13.0	9.7	9.9	16.1	15.7
Covestro	16.9	17.7	11.3	12.1	26.7	26.5	6.9	7.5	18.7	20.2	13.1	14.1	17.9	18.1
DSM	17.2	17.0	11.0	10.9	30.9	30.7	7.7	7.8	10.5	10.5	8.4	8.4	10.9	10.7
Evonik	16.1	16.9	9.9	10.8	28.9	29.2	5.9	6.6	9.5	10.6	6.6	7.4	8.5	9.0
Lanxess	13.7	15.2	8.0	9.8	24.5	25.9	4.0	4.7	11.5	13.0	7.5	8.5	10.5	13.5
Solvay	20.6	20.0	14.1	13.6	24.1	23.8	7.2	7.1	10.6	10.5	7.8	8.0	9.1	9.0
Synthoner	12.8	13.1	10.2	10.4	22.5	22.7	7.5	7.4	19.7	20.6	16.2	16.5	27.6	24.6
Wacker Chemie	20.9	20.5	8.0	8.4	20.4	20.7	4.9	5.1	9.2	10.5	6.5	7.3	12.7	12.9
Mean	17.0	17.1	10.9	11.2	25.6	25.6	6.9	7.0	13.9	14.4	10.2	10.5	14.3	14.0
Median	16.9	17.0	11.0	10.9	24.5	25.9	7.2	7.4	12.7	13.0	9.0	9.1	12.7	13.5
<b>Consumer Facing Chemicals</b>														
Croda	27.6	28.6	23.9	24.7	34.6	35.4	16.4	17.0	28.1	29.0	20.1	20.6	28.3	25.7
Frutarom	20.0	20.6	16.5	17.2	40.0	40.0	12.7	13.2	20.2	21.7	16.6	17.8	21.5	19.5
Givaudan	26.2	26.2	23.4	23.4	51.3	51.2	17.9	17.9	26.3	27.4	21.6	22.4	28.0	26.9
Kerry Group	14.4	14.9	11.7	12.1	37.5	38.0	9.6	10.1	13.8	14.8	12.0	12.8	17.2	16.4
Symrise	22.0	22.4	19.0	19.5	43.6	44.4	12.0	12.6	17.0	18.6	12.0	13.2	20.6	20.9
Mean	22.0	22.5	18.9	19.3	41.4	41.8	13.7	14.1	21.1	22.3	16.5	17.4	23.1	21.9
Median	22.0	22.4	19.0	19.5	40.0	40.0	12.7	13.2	20.2	21.7	16.6	17.8	21.5	20.9
<b>Industrial Gases</b>														
Air Liquide	25.8	26.3	17.2	17.6	44.6	45.1	10.3	10.6	11.1	11.5	7.7	8.0	12.3	12.3
Linde	23.3	24.2	14.0	15.0	36.8	37.9	8.5	9.3	10.1	11.1	7.7	8.4	9.9	10.7
Mean	24.6	25.3	15.6	16.3	40.7	41.5	9.4	10.0	10.6	11.3	7.7	8.2	11.1	11.5
Median	24.6	25.3	15.6	16.3	40.7	41.5	9.4	10.0	10.6	11.3	7.7	8.2	11.1	11.5
<b>Chemical Distributors</b>														
Brenntag	7.8	7.9	6.7	6.8	21.8	21.9	3.7	3.9	16.2	17.0	10.7	11.2	13.7	13.5
Mean	20.0	20.5	14.7	15.2	35.2	35.6	10.2	10.6	18.0	18.9	13.7	14.3	16.8	16.7
Median	19.0	19.2	13.5	13.6	34.6	35.4	9.3	9.3	16.7	17.4	12.0	12.8	16.6	16.3

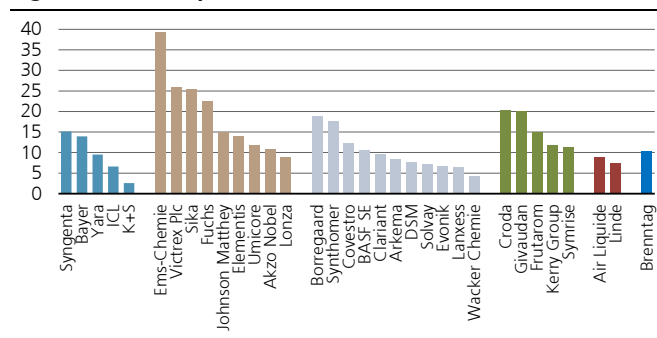
Source: UBS estimates, Note: Data for Johnson Matthey (FY-ending March) and Victrex (FY-ending September) are not calendarised.

Figure 25: EBITDA margin, 2016e



Source: UBS estimates

Figure 26: ROIC (post-tax), 2016e



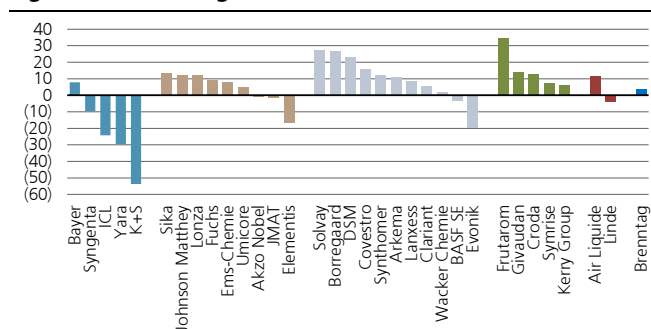
Source: UBS estimates

## European Momentum & Debt

Company	Year End	Reporting Currency	Net debt		Revenue growth		EBITDA growth		EBITA growth		EPS growth		Int. cover (EBITA)		ND as % of EV	
			2017e	2018e	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2017e	2018e	2017e	2018e
			(LC)	(LC)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(x)	(x)	(%)	(%)
Agriculture																
Bayer	Dec	EUR	10,932	7,439	4.0	4.3	5.1	4.9	6.9	6.1	5.4	7.3	9.4	10.9	10.9	7.6
ICL	Dec	USD	3,866	3,949	2.4	1.1	17.7	9.6	29.1	14.4	8.9	12.8	5.1	5.6	39.7	40.3
K+S	Dec	EUR	3,367	3,737	10.5	14.3	32.8	55.3	2.3	173.5	(39.1)	402.3	1.6	3.8	35.7	38.0
Syngenta	Dec	USD	2,712	1,959	6.9	5.9	13.7	11.3	16.2	12.9	17.7	14.0	10.6	13.5	6.7	4.9
Yara	Dec	NOK	17,240	14,738	3.0	2.1	13.1	1.5	29.9	(1.2)	21.8	(0.1)	16.9	16.4	15.9	13.6
Mean					5.4	5.5	16.4	16.5	16.9	41.2	3.0	87.3	8.7	10.1	21.8	20.9
Median					4.0	4.3	13.7	9.6	16.2	12.9	8.9	12.8	9.4	10.9	15.9	13.6
Specialties																
Akzo Nobel	Dec	EUR	915	372	3.5	1.9	4.8	3.7	5.5	4.1	5.1	4.3	22.4	24.7	5.0	2.1
Elementis	Dec	USD	(93)	(104)	3.7	3.7	10.0	7.0	11.6	7.7	16.3	7.4	27.7	29.9	(6.0)	(6.8)
Ems-Chemie	Dec	CHF	(547)	(601)	5.9	5.9	2.3	4.0	1.9	3.8	2.8	4.0	47.5	49.3	(4.8)	(5.3)
Fuchs	Dec	EUR	(230)	(338)	3.6	3.6	7.0	6.3	5.2	5.3	4.6	5.2	122.7	132.8	(4.6)	(6.9)
Johnson Matthey	Mar	GBP	612	501	4.9	6.5	2.9	4.0	4.3	5.2	5.2	6.4	15.3	15.8	9.0	7.3
Lonza	Dec	CHF	1,583	1,280	5.2	4.5	7.8	7.2	7.8	8.2	8.3	9.8	9.1	10.3	13.9	11.5
Sika	Dec	CHF	(690)	(1,035)	7.3	6.8	11.4	8.0	7.2	9.0	9.2	11.1	21.3	33.5	(5.5)	(8.4)
Umicore	Dec	EUR	388	436	10.5	14.0	11.3	16.7	14.6	17.5	15.7	16.1	15.3	17.0	6.2	6.9
Victrex Plc	Sep	GBP	(108)	(96)	4.0	4.0	6.3	4.2	7.2	4.8	5.6	6.1	NA	NA	(7.0)	(6.3)
Mean					5.4	5.7	7.1	6.8	7.3	7.3	8.1	7.8	35.2	39.2	0.7	(0.6)
Median					4.9	4.5	7.0	6.3	7.2	5.3	5.6	6.4	21.8	27.3	(4.6)	(5.3)
Diversified Specialties																
Arkema	Dec	EUR	1,363	1,130	8.0	3.1	7.5	5.5	8.6	6.8	(14.2)	6.9	9.8	9.9	13.5	11.4
BASF SE	Dec	EUR	11,973	10,706	6.4	5.8	9.6	6.7	13.8	8.8	12.6	7.2	13.9	15.6	13.2	11.9
Borregaard	Dec	NOK	163	18	1.9	1.8	(6.6)	(7.8)	(8.8)	(10.8)	(9.2)	(13.4)	19.0	16.9	1.9	0.2
Clariant	Dec	CHF	1,370	1,149	5.0	3.4	5.8	4.7	6.1	5.0	7.9	9.4	7.3	9.8	19.0	16.4
Covestro	Dec	EUR	2,375	2,375	5.0	4.3	7.8	8.9	12.8	11.1	20.1	13.6	8.5	9.9	15.9	16.8
DSM	Dec	EUR	1,928	1,544	6.8	2.1	11.2	0.9	14.7	0.7	19.8	2.8	8.7	9.4	17.2	14.3
Evonik	Dec	EUR	2,306	2,084	9.7	4.2	11.3	9.2	7.4	13.1	7.7	15.2	10.1	11.7	11.6	10.6
Lanxess	Dec	EUR	2,769	2,463	12.9	14.0	24.1	26.6	37.2	39.7	59.5	36.4	9.2	12.9	26.1	23.9
Solvay	Dec	EUR	3,868	3,660	2.4	1.8	(0.2)	(0.9)	(0.7)	(1.4)	5.2	1.3	5.3	5.4	18.4	17.8
Synthomer	Dec	GBP	138	103	12.6	2.1	3.1	3.7	0.9	4.1	5.3	1.7	15.5	n/m	9.2	6.9
Wacker Chemie	Dec	EUR	572	259	3.3	4.2	9.3	2.5	31.2	9.1	53.7	9.9	22.3	24.4	8.3	4.0
Mean					6.7	4.2	7.5	5.5	11.2	7.8	15.3	8.3	11.8	12.6	14.0	12.2
Median					6.4	3.4	7.8	4.7	8.6	6.8	7.9	7.2	9.8	10.8	13.5	11.9
Consumer Facing Chemicals																
Croda	Dec	GBP	328	225	10.1	3.1	10.2	6.9	9.8	6.7	11.2	6.6	26.4	31.3	6.9	4.9
Frutarom	Dec	USD	326	172	9.9	4.9	17.0	8.3	19.4	9.0	22.6	9.7	17.2	18.7	9.1	5.0
Givaudan	Dec	CHF	578	367	4.2	4.0	4.6	3.9	4.2	3.7	4.3	4.0	14.2	14.8	3.3	2.1
Kerry Group	Dec	EUR	1,070	563	3.5	4.3	3.3	7.5	4.8	7.3	6.3	9.7	11.8	13.8	8.6	4.7
Symrise	Dec	EUR	1,186	971	4.7	6.8	9.8	8.8	11.2	9.1	12.0	11.8	13.8	18.8	13.8	11.5
Mean					6.5	4.6	9.0	7.1	9.9	7.2	11.3	8.4	16.7	19.5	8.4	5.7
Median					4.7	4.3	9.8	7.5	9.8	7.3	11.2	9.7	14.2	18.7	8.6	4.9
Industrial Gases																
Air Liquide	Dec	EUR	15,491	14,984	13.2	3.1	14.8	5.4	15.8	5.6	3.4	6.5	8.4	9.0	26.3	25.7
Linde	Dec	EUR	7,273	6,334	3.3	2.8	4.9	6.6	6.2	9.9	9.7	13.0	7.3	8.6	17.7	15.7
Mean					8.3	3.0	9.9	6.0	11.0	7.7	6.5	9.8	7.9	8.8	22.0	20.7
Median					8.3	3.0	9.9	6.0	11.0	7.7	6.5	9.8	7.9	8.8	22.0	20.7
Chemical Distributors																
Brenntag	Dec	EUR	1,316	1,065	2.3	2.7	3.6	5.0	3.9	5.4	5.3	7.5	7.8	9.0	14.7	12.4
European Chemical sector				Mean	6.1	4.8	9.0	7.8	10.6	12.6	10.0	20.2	17.5	19.8	11.2	9.5
				Median	5.0	4.0	7.8	6.3	7.4	6.8	7.9	7.4	12.8	13.8	10.9	7.6

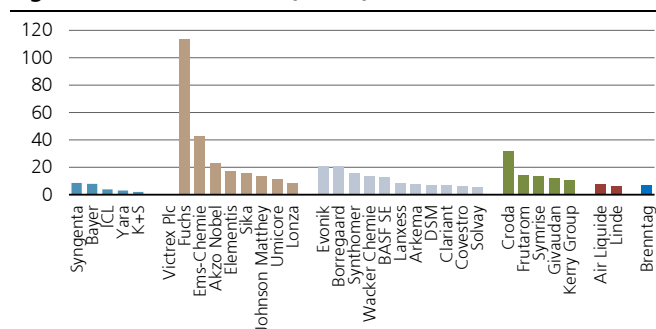
Source: UBS estimates, Note: Data for Johnson Matthey (FY-ending March) and Victrex (FY-ending September) are not calendarised.

Figure 27: EBITDA growth, 2016e vs. 2015e



Source: UBS estimates

Figure 28: Interest cover (EBITA), 2016e



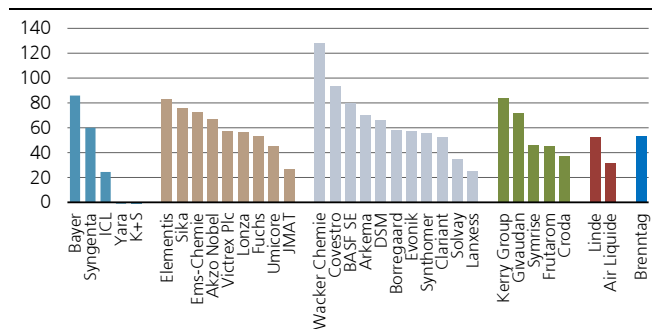
Source: UBS estimates

## European Cash Flow

Company	Reporting Currency	Capex/D&A			EBITA/Capex			Enterprise FCF/EBITA			Enterprise FCF			Equity FCF		
		2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e
		(%)	(%)	(%)	(x)	(x)	(x)	(%)	(%)	(%)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)
<b>Agriculture</b>																
Bayer	EUR	70.4	72.8	74.3	4.2	4.4	4.5	85.9	82.3	78.0	8,293	8,493	8,540	7,277	7,394	7,450
ICL	USD	178.2	180.6	180.6	0.9	1.1	1.3	24.3	16.7	28.1	135	120	231	64	58	168
K+S	EUR	459.0	186.5	164.4	0.2	0.3	0.8	(407.7)	(97.1)	0.6	(827)	(202)	4	(929)	(334)	(146)
Syngenta	USD	110.9	112.4	112.9	3.2	3.6	3.8	60.0	80.2	75.6	1,175	1,824	1,943	986	1,610	1,753
Yara	NOK	234.8	154.9	106.8	0.5	1.1	1.4	(28.9)	49.0	79.5	(2,317)	5,099	8,170	(3,229)	3,693	6,738
Mean		210.6	141.4	127.8	1.8	2.1	2.4	(53.3)	26.2	52.4	1,292	3,067	3,777	834	2,484	3,193
Median		178.2	154.9	112.9	0.9	1.1	1.4	24.3	49.0	75.6	135	1,824	1,943	64	1,610	1,753
<b>Specialties</b>																
Akzo Nobel	EUR	108.6	109.2	109.1	3.0	3.0	3.1	67.3	63.9	64.8	1,064	1,067	1,126	675	736	879
Elementis	USD	116.1	149.3	143.9	3.3	2.7	3.0	83.0	82.7	74.8	82	91	89	81	90	88
Ems-Chemie	CHF	107.2	107.2	125.0	8.6	8.3	7.0	72.7	74.5	72.4	372	389	393	372	389	393
Fuchs	EUR	193.1	162.2	144.8	3.4	3.6	3.8	53.0	53.5	57.1	182	194	218	198	209	233
Johnson Matthey	GBP	174.5	161.6	161.4	1.8	2.1	2.2	27.1	56.3	54.4	136	296	300	103	263	272
Lonza	CHF	119.5	112.5	104.9	1.8	1.9	2.1	56.1	73.8	77.6	342	485	551	272	412	482
Sika	CHF	81.6	75.6	77.6	6.0	5.3	5.4	75.6	77.1	77.1	596	652	712	554	617	686
Umicore	EUR	137.9	144.2	133.2	1.4	1.5	1.6	45.4	29.5	25.8	151	113	116	120	86	88
Victrex Plc	GBP	172.7	200.0	200.0	3.9	3.6	3.8	57.3	77.7	66.3	58	84	75	58	84	75
Mean		134.6	135.7	133.3	3.7	3.6	3.5	59.7	65.4	63.4	332	374	398	270	321	355
Median		119.5	144.2	133.2	3.3	3.0	3.1	57.3	73.8	66.3	182	296	300	198	263	272
<b>Diversified Specialties</b>																
Arkema	EUR	103.9	105.1	102.5	1.6	1.6	1.7	70.2	57.5	62.1	512	456	525	381	341	406
BASF SE	EUR	105.2	95.0	92.1	1.6	1.9	2.1	79.4	65.6	60.3	5,002	4,701	4,706	4,492	4,187	4,206
Borregaard	NOK	129.7	130.9	130.9	2.2	2.0	1.8	57.9	59.8	56.6	410	386	326	382	358	299
Clariant	CHF	154.3	157.1	157.1	2.2	2.1	2.2	52.2	60.0	60.7	361	440	468	257	340	389
Covestro	EUR	58.8	82.1	82.1	3.0	2.5	2.6	93.2	79.1	78.5	1,135	1,086	1,198	975	952	1,071
DSM	EUR	103.5	104.8	105.5	1.6	1.7	1.7	66.5	69.3	84.7	545	653	803	325	444	700
Evonik	EUR	129.4	104.0	105.2	1.4	1.6	1.7	57.6	71.7	66.2	730	977	1,020	567	745	789
Lanxess	EUR	99.4	91.9	88.6	1.1	1.5	2.0	25.4	(1.7)	50.3	128	(12)	484	68	(87)	409
Solvay	EUR	123.2	118.3	114.1	1.8	1.8	1.9	34.5	41.2	49.1	585	695	816	347	439	568
Synthomer	GBP	133.1	135.3	99.4	3.3	2.9	4.0	55.9	58.7	64.4	64	68	77	56	60	69
Wacker Chemie	EUR	60.6	59.9	62.8	0.8	1.0	1.1	128.0	107.0	96.3	436	478	470	311	458	450
Mean		109.2	107.7	103.7	1.9	1.9	2.1	65.5	60.8	66.3	901	903	990	742	749	850
Median		105.2	104.8	102.5	1.6	1.8	1.9	57.9	60.0	62.1	512	478	525	347	439	450
<b>Consumer Facing Chemicals</b>																
Croda	GBP	263.5	166.2	126.5	2.5	3.8	4.9	36.8	54.3	65.2	109	176	225	99	164	214
Frutarom	USD	77.9	80.2	80.1	5.4	5.9	6.1	45.3	70.2	77.3	80	147	177	68	136	166
Givaudan	CHF	150.7	145.3	142.8	5.9	5.9	5.8	71.7	71.9	72.4	784	819	855	709	753	789
Kerry Group	EUR	122.0	148.1	107.1	3.3	2.9	4.0	83.4	71.9	82.4	587	530	652	547	497	632
Symrise	EUR	207.9	202.6	189.8	2.8	3.2	3.4	45.8	61.2	59.0	240	356	375	200	314	341
Mean		164.4	148.5	129.3	4.0	4.3	4.9	56.6	65.9	71.3	360	406	457	325	373	428
Median		150.7	148.1	126.5	3.3	3.8	4.9	45.8	70.2	72.4	240	356	375	200	314	341
<b>Industrial Gases</b>																
Air Liquide	EUR	144.0	127.6	121.4	1.3	1.6	1.7	31.2	44.5	52.8	980	1,617	2,026	581	1,182	1,600
Linde	EUR	102.9	105.0	108.3	1.4	1.4	1.5	52.6	63.6	71.4	1,239	1,593	1,962	859	1,252	1,644
Mean		123.5	116.3	114.8	1.4	1.5	1.6	41.9	54.1	62.1	1,110	1,605	1,994	720	1,217	1,622
Median		123.5	116.3	114.8	1.4	1.5	1.6	41.9	54.1	62.1	1,110	1,605	1,994	720	1,217	1,622
<b>Chemical Distributors</b>																
Brenntag	EUR	123.0	113.7	104.4	4.8	5.3	5.9	53.0	56.8	58.2	380	423	457	313	359	399
Mean		141.1	127.3	120.0	2.7	2.8	3.0	42.8	57.1	63.6	720	1,039	1,215	550	855	1,039
Median		123.0	118.3	109.1	2.2	2.1	2.2	56.1	63.6	65.2	380	456	484	313	389	409

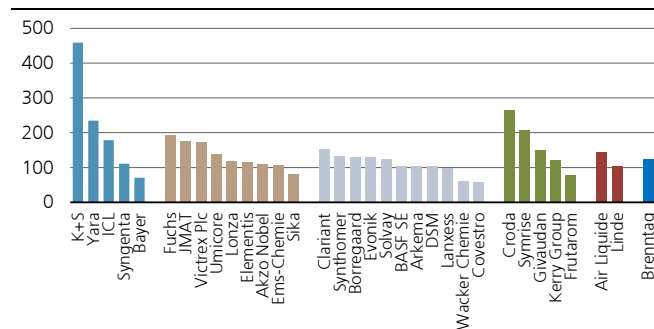
Source: UBS estimates, Note: Data for Johnson Matthey (FY-ending March) and Victrex (FY-ending September) are not calendarised.

Figure 29: EV FCF/ EBITA, 2016e



Source: UBS estimates

Figure 30: Capex/D&A, 2016e



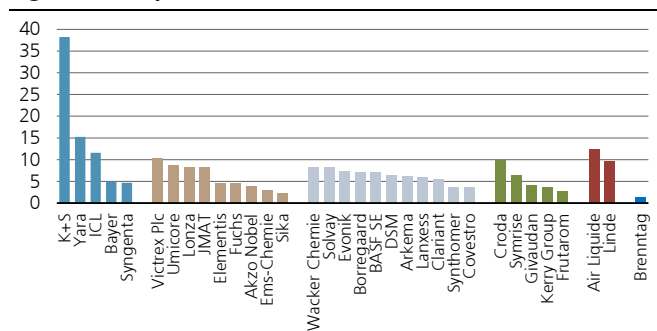
Source: UBS estimates

## European Productivity

Company	Reported tax rate			D&A/Revenue			Capex/Revenue			NTFA/Revenue			NWC/Revenue		
	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
<b>Agriculture</b>															
Bayer	24.1	24.9	24.9	7.0	6.7	6.5	4.9	4.9	4.8	27.5	27.8	27.9	18.2	17.6	17.6
ICL	25.0	28.0	30.0	6.5	6.4	6.3	11.6	11.5	11.3	78.7	81.8	86.0	26.9	29.3	30.2
K+S	5.5	28.3	28.3	8.3	11.6	10.2	38.2	21.7	16.7	165.2	174.1	164.6	25.4	23.1	22.2
Syngenta	19.2	17.5	17.7	4.2	4.1	4.1	4.7	4.7	4.6	26.9	26.3	26.0	36.4	32.8	28.9
Yara	0.0	21.4	21.3	6.5	5.9	6.1	15.2	9.1	6.5	53.8	57.6	58.2	18.4	17.6	17.6
Mean	14.8	24.0	24.5	6.5	6.9	6.6	14.9	10.4	8.8	70.4	73.5	72.5	25.1	24.1	23.3
Median	19.2	24.9	24.9	6.5	6.4	6.3	11.6	9.1	6.5	53.8	57.6	58.2	25.4	23.1	22.2
<b>Specialties</b>															
Akzo Nobel	31.7	31.6	31.4	3.4	3.4	3.4	3.7	3.7	3.7	29.9	30.8	30.5	5.3	5.1	5.1
Elementis	18.5	18.5	19.0	4.0	4.0	4.0	4.6	6.0	5.8	33.1	33.3	34.0	19.4	16.1	13.5
Ems-Chemie	18.0	17.5	17.5	2.8	2.8	2.8	3.0	3.0	3.5	26.0	24.8	23.8	23.7	23.8	23.8
Fuchs	30.2	30.5	30.4	2.3	2.6	2.9	4.4	4.3	4.1	18.2	20.6	21.8	20.1	19.8	19.6
Johnson Matthey	15.7	16.0	17.0	4.7	4.4	4.1	8.1	7.1	6.6	34.1	33.5	35.0	31.2	25.5	27.0
Lonza	20.0	20.0	20.0	6.9	7.1	7.2	8.3	8.0	7.5	62.9	64.3	62.2	14.2	15.2	15.1
Sika	25.0	25.0	25.0	2.8	3.4	3.3	2.3	2.6	2.6	16.3	16.4	16.7	14.9	14.4	14.0
Umicore	23.0	24.0	25.0	6.4	6.0	6.1	8.8	8.7	8.1	38.5	36.6	33.6	30.7	29.7	30.2
Victrex Plc	17.7	19.0	18.0	5.9	5.7	5.5	10.3	11.4	11.0	100.2	100.2	101.9	21.5	19.5	17.2
Mean	22.2	22.4	22.6	4.4	4.4	4.4	5.9	6.1	5.9	39.9	40.1	40.0	20.1	18.8	18.4
Median	20.0	20.0	20.0	4.0	4.0	4.0	4.6	6.0	5.8	33.1	33.3	33.6	20.1	19.5	17.2
<b>Diversified Specialties</b>															
Arkema	34.2	33.1	33.1	5.9	5.8	5.8	6.1	6.1	5.9	36.1	36.3	38.3	14.4	13.5	13.7
BASF SE	20.0	23.0	24.0	6.6	6.4	6.2	7.0	6.1	5.7	47.0	47.0	45.0	20.6	19.0	19.0
Borregaard	27.0	27.0	28.6	5.5	5.4	5.3	7.2	7.1	6.9	52.2	52.8	53.5	12.4	12.7	12.7
Clariant	24.0	24.0	24.0	3.5	3.5	3.5	5.4	5.5	5.5	39.1	42.0	42.6	8.9	10.2	11.3
Covestro	30.3	30.0	30.0	6.0	5.6	5.6	3.5	4.6	4.6	41.5	37.9	35.4	25.2	30.1	32.3
DSM	18.3	19.8	19.5	6.2	6.2	6.1	6.5	6.5	6.5	39.8	37.5	37.1	16.1	15.8	15.3
Evonik	30.0	30.0	30.0	5.7	6.2	6.1	7.4	6.4	6.4	54.5	57.7	56.4	24.6	16.7	16.8
Lanxess	40.0	35.0	35.0	5.9	5.7	5.5	5.9	5.3	4.8	44.4	50.7	54.7	18.3	18.4	18.5
Solvay	32.0	26.3	24.0	6.6	6.5	6.4	8.1	7.7	7.3	58.4	56.7	56.7	9.1	9.4	9.7
Synthomer	17.4	18.0	20.0	2.6	2.6	2.6	3.5	3.6	2.6	24.1	27.4	27.3	5.7	6.0	6.3
Wacker Chemie	37.0	30.0	30.0	13.4	12.9	12.2	8.1	7.7	7.6	85.8	77.6	69.3	15.9	16.5	16.6
Mean	28.2	26.9	27.1	6.2	6.1	5.9	6.2	6.0	5.8	47.5	47.6	46.9	15.6	15.3	15.7
Median	30.0	27.0	28.6	5.9	5.8	5.8	6.5	6.1	5.9	44.4	47.0	45.0	15.9	15.8	15.3
<b>Consumer Facing Chemicals</b>															
Croda	28.8	28.5	29.0	3.7	3.8	4.0	9.7	6.3	5.0	40.4	40.7	41.2	15.6	16.2	16.9
Frutarom	19.0	18.0	18.0	3.6	3.5	3.5	2.8	2.8	2.8	24.7	27.0	26.6	27.3	29.0	29.6
Givaudan	17.0	18.0	18.0	2.7	2.8	2.8	4.0	4.0	4.0	26.8	23.6	23.9	21.3	20.7	20.5
Kerry Group	13.5	13.5	13.5	2.9	2.7	2.8	3.5	4.0	3.0	26.2	28.9	29.2	2.3	1.6	1.0
Symrise	29.0	29.0	29.0	3.1	3.0	3.0	6.4	6.0	5.7	30.6	36.6	35.6	23.4	24.3	23.8
Mean	21.5	21.4	21.5	3.2	3.1	3.2	5.3	4.6	4.1	29.7	31.4	31.3	18.0	18.4	18.4
Median	19.0	18.0	18.0	3.1	3.0	3.0	4.0	4.0	4.0	26.8	28.9	29.2	21.3	20.7	20.5
<b>Industrial Gases</b>															
Air Liquide	27.9	30.4	30.4	8.6	8.6	8.8	12.4	11.0	10.6	99.5	103.1	102.6	4.8	6.3	7.7
Linde	24.5	24.5	24.5	9.3	9.3	9.2	9.6	9.8	10.0	74.7	73.0	71.6	4.9	6.5	7.1
Mean	26.2	27.5	27.5	9.0	9.0	9.0	11.0	10.4	10.3	87.1	88.0	87.1	4.9	6.4	7.4
Median	26.2	27.5	27.5	9.0	9.0	9.0	11.0	10.4	10.3	87.1	88.0	87.1	4.9	6.4	7.4
<b>Chemical Distributors</b>															
Brenntag	34.0	34.0	34.0	1.1	1.1	1.1	1.4	1.3	1.2	9.0	9.1	9.0	9.7	9.9	10.1
Mean	23.6	24.7	24.9	5.3	5.3	5.2	7.5	6.6	6.2	47.5	48.3	47.8	17.8	17.3	17.3
Median	24.1	24.9	24.9	5.7	5.6	5.5	6.4	6.1	5.7	39.1	37.5	37.1	18.3	16.7	16.9

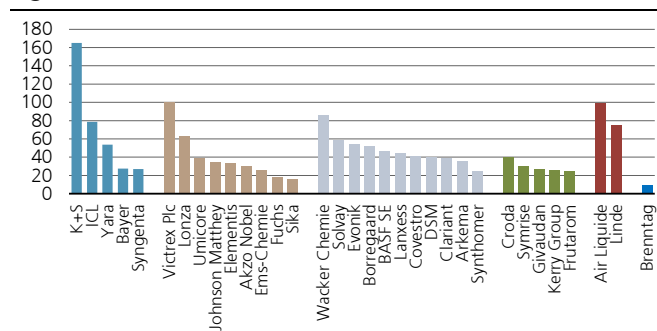
Source: UBS estimates, Note: Data for Johnson Matthey (FY-ending March) and Victrex (FY-ending September) are not calendarised.

Figure 31: Capex as % of Sales (2016e)



Source: UBS estimates

Figure 32: Fixed assets as % of Sales (2016e)



Source: UBS estimates

## European Chemicals – UBS estimates versus consensus

	2016E EBITDA			2016E EBITA			2016E EPS			2016E DPS		
	IBES	UBS	UBS vs. IBES	IBES*	UBS	UBS vs. IBES	IBES	UBS	UBS vs. IBES	IBES	UBS	UBS vs. IBES
<b>Agriculture</b>												
Bayer (€)	11061	12888	17%	8730	9656	11%	7.39	7.63	3%	2.68	2.65	-1%
ICL (US\$)	918	915	0%	463	555	20%	0.32	0.32	1%	0.17	0.16	-4%
Syngenta (US\$)	2642	2503	-5%	2081	1957	-6%	16.57	15.91	-4%	12.13	12.00	-1%
K+S (€)	550	491	-11%	256	203	-21%	0.76	0.53	-31%	0.43	0.37	-15%
Yara (NKR)	15163	14823	-2%	8992	8008	-11%	21.55	23.37	8%	12.35	12.56	2%
<b>Average</b>			<b>0%</b>			<b>-1%</b>			<b>-4%</b>			<b>-4%</b>
<b>Specialties</b>												
Akzo Nobel (€)	2131	2071	-3%	1542	1583	3%	4.15	3.92	-5%	1.63	1.58	-3%
Elementis (US\$)	127	124	-2%	100	99	-2%	0.17	0.16	-8%	11.20	13.48	20%
Ems-Chemie (CHF)	575	568	-1%	520	512	-1%	17.94	17.27	-4%	15.50	13.50	-13%
Fuchs (€)	401	396	-1%	355	344	-3%	1.80	1.81	0%	0.87	0.87	0%
Johnson Matthey (€)***	657	663	1%	495	504	2%	200.29	204.16	2%	78.17	79.62	2%
Lonza (CHF)	879	890	1%	551	610	11%	8.07	8.20	2%	2.77	2.89	4%
Sika (CHF)	949	950	0%	795	789	-1%	218.25	216.68	-1%	90.24	86.00	-5%
Umicore (€)	522	506	-3%	337	333	-1%	2.22	2.23	1%	1.24	1.20	-3%
Victrex (€)	115	115	1%	100	100	0%	96.70	96.67	0%	46.82	46.82	0%
<b>Average</b>			<b>-1%</b>			<b>1%</b>			<b>-1%</b>			<b>1%</b>
<b>Diversified Specialties</b>												
Arkema (€)	1167	1170	0%	709	730	3%	5.29	5.70	8%	2.06	2.10	2%
BASF (€)	10135	10076	-1%	6206	6301	2%	4.61	5.07	10%	2.97	3.00	1%
Borregaard (NKR)	993	951	-4%	726	707	-3%	5.24	4.89	-7%	1.72	1.60	-7%
Clariant (CHF)	881	899	2%	622	691	11%	1.17	1.34	15%	0.43	0.44	2%
Covestro (€)	1901	1904	0%	1212	1217	0%	3.45	3.42	-1%	1.15	1.15	0%
DSM (€)	1257	1320	5%	774	821	6%	3.12	3.15	1%	1.74	1.70	-2%
Evonik (€)	2145	1983	-8%	1429	1268	-11%	1.62	1.93	16%	1.15	1.15	0%
Lanxess (€)	983	955	-3%	513	502	-2%	2.41	2.34	-3%	0.73	0.70	-4%
Solvay (€)*	2434	2468	1%	1655	1697	3%	8.42	7.83	-7%	3.27	3.30	1%
Wacker Chemie (€)	1036	1068	3%	313	341	9%	2.94	3.57	22%	1.87	1.96	5%
Synthomer (€)	143	140	-2%	116	114	-2%	24.36	22.15	-9%	9.70	10.58	9%
<b>Average</b>			<b>0%</b>			<b>1%</b>			<b>1%</b>			<b>1%</b>
<b>Consumer Facing Chemicals</b>												
Croda (€)	341	340	0%	296	295	0%	152.35	152.05	0%	81.41	76.48	-6%
Frutarom (US\$)**	211	217	3%	169	176	4%	2.10	2.22	6%	0.37	0.52	41%
Givaudan (CHF)	1150	1216	6%	930	990	6%	77.71	89.29	15%	57.46	56.70	-1%
Kerry Group (€)	880	878	0%	715	703	-2%	3.21	3.22	0%	0.54	0.55	1%
Symrise (€)	619	613	-1%	427	416	-3%	2.25	2.52	12%	0.87	0.85	-2%
<b>Average</b>			<b>1%</b>			<b>1%</b>			<b>7%</b>			<b>7%</b>
<b>Industrial Gases</b>												
Air Liquide (€)	4739	4752	0%	3173	3138	-1%	5.16	5.31	3%	2.58	2.58	0%
Linde (€)	4042	3965	-2%	2167	2357	9%	7.11	7.38	4%	3.62	3.55	-2%
<b>Average</b>			<b>-1%</b>			<b>4%</b>			<b>3%</b>			<b>-1%</b>
<b>Chemical Distributors</b>												
Brenntag (€)	816	838	3%	662	717	8%	2.50	2.57	3%	1.02	0.90	-12%
<b>Average</b>			<b>0%</b>			<b>1%</b>			<b>1%</b>			<b>0%</b>

Consensus numbers can be EBIT or EBITA; UBS numbers are EBITA only  
 \* Dividend (pre w/h tax); \*\* Dividend in ILS; \*\*\* JMAT is for 2017

	2017E EBITDA			2017E EBITA			2017E EPS			2017E DPS		
	IBES	UBS	UBS vs. IBES	IBES*	UBS	UBS vs. IBES	IBES	UBS	UBS vs. IBES	IBES	UBS	UBS vs. IBES
<b>Agriculture</b>												
Bayer (€)	11683	13543	16%	9783	10322	6%	7.99	8.05	1%	2.87	2.80	-2%
ICL (US\$)	1141	1077	-6%	723	717	-1%	0.36	0.35	-4%	0.17	0.18	4%
Syngenta (US\$)	2914	2845	-2%	2305	2275	-1%	18.85	18.74	-1%	12.99	14.00	8%
K+S (€)	760	652	-14%	383	207	-46%	1.11	0.32	-71%	0.52	0.14	-73%
Yara (NKR)	14502	16758	16%	7942	10403	31%	20.80	28.48	37%	10.76	12.85	19%
<b>Average</b>			<b>2%</b>			<b>-2%</b>			<b>-8%</b>			<b>-9%</b>
<b>Specialties</b>												
Akzo Nobel (€)	2200	2170	-1%	1584	1669	5%	4.21	4.12	-2%	1.71	1.66	-3%
Elementis (US\$)	136	137	0%	111	110	-1%	0.18	0.19	1%	11.84	13.48	14%
Ems-Chemie (CHF)	588	581	-1%	533	522	-2%	18.43	17.76	-4%	16.33	14.00	-14%
Fuchs (€)	420	424	1%	371	362	-2%	1.89	1.89	0%	0.92	0.91	-1%
Johnson Matthey (€)***	699	682	-2%	530	525	-1%	216.24	214.66	-1%	83.33	83.72	0%
Lonza (CHF)	975	959	-2%	678	657	-3%	9.60	8.88	-7%	3.11	3.13	1%
Sika (CHF)	1027	1059	3%	873	846	-3%	240.98	236.64	-2%	98.15	94.00	-4%
Umicore (€)	581	563	-3%	390	382	-2%	2.59	2.58	0%	1.34	1.26	-6%
Victrex (€)	125	123	-2%	108	108	-1%	100.36	102.04	2%	92.82	101.07	9%
<b>Average</b>			<b>-1%</b>			<b>-1%</b>			<b>-2%</b>			<b>0%</b>
<b>Diversified Specialties</b>												
Arkema (€)	1261	1258	0%	785	792	1%	6.10	6.51	7%	2.25	2.35	4%
BASF (€)	10845	11049	2%	6798	7169	5%	5.01	5.72	14%	3.08	3.20	4%
Borregaard (NKR)	1044	888	-15%	764	645	-16%	5.53	4.44	-20%	1.95	1.80	-8%
Clariant (CHF)	932	952	2%	654	734	12%	1.28	1.44	13%	0.47	0.48	2%
Covestro (€)	1908	2051	8%	1222	1373	12%	3.66	4.11	12%	1.30	1.35	4%
DSM (€)	1352	1468	9%	851	942	11%	3.60	3.77	5%	1.83	1.75	-4%
Evonik (€)	2275	2208	-3%	1511	1363	-10%	2.02	1.75	-13%	1.17	1.18	1%
Lanxess (€)	1112	1185	7%	595	689	16%	3.01	3.74	24%	0.88	1.12	27%
Solvay (€)*	2568	2463	-4%	1665	1685	1%	8.84	8.24	-7%	3.44	3.45	0%
Wacker Chemie (€)	1134	1167	3%	435	447	3%	4.62	5.48	19%	2.24	2.74	23%
Synthomer (€)	153	145	-5%	121	115	-5%	25.53	23.94	-6%	10.28	11.14	8%
<b>Average</b>			<b>0%</b>			<b>3%</b>			<b>4%</b>			<b>6%</b>
<b>Consumer Facing Chemicals</b>												
Croda (€)	370	375	1%	321	324	1%	164.97	169.10	3%	80.61	85.07	6%
Frutarom (US\$)**	245	254	4%	200	210	5%	2.60	2.72	4%	0.45	0.64	44%
Givaudan (CHF)	1192	1272	7%	971	1043	8%	82.55	93.13	13%	61.93	59.54	-4%
Kerry Group (€)	928	907	-2%	760	737	-3%	3.48	3.42	-2%	0.60	0.60	0%
Symrise (€)	663	673	2%	505	478	-5%	2.35	2.82	20%	0.96	0.98	2%
<b>Average</b>			<b>2%</b>			<b>1%</b>			<b>8%</b>			<b>9%</b>
<b>Industrial Gases</b>												
Air Liquide (€)	5408	5456	1%	3665	3634	-1%	5.52	5.49	-1%	2.76	2.63	-5%
Linde (€)	4215	4161	-1%	2298	2503	9%	7.66	8.10	6%	3.87	3.80	-2%
<b>Average</b>			<b>0%</b>			<b>4%</b>			<b>3%</b>			<b>-3%</b>
<b>Chemical Distributors</b>												
Brenntag (€)	861	868	1%	703	745	6%	2.72	2.71	0%	1.10	1.00	-9%
<b>Average</b>			<b>0%</b>			<b>1%</b>			<b>1%</b>			<b>1%</b>

Consensus numbers can be EBIT or EBITA; UBS numbers are EBITA only  
 \* Dividend (pre w/h tax); \*\* Dividend in ILS; \*\*\* JMAT is for 2018

Source: IBES, UBS

Source: IBES, UBS estimates; Note: Data for Johnson Matthey (FY-ending March) and Victrex (FY-ending September) are not calendarised.



## Sector event calendar

Sika	Net Sales 2016	10-Jan-17
Novozymes	FY 2016 Financial Result	18-Jan-17
Lonza	FY 2016 Financial Result	25-Jan-17
Givaudan	FY 2016 Financial Result	31-Jan-17
Victrex	AGM	8-Feb-17
Umicore	FY 2016 Financial Result	10-Feb-17
Akzo Nobel	FY 2016 Financial Result	15-Feb-17
DSM	FY 2016 Financial Result	15-Feb-17
Clariant	FY 2016 Financial Result	16-Feb-17
Covestro	FY 2016 Financial Result	20-Feb-17
Bayer	FY 2016 Financial Result	22-Feb-17
Novozymes	AGM	22-Feb-17
BASF	FY 2016 Financial Result	24-Feb-17
Sika	FY 2016 Financial Result	24-Feb-17
Croda	Preliminary Results	28-Feb-17
Evonik	FY 2016 Financial Result	2-Mar-17
Linde	FY 2016 Financial Result	9-Mar-17
K+S	FY 2016 Financial Result	16-Mar-17
Lanxess	FY 2016 Financial Result	16-Mar-17
Clariant	AGM	20-Mar-17
Givaudan	AGM	23-Mar-17
Givaudan	Q1 2017 Financial Result	11-Apr-17
Sika	Q1 Net Sales / AGM	11-Apr-17
Akzo Nobel	Q1 2017 Financial Result	24-Apr-17
Akzo Nobel	AGM	25-Apr-17
Covestro	Q1 2017 Financial Result	25-Apr-17
Lonza	AGM	25-Apr-17
Umicore	Q1 2017 Financial Result	25-Apr-17
Lonza	Q1 2017 Financial Result	26-Apr-17
BASF	Q1 2017 Financial Result	27-Apr-17
Bayer	Q1 2017 Financial Result	27-Apr-17
Bayer	AGM	28-Apr-17
DSM	Q1 2017 Financial Result	2-May-17
Covestro	AGM	3-May-17
DSM	AGM	3-May-17
Evonik	Q1 2017 Financial Result	5-May-17
K+S	Q1 2017 Financial Result	9-May-17
K+S	AGM	10-May-17
Linde	AGM	10-May-17
Lanxess	Q1 2017 Financial Result	11-May-17
BASF	AGM	12-May-17
Evonik	AGM	23-May-17
Lanxess	AGM	26-May-17
Givaudan	H1 2017 Financial Result	17-Jul-17
Akzo Nobel	Q2 2017 Financial Result	25-Jul-17
BASF	H1 2017 Financial Result	27-Jul-17
Lonza	H1 2017 Financial Result	27-Jul-17
Sika	H1 2017 Financial Result	27-Jul-17
Umicore	H1 2017 Financial Result	31-Jul-17
DSM	Q2 2017 Financial Result	1-Aug-17

Source: Company data



## US Value

Company	Local Currency	Share Price	% of 52 week high	Market Cap	EV/Revenue		EV/EBITDA		EV/ Inv. Cap		P/E		EV FCF Yield		Equity FCF Yield		Dividend Yield		P/Book	
					2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e		
					(x)	(x)	(x)	(x)	(x)	(x)	(x)	(x)	(%)	(%)	(%)	(%)	(%)	(%)		(X)
Agriculture																				
Agrium	USD	106.7	100	14,718	1.4	1.3	10.2	9.1	1.8	1.8	18.7	16.3	3.3	5.5	3.0	5.8	3.5	3.5	2.2	
CF Industries	USD	30.4	69	7,079	2.8	2.5	11.1	9.1	1.3	1.4	n/a	32.0	10.1	6.6	13.9	7.4	4.0	4.0	2.0	
Intrepid Potash	USD	2.4	68	181	1.9	1.8	12.3	9.6	0.6	0.6	n/a	n/a	8.1	3.4	4.6	(1.7)	0.0	0.0	0.5	
Monsanto	USD	104.7	93	45,827	3.9	3.7	13.8	12.5	4.6	4.8	22.3	18.7	4.8	5.2	5.1	5.5	2.2	2.4	13.6	
Mosaic	USD	30.2	98	10,608	1.9	1.8	11.4	9.5	1.1	1.1	35.3	27.4	4.0	4.6	4.1	4.8	3.6	3.6	1.1	
Potash Corp	USD	19.3	100	16,196	5.4	5.3	12.4	11.8	1.5	1.5	29.7	27.7	2.0	3.0	1.5	2.8	2.1	2.1	1.9	
				Mean	2.9	2.7	11.9	10.3	1.8	1.8	26.5	24.4	5.4	4.7	5.4	4.1	2.6	2.6	3.6	
				Median	2.4	2.2	11.9	9.6	1.4	1.4	26.0	27.4	4.4	4.9	4.4	5.1	2.9	3.0	2.0	
Specialties																				
Albemarle	USD	91.8	100	10,415	3.9	3.8	13.8	12.9	2.1	3.0	23.2	19.3	3.7	2.4	3.5	2.2	1.6	1.7	3.0	
Ashland	USD	115.0	93	7,132	2.9	2.8	15.2	14.2	1.6	1.9	42.9	32.9	4.3	4.0	3.8	3.4	1.2	1.2	2.4	
Axalta Coating	USD	27.2	90	6,585	2.2	2.0	9.4	8.2	2.1	2.0	19.0	16.0	5.3	7.1	5.4	7.5	0.0	0.0	3.8	
DuPont	USD	74.7	100	65,673	1.8	1.7	8.0	7.1	2.2	1.4	17.6	14.8	14.8	(6.1)	14.9	(7.3)	2.7	2.9	1.5	
Ecolab	USD	119.6	96	35,369	2.9	2.7	13.5	12.2	3.1	3.1	24.2	21.6	3.7	4.1	3.7	4.1	1.3	1.5	4.3	
PPG Industries	USD	99.4	85	26,473	2.0	2.0	11.2	10.8	3.7	3.9	15.5	14.0	5.4	5.7	5.8	6.3	1.8	1.9	6.5	
W. R. Grace & Co	USD	68.1	68	4,815	3.5	3.3	10.9	9.8	3.0	3.1	19.3	16.6	3.7	3.7	3.4	3.3	1.0	1.0	8.7	
				Mean	2.7	2.6	11.7	10.8	2.5	2.6	23.1	19.3	5.9	3.0	5.8	2.8	1.4	1.5	4.3	
				Median	2.9	2.7	11.2	10.8	2.2	3.0	19.3	16.6	4.3	4.0	3.8	3.4	1.3	1.5	3.8	
Diversified Specialties																				
Celanese Corp.	USD	83.2	100	12,032	2.3	2.2	8.3	7.7	2.5	2.4	11.5	10.4	7.7	8.8	7.8	8.8	1.7	1.9	3.8	
Chemours	USD	27.0	100	4,948	1.4	1.3	8.2	7.4	2.5	2.4	15.4	13.5	6.7	5.7	7.0	5.4	0.4	0.5	7.0	
Dow Chemical	USD	57.4	100	64,747	2.2	2.0	9.9	8.2	1.6	1.3	17.2	14.4	4.7	7.2	5.4	8.1	3.5	3.9	1.5	
Eastman Chemical	USD	77.8	99	11,526	2.0	1.9	8.3	7.6	1.4	1.3	10.5	9.6	4.4	4.9	5.5	6.2	2.7	3.0	2.0	
Huntsman	USD	20.3	100	4,879	0.9	0.8	6.7	6.1	1.6	1.6	10.4	9.4	7.6	8.6	10.6	12.0	2.7	3.0	3.5	
Kraton Performance	USD	32.8	89	1,009	1.3	1.1	6.0	5.2	1.2	1.2	9.6	7.4	11.0	12.2	15.4	17.2	0.0	0.0	1.6	
Methanex Corp.	USD	44.7	100	4,010	2.4	2.1	11.4	8.6	1.9	2.0	n/a	31.8	6.7	9.0	6.6	9.0	2.5	2.5	2.6	
LyondellBasell	USD	90.5	99	37,484	1.6	1.6	7.2	7.6	3.1	3.0	9.7	10.1	6.7	5.3	7.8	6.0	4.2	4.6	5.7	
Olin	USD	26.5	99	4,417	1.4	1.3	7.7	6.7	1.4	1.4	23.1	18.3	7.8	9.0	10.9	12.3	3.0	3.0	1.8	
Tronox	USD	11.7	100	1,359	2.0	1.9	10.5	9.7	1.2	1.2	n/a	n/a	6.7	7.9	n/a	n/a	1.5	1.5	1.7	
Westlake Chemical	USD	57.9	98	7,495	1.0	1.5	5.1	7.4	1.0	1.4	15.4	15.4	6.6	4.0	4.8	4.3	1.3	1.3	1.7	
				Mean	1.7	1.6	8.1	7.5	1.8	1.7	13.6	14.0	7.0	7.5	8.2	8.9	2.1	2.3	3.0	
				Median	1.6	1.6	8.2	7.6	1.6	1.4	11.5	11.9	6.7	7.9	7.4	8.5	2.5	2.5	2.0	
Consumer Facing Chemicals																				
Intl Flavors & Frags	USD	125.8	88	10,053	3.0	2.9	12.3	11.7	3.6	3.7	21.5	19.8	4.9	5.2	4.3	4.6	1.9	2.1	5.0	
Sherwin-Williams	USD	271.4	87	25,717	2.1	2.0	12.0	11.3	8.7	9.2	18.7	17.1	5.5	5.9	5.1	5.4	1.1	1.2	12.9	
				Mean	2.6	2.5	12.2	11.5	6.1	6.4	20.1	18.4	5.2	5.5	4.7	5.0	1.5	1.6	8.9	
				Median	2.6	2.5	12.2	11.5	6.1	6.4	20.1	18.4	5.2	5.5	4.7	5.0	1.5	1.6	8.9	
Industrial Gases																				
Air Products	USD	149.1	95	32,644	4.6	3.8	12.9	10.8	3.6	3.1	23.1	19.2	2.9	3.4	3.0	3.9	2.4	2.6	3.3	
Praxair	USD	123.0	100	35,436	4.0	3.8	12.1	11.3	2.9	2.9	20.5	18.9	3.4	3.8	3.9	4.4	2.7	3.0	5.6	
				Mean	4.3	3.8	12.5	11.1	3.3	3.0	21.8	19.1	3.1	3.6	3.4	4.2	2.5	2.8	4.4	
				Median	4.3	3.8	12.5	11.1	3.3	3.0	21.8	19.1	3.1	3.6	3.4	4.2	2.5	2.8	4.4	
US Chemical sector					Mean	2.4	2.3	10.3	9.3	2.4	2.4	19.6	18.1	6.0	5.5	6.4	5.8	2.0	2.2	4.0
				Median	2.1	2.0	10.9	9.1	1.9	1.9	18.7	16.6	5.4	5.3	5.2	5.5	2.1	2.1	2.6	

Source: UBS estimates, priced as of 9 Dec 2016

## US Absolute

Company	Reporting Currency	Revenue			EBITDA				EBITA			EPS			DPS	
		2016e	2017e	2018e	2015	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e	2017e	2018e
		(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)	(LC)
Agriculture																
Agrium	USD	13,707	14,211	14,690	2,140	1,609	1,909	2,103	1,086	1,367	1,533	4.80	5.70	6.55	3.72	3.72
CF Industries	USD	3,851	4,654	5,064	1,708	907	1,182	1,422	272	542	771	0.64	0.20	0.95	1.20	1.20
Intrepid Potash	USD	172	150	158	45	(4)	23	29	(46)	(0)	6	(0.76)	(0.19)	(0.08)	0.00	0.00
Monsanto	USD	13,502	14,003	14,855	4,825	3,732	3,915	4,375	3,005	3,145	3,578	4.55	4.70	5.60	2.32	2.56
Mosaic	USD	7,157	7,205	7,353	2,011	1,066	1,195	1,355	354	461	607	0.71	0.85	1.10	1.10	1.10
Potash Corp	USD	3,882	3,766	3,824	2,598	1,420	1,641	1,728	719	895	962	0.52	0.65	0.70	0.40	0.40
Specialties																
Albemarle	USD	2,614	2,753	2,945	960	746	778	868	540	571	650	3.50	3.95	4.75	1.46	1.54
Ashland	USD	4,948	3,068	3,164	1,122	1,079	580	619	742	310	341	6.78	2.68	3.49	1.33	1.33
Axalta Coating	USD	4,079	4,197	4,358	867	906	965	1,050	586	641	726	1.11	1.43	1.70	0.00	0.00
DuPont	USD	24,630	38,548	40,108	5,432	5,294	8,708	9,769	4,025	5,870	6,838	3.25	4.23	5.06	2.05	2.15
Ecolab	USD	13,221	13,861	14,743	2,837	2,850	3,012	3,314	2,045	2,250	2,504	4.40	4.95	5.55	1.61	1.85
PPG Industries	USD	15,112	15,012	15,382	2,672	2,704	2,707	2,831	2,224	2,231	2,355	5.91	6.40	7.10	1.74	1.92
W. R. Grace & Co	USD	1,598	1,675	1,754	743	504	540	585	402	434	478	3.13	3.53	4.10	0.68	0.68
Diversified Specialties																
Celanese Corp.	USD	5,374	5,789	6,001	1,515	1,564	1,612	1,683	1,276	1,320	1,391	6.60	7.25	8.00	1.45	1.60
Chemours	USD	5,281	5,335	5,474	572	755	895	960	471	607	657	1.15	1.75	2.00	0.12	0.13
Dow Chemical	USD	47,570	38,548	40,108	9,596	9,616	8,708	9,769	6,769	5,870	6,838	3.70	3.35	4.00	2.03	2.24
Eastman Chemical	USD	8,939	9,137	9,418	2,288	2,126	2,158	2,335	1,546	1,576	1,753	6.81	7.39	8.14	2.09	2.30
Huntsman	USD	9,569	9,505	9,911	1,221	1,102	1,290	1,380	675	840	930	1.46	1.96	2.17	0.55	0.61
Kraton Performance	USD	1,763	1,934	2,036	166	360	402	432	233	269	294	2.40	3.40	4.45	0.00	0.00
Methanex Corp.	USD	1,931	2,136	2,319	477	257	443	565	5	151	258	(0.50)	0.50	1.40	1.10	1.10
LyondellBasell	USD	29,072	29,255	29,917	8,090	6,718	6,451	6,078	5,670	5,363	4,990	9.50	9.30	8.95	3.78	4.15
Olin	USD	5,574	5,558	5,773	433	824	999	1,078	291	463	529	0.32	1.15	1.45	0.80	0.80
Tronox	USD	2,042	2,249	2,315	326	300	434	461	60	154	177	(1.87)	(0.49)	(0.34)	0.17	0.17
Westlake Chemical	USD	5,090	7,396	7,381	1,206	1,062	1,418	1,454	699	872	878	3.38	3.77	3.77	0.73	0.76
Consumer Facing Chemicals																
Intl Flavors & Frags	USD	3,084	3,180	3,317	699	712	765	827	620	669	728	5.45	5.85	6.35	2.35	2.59
Sherwin-Williams	USD	11,726	12,284	12,867	1,800	1,971	2,180	2,318	1,801	2,013	2,151	12.29	14.51	15.91	2.95	3.24
Industrial Gases																
Air Products	USD	9,524	7,947	8,460	2,974	3,280	2,852	2,954	2,344	1,989	2,081	7.54	6.45	7.75	3.57	3.93
Praxair	USD	10,506	11,129	11,762	3,599	3,446	3,683	3,930	2,335	2,570	2,754	5.47	6.00	6.50	3.30	3.63

Source: UBS estimates

## US Profitability

Company	EBITDA margin		EBITA margin		Gross margin		PAT margin		ROIC (pre-tax)		ROIC (post-tax)		ROE	
	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e	2017e	2018e
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
<b>Agriculture</b>														
Agrium	13.4	14.3	9.6	10.4	26.0	26.2	5.5	6.2	12.6	14.0	9.1	10.1	12.3	13.4
CF Industries	25.4	28.1	11.6	15.2	15.0	18.7	1.0	4.2	5.4	8.2	3.9	5.7	1.3	6.1
Intrepid Potash	15.2	18.6	(0.2)	4.1	18.0	20.9	(9.7)	(4.0)	n/a	1.4	n/a	1.4	n/a	n/a
Monsanto	28.0	29.5	22.5	24.1	51.9	53.7	14.3	15.4	26.8	31.5	19.6	23.0	n/a	n/a
Mosaic	16.6	18.4	6.4	8.3	11.2	13.1	4.2	5.3	3.7	4.9	3.2	3.9	3.1	4.0
Potash Corp	43.6	45.2	23.8	25.1	49.3	51.4	14.4	15.2	6.6	6.9	5.3	5.4	6.6	6.9
Mean	23.7	25.7	12.3	14.5	28.6	30.7	5.0	7.0	11.0	11.2	8.2	8.3	5.8	7.6
Median	21.0	23.4	10.6	12.8	22.0	23.6	4.9	5.7	6.6	7.6	5.3	5.6	4.9	6.5
<b>Specialties</b>														
Albemarle	28.2	29.5	20.8	22.1	36.9	38.2	15.7	16.8	11.1	17.3	9.0	14.0	12.7	15.3
Ashland	18.9	19.6	10.1	10.8	30.5	30.5	5.3	6.1	5.7	7.2	5.0	6.3	5.3	6.6
Axalta Coating	23.0	24.1	15.3	16.7	40.9	42.4	8.3	9.5	14.5	16.7	10.7	12.2	22.5	21.5
DuPont	22.6	24.4	15.2	17.0	29.1	29.6	9.9	11.4	18.4	13.8	13.6	10.3	14.5	10.0
Ecolab	21.7	22.5	16.2	17.0	48.2	48.0	10.6	11.1	17.5	19.4	13.0	14.4	19.0	18.7
PPG Industries	18.0	18.4	14.9	15.3	41.6	42.0	10.5	10.9	27.1	29.8	20.4	22.5	36.9	45.0
W. R. Grace & Co	32.2	33.3	25.9	27.3	43.8	44.8	14.1	15.2	22.3	26.0	15.0	17.4	46.8	47.9
Mean	23.5	24.5	16.9	18.0	38.7	39.4	10.6	11.6	16.7	18.6	12.4	13.9	22.5	23.6
Median	22.6	24.1	15.3	17.0	40.9	42.0	10.5	11.1	17.5	17.3	13.0	14.0	19.0	18.7
<b>Diversified Specialties</b>														
Celanese Corp.	27.8	28.0	22.8	23.2	27.6	28.1	17.4	17.7	24.6	25.5	20.4	21.2	35.2	33.4
Chemours	16.8	17.5	11.4	12.0	23.3	24.4	6.0	6.7	20.4	21.9	15.8	16.8	n/a	41.6
Dow Chemical	22.6	24.4	15.2	17.0	29.1	29.7	9.9	11.4	10.6	11.0	7.9	8.2	10.7	9.9
Eastman Chemical	23.6	24.8	17.2	18.6	27.1	28.4	11.5	12.0	12.2	13.1	9.4	9.6	20.4	19.6
Huntsman	13.6	13.9	8.8	9.4	20.5	20.6	4.9	5.1	15.9	17.7	11.6	12.4	37.8	32.0
Kraton Performance	20.8	21.2	13.9	14.4	29.3	29.3	5.4	6.7	13.2	15.4	10.5	12.3	18.6	22.3
Methanex Corp.	20.7	24.4	7.1	11.1	26.7	29.2	2.1	5.4	5.8	10.7	4.6	8.4	2.9	8.2
LyondellBasell	22.1	20.3	18.3	16.7	19.9	18.2	12.5	11.3	35.8	31.7	25.8	22.9	n/a	n/a
Olin	18.0	18.7	8.3	9.2	14.0	14.9	3.4	4.2	8.3	10.1	5.5	6.7	8.1	10.0
Tronox	19.3	19.9	6.8	7.7	14.4	14.7	(2.5)	(1.6)	3.9	4.7	3.9	4.7	n/a	n/a
Westlake Chemical	19.2	19.7	11.8	11.9	18.3	18.4	6.6	6.6	11.6	11.4	8.0	7.8	11.9	10.8
Mean	20.4	21.2	12.9	13.7	22.7	23.3	7.0	7.8	14.8	15.8	11.2	11.9	18.2	20.9
Median	20.7	20.3	11.8	12.0	23.3	24.4	6.0	6.7	12.2	13.1	9.4	9.6	15.2	19.6
<b>Consumer Facing Chemicals</b>														
Intl Flavors & Frags	24.0	24.9	21.0	21.9	45.5	46.4	14.7	15.3	25.5	27.4	19.2	20.6	24.8	23.3
Sherwin-Williams	17.7	18.0	16.4	16.7	50.4	49.7	11.0	11.3	66.6	75.2	49.3	55.7	n/a	n/a
Mean	20.9	21.5	18.7	19.3	47.9	48.1	12.9	13.3	46.1	51.3	34.2	38.1	24.8	23.3
Median	20.9	21.5	18.7	19.3	47.9	48.1	12.9	13.3	46.1	51.3	34.2	38.1	24.8	23.3
<b>Industrial Gases</b>														
Air Products	35.9	34.9	25.0	24.6	31.5	31.1	17.8	19.6	19.4	19.9	14.6	14.9	16.1	14.9
Praxair	33.1	33.4	23.1	23.4	34.6	34.9	15.5	15.7	17.0	18.0	12.2	13.0	28.4	28.0
Mean	34.5	34.2	24.1	24.0	33.0	33.0	16.6	17.7	18.2	19.0	13.4	13.9	22.2	21.5
Median	34.5	34.2	24.1	24.0	33.0	33.0	16.6	17.7	18.2	19.0	13.4	13.9	22.2	21.5
Mean	22.7	23.7	14.8	15.9	30.3	31.1	8.3	9.4	17.4	18.3	13.0	13.6	18.2	19.7
Median	21.7	22.5	15.2	16.7	29.1	29.3	9.9	10.9	15.2	15.4	11.2	12.2	16.1	16.8

Source: UBS estimates

## US Momentum & Debt

Company	Year End	Reporting Currency	Net debt		Revenue growth		EBITDA growth		EBITA growth		EPS growth		Int. cover (EBITA)		ND as % of EV	
			2017e	2018e	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2017e	2018e	2017e	2018e
			(LC)	(LC)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(x)	(x)	(%)	(%)
<b>Agriculture</b>																
Agrium	Dec	USD	5,069	4,842	3.7	3.4	18.6	10.1	25.9	12.1	18.8	14.8	4.9	5.5	26.1	25.2
CF Industries	Dec	USD	3,208	3,003	20.8	8.8	30.2	20.4	98.9	42.4	(68.1)	364.9	2.1	3.2	24.5	23.3
Intrepid Potash	Dec	USD	99	102	(13.3)	5.7	(692.0)	29.5	(99.5)	(2691.9)	(75.0)	(56.5)	n/a	0.5	35.3	36.0
Monsanto	Aug	USD	8,240	8,889	3.7	6.1	4.9	11.7	4.7	13.7	3.4	19.2	8.1	8.6	15.2	16.2
Mosaic	Dec	USD	2,998	2,315	0.7	2.0	12.0	13.4	30.1	31.6	19.6	29.0	4.2	5.7	22.0	17.9
Potash Corp	Dec	USD	4,152	4,152	(3.0)	1.5	15.5	5.3	24.5	7.4	25.9	7.3	4.1	4.5	20.4	20.4
Mean					2.1	4.6	(101.8)	15.1	14.1	(430.8)	(12.6)	63.1	4.7	4.7	23.9	23.2
Median					2.2	4.5	13.8	12.6	25.2	12.9	11.1	17.0	4.2	5.0	23.3	21.9
<b>Specialties</b>																
Albemarle	Dec	USD	297	767	5.3	7.0	4.2	11.6	5.9	13.8	13.0	20.0	8.9	10.2	2.8	6.9
Ashland	Sep	USD	1,689	1,671	(38.0)	3.1	(46.2)	6.7	(58.2)	9.9	(60.4)	30.3	2.4	2.8	19.2	19.0
Axalta Coating	Dec	USD	2,499	2,054	2.9	3.8	6.5	8.8	9.3	13.3	28.6	18.6	4.2	5.2	27.5	23.8
DuPont	Dec	USD	7,118	6,941	56.5	4.0	64.5	12.2	45.8	16.5	30.3	19.5	9.1	10.6	10.2	10.0
Ecolab	Dec	USD	5,152	5,152	4.8	6.4	n/a	10.0	n/a	11.3	12.4	12.1	8.9	9.7	12.7	12.7
PPG Industries	Dec	USD	3,447	3,705	(0.7)	2.5	0.1	4.6	0.4	5.5	8.2	11.0	21.3	22.4	11.3	12.1
W. R. Grace & Co	Dec	USD	1,168	1,018	4.8	4.7	7.1	8.2	7.9	10.2	12.9	16.2	5.5	6.2	19.9	17.8
Mean					5.1	4.5	6.0	8.9	1.9	11.5	6.4	18.2	8.6	9.6	14.8	14.6
Median					4.8	4.0	5.4	8.8	6.9	11.3	12.9	18.6	8.9	9.7	12.7	12.7
<b>Diversified Specialties</b>																
Celanese Corp.	Dec	USD	1,737	1,397	7.7	3.7	3.1	4.4	3.4	5.4	9.7	10.4	12.2	12.9	13.0	10.7
Chemours	Dec	USD	2,580	2,288	1.0	2.6	18.5	7.2	29.0	8.2	51.8	14.5	3.2	3.6	35.0	32.4
Dow Chemical	Dec	USD	14,087	8,379	(19.0)	4.0	(9.4)	12.2	(13.3)	16.5	(9.5)	19.5	9.1	10.6	16.3	10.4
Eastman Chemical	Dec	USD	6,410	6,260	2.2	3.1	1.5	8.2	1.9	11.2	8.4	10.2	7.3	8.2	35.7	35.2
Huntsman	Dec	USD	3,806	3,823	(0.7)	4.3	17.1	7.0	24.4	10.7	34.4	10.6	4.4	5.0	43.8	45.7
Kraton Performance	Dec	USD	1,458	1,272	9.7	5.3	11.7	7.5	15.4	9.2	41.7	30.8	2.0	2.5	60.3	57.0
Methanex Corp.	Dec	USD	1,277	1,143	10.6	8.5	72.7	27.5	3020.1	71.0	(199.4)	183.3	1.9	3.3	25.4	23.6
LyondellBasell	Dec	USD	8,368	8,497	0.6	2.3	(4.0)	(5.8)	(5.4)	(7.0)	(2.1)	(3.8)	18.9	17.0	18.1	18.3
Olin	Dec	USD	3,232	2,819	(0.3)	3.9	21.2	7.9	59.0	14.2	263.4	26.2	2.7	3.2	42.3	39.0
Tronox	Dec	USD	2,813	2,715	10.2	2.9	44.7	6.4	156.8	15.3	(73.6)	(31.8)	0.9	1.0	61.8	60.9
Westlake Chemical	Dec	USD	(268)	3,190	45.3	(0.2)	33.5	2.6	24.8	0.7	11.5	0.0	5.5	5.7	(3.7)	29.8
Mean					6.1	3.7	19.1	7.7	301.5	14.1	12.4	24.5	6.2	6.6	31.6	33.0
Median					2.2	3.7	17.1	7.2	24.4	10.7	9.7	10.6	4.4	5.0	35.0	32.4
<b>Consumer Facing Chemicals</b>																
Intl Flavors & Frags	Dec	USD	(612)	(346)	3.1	4.3	7.4	8.1	8.0	8.7	7.2	8.6	13.4	14.4	(6.5)	(3.6)
Sherwin-Williams	Dec	USD	236	236	4.8	4.7	10.6	6.3	11.8	6.8	18.1	9.6	11.7	12.5	0.9	0.9
Mean					3.9	4.5	9.0	7.2	9.9	7.8	12.7	9.1	12.6	13.5	(2.8)	(1.3)
Median					3.9	4.5	9.0	7.2	9.9	7.8	12.7	9.1	12.6	13.5	(2.8)	(1.3)
<b>Industrial Gases</b>																
Air Products	Sep	USD	4,023	3,969	(16.6)	6.4	(13.0)	3.6	(15.1)	4.6	(14.5)	20.1	24.7	32.1	10.9	12.4
Praxair	Dec	USD	9,031	9,031	5.9	5.7	6.9	6.7	10.1	7.1	9.7	8.3	15.4	16.5	20.3	20.3
Mean					(5.3)	6.1	(3.1)	5.1	(2.5)	5.9	(2.4)	14.2	20.1	24.3	15.6	16.4
Median					(5.3)	6.1	(3.1)	5.1	(2.5)	5.9	(2.4)	14.2	20.1	24.3	15.6	16.4
Mean					4.0	4.2	(13.7)	9.3	131.6	(86.5)	4.2	29.8	8.0	8.6	22.9	23.2
Median					3.1	4.0	9.0	7.9	10.9	10.2	9.7	14.5	5.5	5.7	20.3	20.3

Source: UBS estimates

## US Productivity

Company	Reported tax rate			D&A/Revenue			Capex/Revenue			NTFA/Revenue			NWC/Revenue		
	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e	2016e	2017e	2018e
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
<b>Agriculture</b>															
Agrium	20.9	27.5	27.5	3.8	3.8	3.9	5.7	5.6	3.7	48.8	50.6	50.1	14.7	13.1	11.8
CF Industries	13.0	29.0	30.5	16.5	13.8	12.9	57.0	9.7	8.9	239.9	211.5	190.6	n/a	n/a	n/a
Intrepid Potash	0.0	0.0	0.0	24.2	15.4	14.5	11.0	10.0	10.0	236.2	261.5	242.5	51.5	49.1	43.1
Monsanto	24.1	27.0	27.0	5.4	5.5	5.4	6.8	6.8	7.1	37.8	38.0	37.3	13.7	10.0	10.1
Mosaic	2.2	12.0	20.5	9.9	10.2	10.2	11.6	10.2	10.7	125.9	129.1	126.8	10.3	7.7	5.6
Potash Corp	14.7	20.2	22.0	18.1	19.8	20.1	21.2	18.6	18.3	341.0	351.6	344.8	15.5	25.3	33.8
Mean	12.5	19.3	21.3	13.0	11.4	11.1	18.9	10.1	9.8	171.6	173.7	165.4	21.2	21.0	20.9
Median	13.8	23.6	24.5	13.2	12.0	11.5	11.3	9.8	9.4	181.1	170.3	158.7	14.7	13.1	11.8
<b>Specialties</b>															
Albemarle	18.8	19.0	19.0	7.9	7.5	7.4	6.9	9.1	15.3	92.2	60.4	37.5	25.2	23.5	22.8
Ashland	25.4	11.7	12.5	6.8	8.8	8.8	6.0	6.8	6.6	44.5	65.5	55.6	15.9	16.1	10.8
Axalta Coating	24.9	26.0	27.0	7.8	7.7	7.4	3.7	3.6	2.9	34.1	35.1	37.0	16.7	19.5	20.7
DuPont	21.5	26.0	25.5	5.2	7.4	7.3	4.3	6.0	5.2	39.4	36.1	44.2	9.7	9.8	12.9
Ecolab	25.7	25.7	25.9	6.1	5.5	5.5	5.5	6.0	6.0	24.7	24.1	23.2	13.9	14.0	13.9
PPG Industries	24.7	24.6	24.6	3.2	3.2	3.1	3.1	3.1	3.0	17.3	14.8	14.7	8.1	11.8	11.9
W. R. Grace & Co	31.8	33.0	33.0	6.4	6.3	6.1	7.7	11.9	11.4	49.4	46.8	50.1	10.9	6.9	10.6
Mean	24.7	23.7	23.9	6.2	6.6	6.5	5.3	6.7	7.2	43.1	40.4	37.5	14.4	14.5	14.8
Median	24.9	25.7	25.5	6.4	7.4	7.3	5.5	6.0	6.0	39.4	36.1	37.5	13.9	14.0	12.9
<b>Diversified Specialties</b>															
Celanese Corp.	17.0	17.0	17.0	5.4	5.0	4.9	4.5	4.8	4.7	66.7	61.5	59.3	14.6	14.3	14.5
Chemours	20.0	22.8	23.2	5.4	5.4	5.5	6.0	6.9	6.4	56.9	53.9	53.7	8.0	5.3	4.6
Dow Chemical	24.8	26.0	25.5	6.0	7.4	7.3	8.3	6.0	5.2	43.6	54.2	44.3	12.2	17.0	18.1
Eastman Chemical	22.2	23.0	26.5	6.5	6.4	6.2	6.9	6.6	6.4	57.6	56.6	55.1	13.0	17.1	20.8
Huntsman	24.6	27.0	30.0	4.5	4.7	4.5	4.7	4.2	3.6	46.2	45.9	43.3	19.8	20.5	19.8
Kraton Performance	19.7	20.0	20.0	7.2	6.9	6.8	5.7	6.6	4.8	40.0	46.0	42.6	15.9	16.2	15.7
Methanex Corp.	0.0	21.0	22.0	13.0	13.7	13.2	5.7	3.3	3.1	162.6	141.8	122.4	12.4	9.9	9.1
LyondellBasell	26.0	28.0	28.0	3.6	3.7	3.6	6.9	6.8	6.7	33.1	36.7	38.9	16.6	15.8	15.2
Olin	49.4	34.0	34.0	9.6	9.6	9.5	4.7	4.7	3.5	68.1	63.0	55.3	10.7	11.7	13.0
Tronox	0.0	0.0	0.0	11.8	12.4	12.3	6.7	4.6	4.5	90.1	77.7	67.8	31.9	28.6	29.6
Westlake Chemical	30.4	31.1	32.1	7.1	7.4	7.8	12.3	10.0	10.8	93.1	88.8	91.9	16.1	15.3	14.4
Mean	21.3	22.7	23.5	7.3	7.5	7.4	6.6	5.9	5.4	68.9	66.0	61.3	15.6	15.6	15.9
Median	22.2	23.0	25.5	6.5	6.9	6.8	6.0	6.0	4.8	57.6	56.6	55.1	14.6	15.8	15.2
<b>Consumer Facing Chemicals</b>															
Intl Flavors & Frags	23.8	25.0	25.0	3.0	3.0	3.0	3.1	3.2	3.0	24.0	23.6	22.8	22.7	24.0	24.1
Sherwin-Williams	29.5	26.0	26.0	1.4	1.4	1.3	2.0	2.0	2.0	9.1	9.3	9.5	3.5	3.9	4.0
Mean	26.6	25.5	25.5	2.2	2.2	2.1	2.5	2.6	2.5	16.6	16.5	16.1	13.1	13.9	14.0
Median	26.6	25.5	25.5	2.2	2.2	2.1	2.5	2.6	2.5	16.6	16.5	16.1	13.1	13.9	14.0
<b>Industrial Gases</b>															
Air Products	24.7	24.8	25.1	9.8	10.9	10.3	11.1	15.1	15.4	97.0	109.4	103.8	7.3	8.9	5.3
Praxair	27.3	28.0	28.0	10.6	10.0	10.0	13.5	13.0	13.0	108.1	106.9	104.0	7.9	7.4	6.8
Mean	26.0	26.4	26.6	10.2	10.4	10.2	12.3	14.0	14.2	102.6	108.1	103.9	7.6	8.1	6.0
Median	26.0	26.4	26.6	10.2	10.4	10.2	12.3	14.0	14.2	102.6	108.1	103.9	7.6	8.1	6.0
Mean	21.0	22.8	23.6	8.1	8.0	7.8	9.1	7.3	6.9	82.8	83.0	79.0	15.1	15.3	15.4
Median	24.1	25.7	25.5	6.5	7.4	7.3	6.0	6.6	6.0	49.4	54.2	53.7	13.8	14.1	13.4

Source: UBS estimates

## UBS rating and target prices

Company	Local Currency	UBS Rating	Share Price (LC)	Price Target (LC)	Potential Upside / (downside) (%)
<b>Agriculture</b>					
<b>Agrium</b>	USD	Buy	106.7	106.0	(0.6)
<b>CF Industries</b>	USD	Buy	30.4	28.0	(7.8)
<b>Intrepid Potash</b>	USD	Neutral	2.4	1.2	(51.9)
<b>Monsanto</b>	USD	Buy	104.7	128.0	22.3
<b>Mosaic</b>	USD	Buy	30.2	30.0	(0.6)
<b>Potash Corp</b>	USD	Buy	19.3	19.0	(1.5)
<b>Specialties</b>					
<b>Albemarle</b>	USD	Neutral	91.8	85.0	(7.4)
<b>Ashland</b>	USD	Buy	115.0	125.0	8.7
<b>Axalta Coating</b>	USD	Buy	27.2	32.0	17.6
<b>DuPont</b>	USD	Buy	74.7	80.0	7.1
<b>Ecolab</b>	USD	Buy	119.6	132.0	10.4
<b>PPG Industries</b>	USD	Buy	99.4	115.0	15.7
<b>W. R. Grace &amp; Co</b>	USD	Buy	68.1	83.0	21.9
<b>Diversified Specialties</b>					
<b>Celanese Corp.</b>	USD	Neutral	83.2	71.0	(14.7)
<b>Chemours</b>	USD	Sell	27.0	13.0	(51.8)
<b>Dow Chemical</b>	USD	Buy	57.4	62.0	8.0
<b>Eastman Chemical</b>	USD	Buy	77.8	82.0	5.4
<b>Huntsman</b>	USD	Buy	20.3	19.0	(6.5)
<b>Kraton Performance</b>	USD	Sell	32.8	26.0	(20.7)
<b>Methanex Corp.</b>	USD	Sell	44.7	31.0	(30.6)
<b>LyondellBasell</b>	USD	Neutral	90.5	83.0	(8.3)
<b>Olin</b>	USD	Neutral	26.5	21.0	(20.8)
<b>Tronox</b>	USD	Sell	11.7	6.0	(48.7)
<b>Westlake Chemical</b>	USD	Sell	57.9	41.0	(29.2)
<b>Consumer Facing Chemicals</b>					
<b>Intl Flavors &amp; Frags</b>	USD	Neutral	125.8	129.0	2.6
<b>Sherwin-Williams</b>	USD	Neutral	271.4	297.0	9.4
<b>Industrial Gases</b>					
<b>Air Products</b>	USD	Buy	149.1	157.0	5.3
<b>Praxair</b>	USD	Buy	123.0	133.0	8.2

Source: Share prices as of 9 Dec 2016, UBS estimates

## **Valuation Method and Risk Statement**

Slow or negative economic growth could slow the emerging cyclical improvement. We expect the leading chemical companies to continue to grow near the market growth rate on a trend-line basis. However, the chemical industry is highly cyclical because of inventory swings and surprise swings in raw materials. Companies continue to create value by beating their cost of capital on average. During trough periods, the leading companies may even lose money. Timing is very important in terms of investing in and trading chemical stocks.

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### UBS Investment Research: Global Equity Rating Definitions

12-Month Rating	Definition	Coverage <sup>1</sup>	IB Services <sup>2</sup>
Buy	FSR is > 6% above the MRA.	45%	28%
Neutral	FSR is between -6% and 6% of the MRA.	39%	25%
Sell	FSR is > 6% below the MRA.	15%	17%
Short-Term Rating	Definition	Coverage <sup>3</sup>	IB Services <sup>4</sup>
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 30 September 2016.

1:Percentage of companies under coverage globally within the 12-month rating category.

2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

3:Percentage of companies under coverage globally within the Short-Term rating category.

4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

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#### Company Disclosures

Company Name	Reuters	12-month rating	Short-term rating	Price	Price date
<b>Arkema</b> <sup>13</sup>	AKE.PA	Buy	N/A	€93.94	09 Dec 2016
<b>BASF SE</b> <sup>5, 7, 14</sup>	BASFn.F	Buy	N/A	€85.15	09 Dec 2016
<b>Covestro AG</b>	1COV.DE	Buy	N/A	€63.09	09 Dec 2016
<b>Lanxess AG</b> <sup>13</sup>	LXSG.DE	Buy	N/A	€62.00	09 Dec 2016

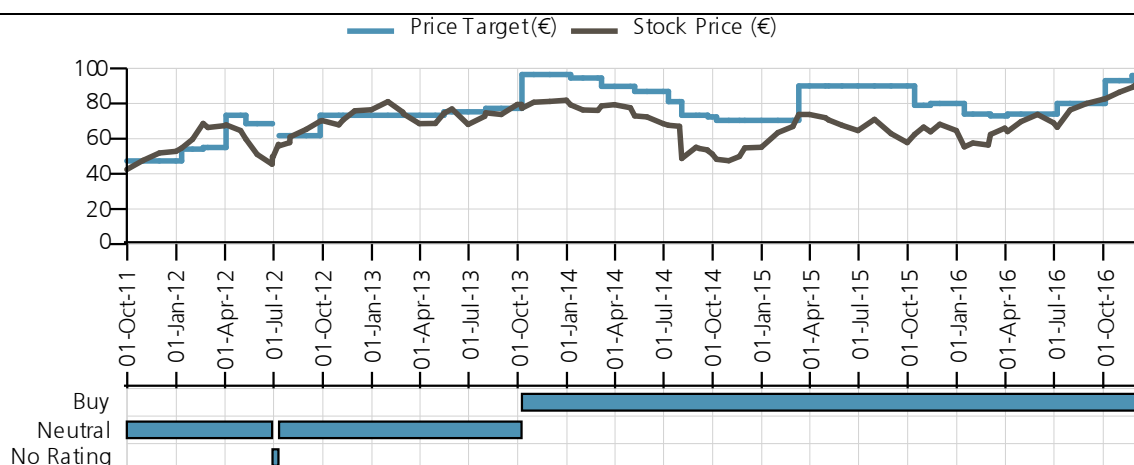
Source: UBS. All prices as of local market close.

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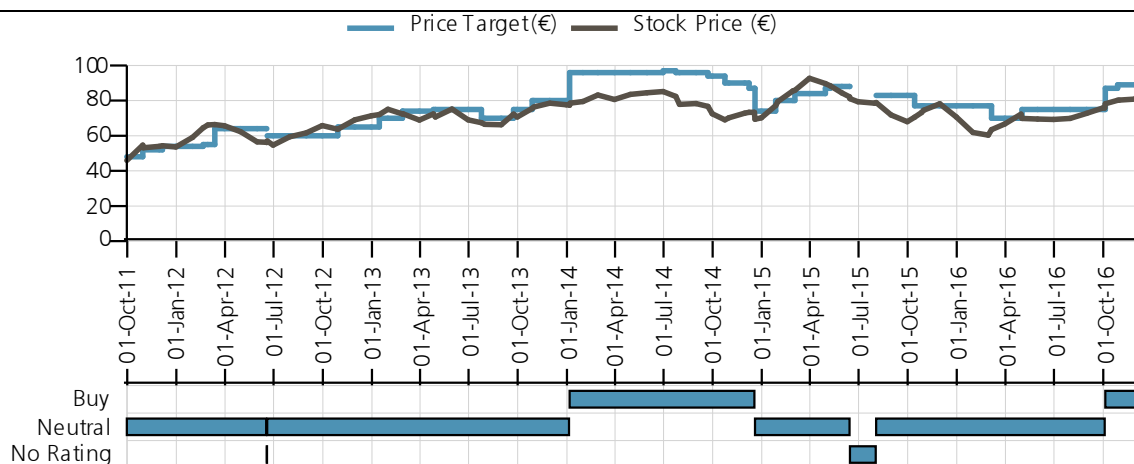
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#### Arkema (€)



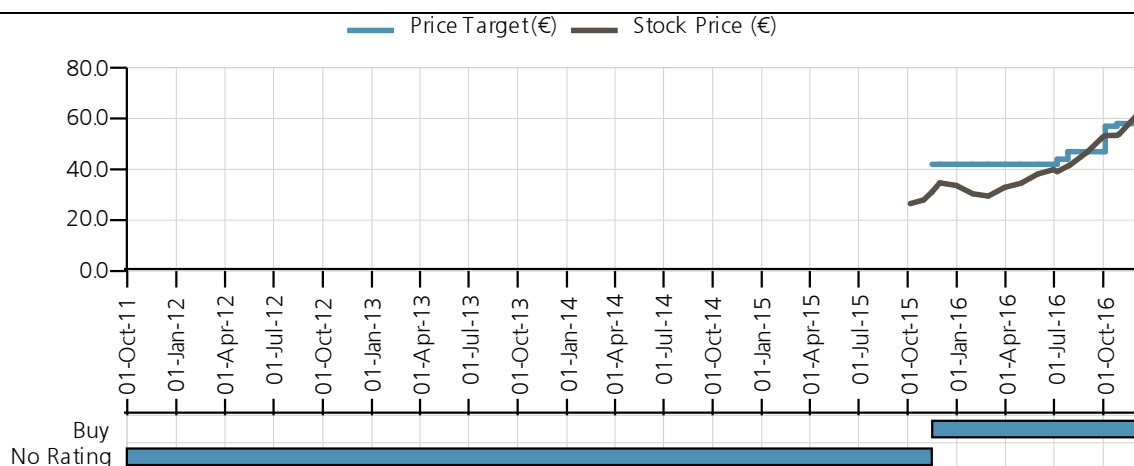
Source: UBS; as of 09 Dec 2016

## BASF SE (€)



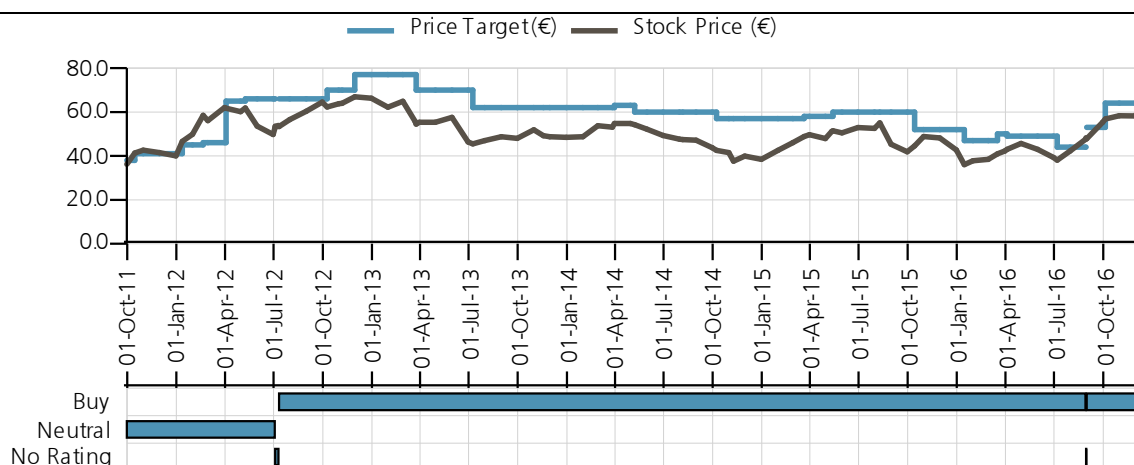
Source: UBS; as of 09 Dec 2016

## Covestro AG (€)



Source: UBS; as of 09 Dec 2016

## Lanxess AG (€)



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