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SK 증권

1. News Summary (3 page)

2018년 11월 20일

News		Conclusion
WTI comment	숨고르기속 소폭 상승…WTI 0.5%↑	
Headline	아람코, 사빅 지분 인수 위한 채권 발행 작업 재고	PIF의 자금 조달을 위해 아람코의 IPO는 사실상 철회된 것으로 판단됨
News 1.	가즈프롬, "TurkStream의 offshore 파트가 완공됨"	CIS 국가들을 우회하는 러시아 가스 파이프라인이 구축되는 것임
News 2.	-	-
News 3.	-	-
News 4.	-	-

2. Prices Summary (4~7 page)

Daily	Unit	Price	1D	1W	1M	3M	12M
Refinery			%	%	%	%	%
WTI	$/bbl	56.8	0.5	(5.3)	(17.9)	(14.6)	1.2
Dubai	$/bbl	66.2	(0.5)	(6.3)	(15.0)	(6.6)	9.0
Gasoline	$/bbl	70.0	0.7	(3.3)	(17.4)	(15.7)	(7.1)
Diesel	$/bbl	82.6	(0.9)	(6.0)	(12.2)	(4.6)	11.5
Complex margin	$/bbl	7.4	0.1	0.8	0.2	(1.0)	(0.9)
1M lagging	$/bbl	(6.7)	(1.7)	(0.9)	(15.9)	(16.2)	(19.7)
Petrochemical			%	%	%	%	%
Naphtha	$/t	543	0.1	(1.0)	(18.8)	(14.8)	(7.2)
Butadiene	$/t	1,090	3.8	3.8	2.8	(36.4)	11.2
HDPE	$/t	1,160	0.0	(1.7)	(7.9)	(10.8)	(7.9)
MEG	$/t	728	0.1	3.0	(15.2)	(19.8)	(18.2)
PX	$/t	1,098	0.3	(1.8)	(11.4)	(6.9)	24.7
SM	$/t	1,013	0.0	(4.7)	(18.9)	(28.5)	(18.6)
Commodity			%	%	%	%	%
Natural Gas	$/mmbtu	4.58	7.3	21.0	42.6	49.8	43.7
Natural rubber	$/t	1,210	(0.8)	(1.6)	(7.6)	(9.0)	(12.9)
Cotton	C/lbs	75.9	(0.3)	(0.7)	(5.2)	(8.7)	6.3

*참고: 정제마진의 변동률은 %가 아닌 $/bbl임

Weekly	Update	Unit	Price	1W	1M	3M	12M
Petrochemical				%	%	%	%
Ethylene	11/19	$/t	925	8.8	(5.6)	(27.5)	(20.6)
Propylene	11/19	$/t	870	(10.3)	(20.2)	(16.9)	7.4
Benzene	11/19	$/t	658	(4.7)	(19.3)	(26.1)	(23.5)
Toluene	11/19	$/t	710	(11.3)	(17.0)	(13.4)	(0.7)
Xylene	11/19	$/t	820	(6.3)	(7.9)	(3.0)	22.4
PP	11/19	$/t	1,213	(1.6)	(3.2)	(1.6)	5.7
PVC	11/19	$/t	850	0.0	1.2	(10.5)	0.0
ABS	11/19	$/t	1,530	(4.4)	(14.0)	(21.9)	(20.7)
SBR	11/19	$/t	1,470	(3.3)	(4.9)	(21.6)	(7.5)
SM	11/19	$/t	1,045	(5.0)	(19.3)	(28.9)	(18.4)
BPA	11/19	$/t	1,648	(4.1)	(14.7)	(11.9)	(7.6)
Caustic	11/19	$/t	324	0.0	(21.0)	(23.0)	(53.7)
2-EH	11/19	$/t	1,125	(2.6)	(5.9)	(0.4)	13.6
Caprolactam	11/19	$/t	2,080	0.0	(5.0)	(3.5)	2.0
Solar				%	%	%	%
Polysilicon	11/14	$/kg	9.63	(1.2)	(5.2)	(15.3)	(42.2)
Module	11/14	$/W	0.22	(0.4)	(2.2)	(11.9)	(29.2)

3. Global Peers Summary (8~9 page)

	Unit	Price	1D	1W	1M	3M	12M
E&P			%	%	%	%	%
ExxonMobil	USD	79.2	0.3	(0.8)	(3.4)	1.2	(1.3)
Shell	EUR	2,395	(0.5)	(1.5)	(5.0)	(3.2)	2.4
Petrochina	CNY	7.91	0.6	(2.6)	(7.2)	(1.0)	(2.6)
Gazprom	RUB	154.1	0.6	2.1	(4.5)	9.3	18.9
Petrobras	BRL	26.0	0.8	2.6	0.3	40.8	62.3
Refinery							
Phillips66	USD	94.9	(1.8)	(2.8)	(7.7)	(17.8)	2.4
Valero	USD	80.7	(3.9)	(6.1)	(13.0)	(27.3)	(2.6)
JX	JPY	681.7	(0.4)	(6.0)	(14.7)	(9.2)	12.0
Neste Oil	EUR	70.2	(2.5)	(2.1)	(0.4)	(3.7)	40.8

	Unit	Price	1D	1W	1M	3M	12M
Petrochemical			%	%	%	%	%
BASF	EUR	68.8	(1.0)	1.6	1.8	(11.5)	(25.0)
DowDuPont	USD	57.8	(2.3)	0.2	0.5	(14.7)	(18.3)
SABIC	SAR	118.8	(0.2)	(4.0)	(4.8)	(3.4)	18.9
Formosa Pla.	TWD	102.0	1.0	1.0	(1.0)	(6.4)	10.7
Shin-Etsu	JPY	9,693	2.8	(4.7)	8.8	(7.9)	(21.6)
Renewable							
Wacker	EUR	79.7	(5.7)	(5.9)	(12.1)	(33.8)	(43.1)
First Solar	USD	43.94	(1.0)	2.9	(5.7)	(13.8)	(27.0)
GCL-Poly	HKD	0.54	0.0	(6.9)	16.1	1.9	(61.7)
Tesla Motors	USD	353.5	(0.2)	6.7	36.0	15.7	12.2

4. Coverage Summary

	11/19	1D	1W	1M	3M	6M	12M	투자의견	TP	%	P/E	P/B
KOSPI	2,101	0.4	1.0	(2.6)	(7.5)	(14.6)	(17.1)				* 추정치는 12M fwd 기준임	
KOSPI화학	4,851	0.7	3.2	(0.5)	(13.3)	(18.8)	(19.3)				* 모든 coverage 업체의 실적은 연결기준임	
LG화학	345,500	0.3	3.6	4.7	(5.1)	0.4	(15.4)	매수	400,000	15.8	15.16	1.58
롯데케미칼	291,500	(0.7)	1.9	12.1	(12.1)	(24.1)	(18.0)	매수	360,000	23.5	9.49	12.73
한화케미칼	17,850	3.2	0.8	7.2	(13.3)	(37.4)	(41.1)	매수	27,000	51.3	8.68	0.44
금호석유화학	89,800	(0.1)	(1.3)	6.0	(10.6)	(16.5)	23.7	매수	140,000	55.9	10.28	1.18
KCC	280,000	2.9	4.5	0.0	(16.7)	(23.3)	(29.0)	매수	400,000	42.9	15.75	0.47
OCI	98,300	(0.9)	(0.8)	7.3	(13.8)	(36.2)	(20.7)	매수	140,000	42.4	11.59	0.68
SKC	35,500	1.4	(0.6)	(5.1)	(23.4)	(11.8)	(15.5)	매수	50,000	40.8	9.83	0.83
SK이노베이션	203,000	3.0	2.5	(4.5)	2.8	(1.5)	(0.2)	매수	240,000	18.2	14.50	1.07
S-Oil	111,500	0.5	0.0	(12.5)	(8.6)	0.0	(7.9)	매수	150,000	34.5	13.98	1.84
GS	51,500	0.0	1.2	0.8	(5.5)	(17.5)	(14.5)	매수	80,000	55.3	4.89	0.59
SK가스	74,900	(1.1)	(5.1)	(8.3)	(12.2)	(24.0)	(22.1)	매수	120,000	60.2	6.14	0.50
포스코대우	19,750	1.3	(0.8)	4.2	9.1	(23.0)	6.8	매수	25,000	26.6	11.32	0.73
LG상사	17,350	1.8	4.5	(7.2)	(24.7)	(39.9)	(36.2)	매수	30,000	72.9	6.26	0.51
한국전력	27,350	(2.1)	(0.7)	1.7	(11.1)	(24.4)	(27.7)	매수	40,000	46.3	7.14	0.22
한국가스공사	50,200	1.7	(4.7)	(9.5)	(9.1)	(17.7)	12.3	매수	75,000	49.4	9.04	0.66

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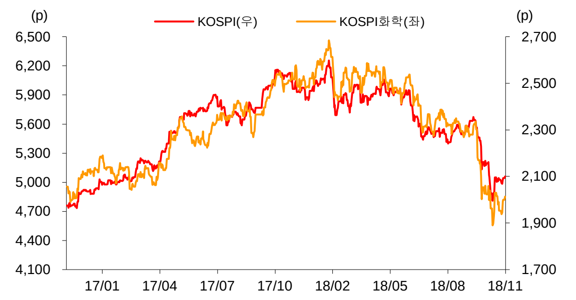
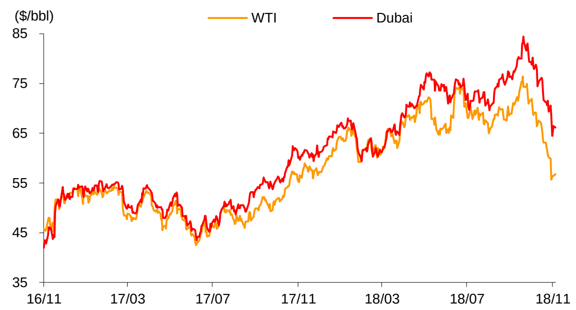
Key Chart

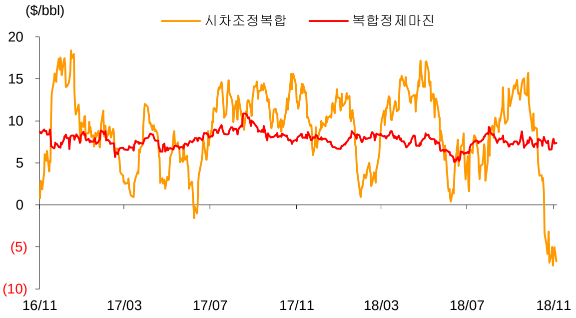
KOSPI/KOSPI화학



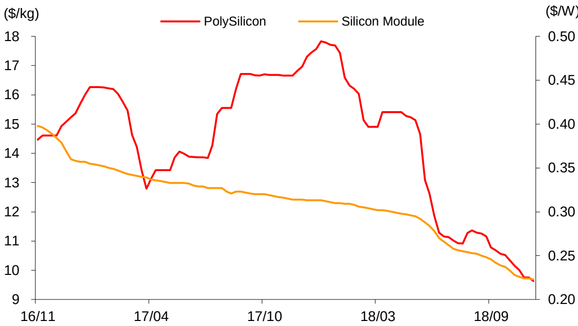
WTI/Dubai



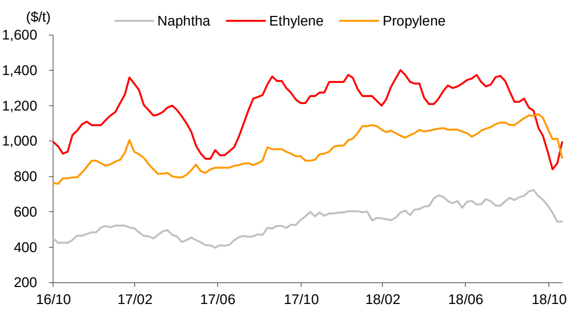
Complex & 1M lagging margin



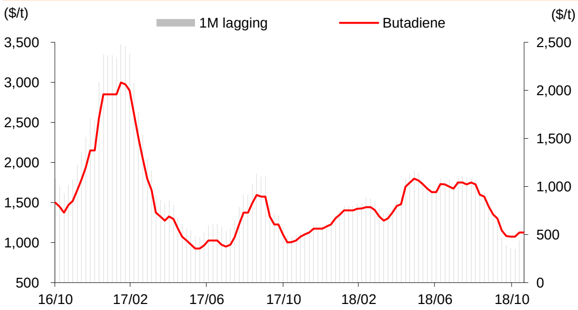
Polysilicon & Module prices



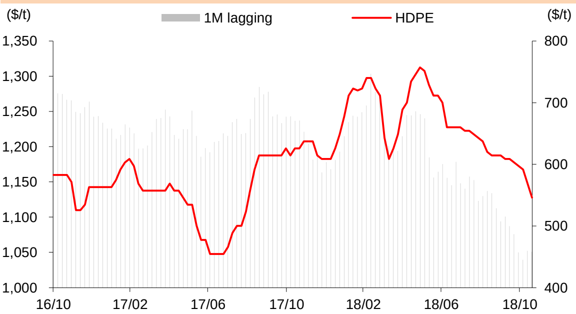
Naphtha/Ethylene/Propylene prices



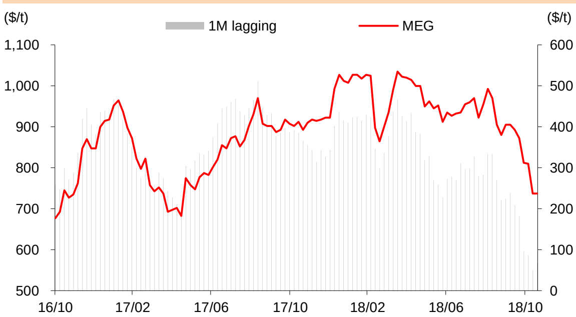
Butadiene price & 1M lagging naphtha spread



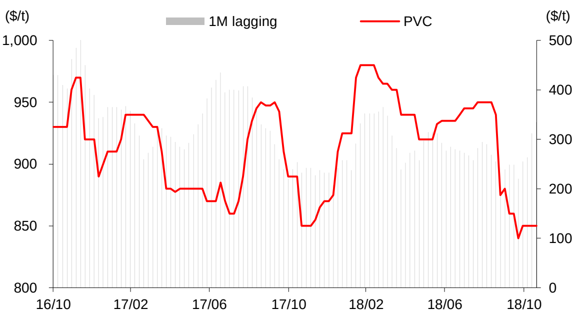
HDPE price & 1M lagging naphtha spread



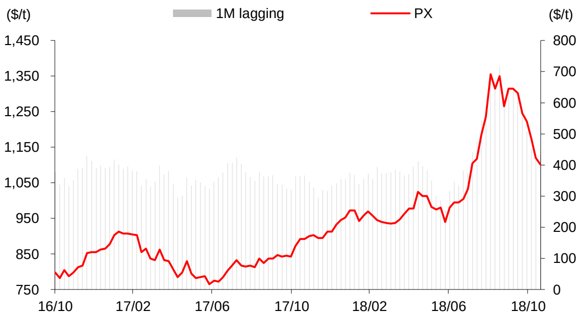
MEG price & 1M lagging naphtha spread



PVC price & 1M lagging naphtha spread



PX price & 1M lagging naphtha spread



자료: Bloomberg, Cischem, Petronet, Platts, Pvinsights, SK증권
참고: 상기 데이터는 일괄적으로 과거 2년치 적용

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News Comment

Headline	(출처: Arabian Business)
제목	아람코, 사빅 지분 인수 위한 채권 발행 작업 재고
결론	PIF의 자금 조달을 위해 아람코의 IPO는 사실상 철회된 것으로 판단됨
세부	
1)	WSJ에 의하면 아람코는 사빅 지분 인수를 위한 채권 발행 계획 철회함
2)	대신, 신디케이트 론과 사빅 B/S의 채권을 결합할 가능성이 대두됨
3)	LBO는 아람코가 재무 공표를 많이 안해도 된다는 장점이 있음
4)	또한 사빅은 이미 채권 발행 레코드가 있어 신규 발행 준비 시간이 짧음
5)	PIF의 자금 조달을 위해 아람코의 IPO는 사실상 철회된 것으로 판단됨

WTI Comment	(출처: 연합뉴스)
제목	숨고르기속 소폭 상승…WTI 0.5%↑
상승 요인	
하락 요인	공급과잉 우려

Issue 1	(출처: Reuters)
제목	가즈프롬, "TurkStream의 offshore 파트가 완공됨"
결론	CIS 국가들을 우회하는 러시아 가스 파이프라인이 구축되는 것임
세부	
1)	흑해를 지나 터키로 유입되는 TurkStream의 offshore 파트가 완공됨
2)	푸틴, "Onshore 파트는 2019년 말에 완공될 것"
3)	TurkStream은 2개의 라인이며 각각 15.75bcm/년의 capa 보유
4)	1개 라인은 터키에 가스를 공급하고 다른 1개는 남유럽에 가스 공급함
5)	CIS 국가들을 우회하는 러시아 가스 파이프라인이 구축되는 것임

Issue 2	
제목	
결론	
세부	
1)	
2)	
3)	
4)	
5)	

Issue 3	
제목	
결론	
세부	
1)	
2)	
3)	
4)	
5)	

Issue 4	
제목	
결론	
세부	
1)	
2)	
3)	
4)	
5)	

Issue 5	
제목	
결론	
세부	
1)	
2)	
3)	
4)	
5)	

Issue 6	
제목	
결론	
세부	
1)	
2)	
3)	
4)	
5)	

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Commodity Price Data

Daily Price		Today	1D	1W	1M	3M	6M	12M	YTD	2016avg.	2017avg.	2018acc.
F/X	**USD/EUR**	0.873	0.876	0.892	0.869	0.874	0.850	0.848	0.833	0.904	0.887	0.844
	Change, %		(0.3)	(2.1)	0.5	(0.1)	2.8	2.9	4.8	(3.4)	(1.5)	3.5
	USD/JPY	112.6	112.8	113.8	112.6	110.5	110.8	112.1	112.6	108.8	112.1	110.2
	Change, %		(0.2)	(1.1)	0.0	1.9	1.6	0.4	(0.1)	3.5	0.4	2.2
	USD/KRW	1,128.6	1,128.6	1,133.8	1,132.1	1,124.9	1,077.6	1,097.6	1,066.7	1,160.5	1,130.9	1,097.4
	Change, %		(0.0)	(0.5)	(0.3)	0.3	4.7	2.8	5.8	(2.8)	(0.2)	2.8
Agriculture	**Corn**	362.3	364.8	371.3	367.0	364.3	402.5	343.0	350.8	358.5	359.4	367.7
	Change, %		(0.7)	(2.4)	(1.3)	(0.5)	(10.0)	5.6	3.3	1.0	0.8	(1.5)
	Soybean	873.8	892.3	871.8	856.8	881.5	998.5	990.5	951.8	987.5	975.9	936.7
	Change, %		(2.1)	0.2	2.0	(0.9)	(12.5)	(11.8)	(8.2)	(11.5)	(10.5)	(6.7)
	Wheat	498.5	506.8	519.8	514.8	560.5	518.3	427.3	427.0	436.4	436.0	493.0
	Change, %		(1.6)	(4.1)	(3.2)	(11.1)	(3.8)	16.7	16.7	14.2	14.3	1.1
	Rice	10.8	10.9	10.6	11.0	10.4	12.3	12.3	11.7	10.3	11.1	11.7
	Change, %		(1.1)	1.2	(2.4)	4.1	(12.6)	(12.3)	(7.8)	4.1	(2.6)	(7.6)
	Oats	304.5	298.3	285.0	295.3	258.8	242.0	257.0	241.0	196.3	252.3	253.0
	Change, %		2.1	6.8	3.1	17.7	25.8	18.5	26.3	55.1	20.7	20.4
MYR/mt	**Palm Oil**	1,800.0	1,775.0	1,865.0	2,125.0	2,204.0	2,433.0	2,680.0	2,444.0	2,653.8	2,787.3	2,293.9
	Change, %		1.4	(3.5)	(15.3)	(18.3)	(26.0)	(32.8)	(26.4)	(32.2)	(35.4)	(21.5)
	Cocoa	2,155.0	2,193.0	2,209.0	2,162.0	2,115.0	2,678.0	2,126.0	1,892.0	2,854.0	2,005.2	2,322.1
	Change, %		(1.7)	(2.4)	(0.3)	1.9	(19.5)	1.4	13.9	(24.5)	7.5	(7.2)
	Cotton	75.9	76.1	76.4	77.9	81.8	86.6	69.8	78.6	65.6	73.5	82.8
	Change, %		(0.3)	(0.7)	(2.6)	(7.2)	(12.3)	8.7	(3.5)	15.7	3.2	(8.4)
	Sugar	12.8	12.7	12.9	13.9	10.2	11.7	15.4	15.2	18.2	15.8	12.2
	Change, %		0.9	(1.1)	(7.8)	25.7	9.8	(16.7)	(15.6)	(29.5)	(19.1)	4.8
	Coffee	112.4	112.6	110.2	122.1	101.2	114.0	123.8	126.2	136.1	133.0	114.1
	Change, %		(0.2)	2.0	(8.0)	11.0	(1.4)	(9.2)	(11.0)	(17.4)	(15.5)	(1.5)
Energy	**WTI**	56.8	56.5	59.9	69.1	65.9	71.3	56.6	60.4	43.4	51.0	66.8
	Change, %		0.5	(5.3)	(17.9)	(13.9)	(20.4)	0.4	(6.1)	30.8	11.4	(15.0)
	Brent	67.0	66.8	70.1	79.8	71.8	78.5	62.7	66.9	45.1	54.9	73.3
	Change, %		0.3	(4.5)	(16.1)	(6.8)	(14.7)	6.8	0.1	48.5	22.1	(8.6)
	Natural Gas	4.6	4.3	3.8	3.3	2.9	2.8	3.1	3.0	2.6	3.0	2.9
	Change, %		7.3	21.0	41.0	55.6	61.0	48.0	55.2	79.6	51.7	55.7
	Ethanol	1.3	1.3	1.3	1.3	1.4	1.5	1.4	1.3	1.5	1.5	1.4
	Change, %		(0.8)	(0.4)	(0.4)	(7.9)	(14.3)	(11.4)	(5.0)	(17.2)	(16.2)	(9.8)
	RBOB Gasoline	157.8	157.7	163.7	191.4	198.1	223.3	174.5	179.9	140.0	162.9	198.3
	Change, %		0.1	(3.6)	(17.6)	(20.3)	(29.3)	(9.6)	(12.3)	12.7	(3.1)	(20.4)
	Coal	103.0	102.5	105.9	110.0	118.0	104.4	96.6	100.8	65.5	88.2	107.8
	Change, %		0.4	(2.7)	(6.4)	(12.8)	(1.3)	6.6	2.1	57.3	16.7	(4.5)
Metal	**Gold**	1,224.1	1,221.5	1,200.4	1,226.9	1,185.1	1,292.6	1,294.2	1,302.6	1,248.5	1,258.6	1,272.4
	Change, %		0.2	2.0	(0.2)	3.3	(5.3)	(5.4)	(6.0)	(2.0)	(2.7)	(3.8)
	Silver	14.4	14.4	14.0	14.6	14.8	16.4	17.3	16.9	17.1	17.1	15.8
	Change, %		0.1	3.1	(1.0)	(2.5)	(12.2)	(16.7)	(14.9)	(15.7)	(15.5)	(9.0)
	Copper	6,259.0	6,205.0	6,049.0	6,220.0	5,926.0	6,855.0	6,777.0	7,247.0	4,872.0	6,199.4	6,599.2
	Change, %		0.9	3.5	0.6	5.6	(8.7)	(7.6)	(13.6)	28.5	1.0	(5.2)
	Nickel	796.3	816.7	826.4	914.3	946.6	995.7	751.2	809.1	646.4	680.2	914.1
	Change, %		(2.5)	(3.6)	(12.9)	(15.9)	(20.0)	6.0	(1.6)	23.2	17.1	(12.9)
	Zinc	2,600.0	2,606.0	2,496.5	2,626.0	2,389.5	3,099.5	3,180.0	3,319.0	2,097.5	2,888.5	2,939.5
	Change, %		(0.2)	4.1	(1.0)	8.8	(16.1)	(18.2)	(21.7)	24.0	(10.0)	(11.6)
	Lead	1,984.0	1,988.3	1,912.8	1,989.0	1,980.0	2,327.5	2,433.0	2,482.8	1,868.3	2,315.7	2,278.9
	Change, %		(0.2)	3.7	(0.3)	0.2	(14.8)	(18.5)	(20.1)	6.2	(14.3)	(12.9)
	Aluminum	13,770.0	13,705.0	13,835.0	14,150.0	14,390.0	14,750.0	15,355.0	15,020.0	12,373.5	14,556.6	14,330.9
	Change, %		0.5	(0.5)	(2.7)	(4.3)	(6.6)	(10.3)	(8.3)	11.3	(5.4)	(3.9)
	Cobalt	55,000.0	55,000.0	55,000.0	60,418.0	63,847.0	90,750.0	61,500.0	75,205.0	25,480.1	55,906.9	75,130.6
	Change, %		0.0	0.0	(9.0)	(13.9)	(39.4)	(10.6)	(26.9)	115.9	(1.6)	(26.8)
	HR Coil	795.0	800.0	812.0	826.0	902.0	880.0	611.0	662.0	519.3	620.1	837.3
	Change, %		(0.6)	(2.1)	(3.8)	(11.9)	(9.7)	30.1	20.1	53.1	28.2	(5.1)
	Scrap	402.0	404.0	402.0	407.0	380.0	395.0	343.0	367.0	275.7	344.7	390.2
	Change, %		(0.5)	0.0	(1.2)	5.8	1.8	17.2	9.5	45.8	16.6	3.0

자료: Bloomberg

참고) NYMEX, ICE, LME 중 대표지수를 사용

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Refining Price Data

Daily Price		11/19	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Crude Oil	**WTI**	56.8	56.5	59.9	69.1	66.4	72.2	56.1	53.7	43.4	50.9	66.8
	Change, %		*0.5*	*(5.3)*	*(17.9)*	*(14.6)*	*(21.4)*	*1.2*	*5.7*	*30.9*	*11.5*	*(15.0)*
	Dubai	66.2	66.5	70.6	77.9	70.8	76.4	60.7	53.8	41.3	53.1	71.0
	Change, %		*(0.5)*	*(6.3)*	*(15.0)*	*(6.6)*	*(13.4)*	*9.0*	*22.9*	*60.2*	*24.6*	*(6.8)*
Crude Oil Product	**Gasoline(휘발유)**	70.0	69.5	72.4	84.8	83.0	91.0	75.4	69.8	56.3	68.0	82.5
	Change, %		*0.7*	*(3.3)*	*(17.4)*	*(15.7)*	*(23.1)*	*(7.1)*	*0.2*	*24.4*	*2.9*	*(15.2)*
	Kerosene(등유)	84.0	84.6	88.8	94.0	86.0	92.5	74.5	66.4	52.9	65.2	86.4
	Change, %		*(0.7)*	*(5.4)*	*(10.6)*	*(2.3)*	*(9.1)*	*12.8*	*26.5*	*58.9*	*28.8*	*(2.7)*
	Diesel(경유)	82.6	83.3	87.9	94.1	86.5	91.9	74.0	65.5	52.1	65.6	85.9
	Change, %		*(0.9)*	*(6.0)*	*(12.2)*	*(4.6)*	*(10.1)*	*11.5*	*26.1*	*58.5*	*25.9*	*(3.9)*
	Bunker-C	68.8	69.3	72.4	76.7	67.6	70.6	56.6	52.1	35.5	49.7	66.3
	Change, %		*(0.7)*	*(4.9)*	*(10.3)*	*1.8*	*(2.6)*	*21.4*	*32.1*	*93.6*	*38.5*	*3.8*
	Naphtha	58.5	58.3	58.5	72.5	69.5	76.7	63.9	53.5	42.6	53.7	69.1
	Change, %		*0.4*	*0.0*	*(19.3)*	*(15.8)*	*(23.7)*	*(8.5)*	*9.5*	*37.4*	*8.9*	*(15.4)*
Dubai Spread	**Gasoline(휘발유)**	3.8	3.0	1.8	6.9	12.2	14.6	14.7	16.0	14.9	14.9	11.5
	Change		*0.8*	*2.0*	*(3.1)*	*(8.3)*	*(10.7)*	*(10.9)*	*(12.2)*	*(11.1)*	*(11.1)*	*(7.7)*
	Kerosene(등유)	17.9	18.1	18.2	16.1	15.2	16.1	13.8	12.6	11.6	12.1	15.4
	Change		*(0.3)*	*(0.3)*	*1.8*	*2.7*	*1.8*	*4.0*	*5.3*	*6.3*	*5.7*	*2.5*
	Diesel(경유)	16.4	16.8	17.3	16.2	15.7	15.5	13.4	11.7	10.8	12.5	14.9
	Change		*(0.4)*	*(0.9)*	*0.2*	*0.7*	*0.9*	*3.0*	*4.7*	*5.6*	*3.9*	*1.5*
	Bunker-C	2.6	2.8	1.8	(1.2)	(3.2)	(5.8)	(4.0)	(1.8)	(5.8)	(3.4)	(4.7)
	Change		*(0.2)*	*0.9*	*3.8*	*5.8*	*8.4*	*6.7*	*4.4*	*8.4*	*6.0*	*7.3*
	Naphtha	(7.7)	(8.2)	(12.1)	(5.3)	(1.3)	0.3	3.2	(0.4)	1.3	0.6	(1.9)
	Change		*0.6*	*4.4*	*(2.3)*	*(6.4)*	*(7.9)*	*(10.9)*	*(7.3)*	*(8.9)*	*(8.3)*	*(5.8)*
Refining Margin	**Simple(단순)**	5.4	5.4	4.7	3.6	3.5	2.5	3.2	3.8	1.9	3.2	2.5
	Change		*(0.1)*	*0.7*	*1.8*	*1.9*	*2.9*	*2.2*	*1.6*	*3.5*	*2.2*	*2.9*
	Complex(복합)	7.4	7.3	6.6	7.2	8.3	8.4	8.3	8.3	7.0	8.0	7.5
	Change		*0.1*	*0.8*	*0.2*	*(1.0)*	*(1.0)*	*(0.9)*	*(0.9)*	*0.4*	*(0.6)*	*(0.1)*
	Complex(lagging)	(6.7)	(5.1)	(5.9)	9.2	9.4	16.0	13.0	18.0	8.5	8.9	8.6
	Change		*(1.7)*	*(0.9)*	*(15.9)*	*(16.2)*	*(22.7)*	*(19.7)*	*(24.7)*	*(15.2)*	*(15.6)*	*(15.3)*

자료 : Petronet, SK증권
참고 1) Crude Oil 가격은 현물(spot) 기준으로 선물(future) 가격과 다를 수 있음
참고 2) Gasoline은 95RON, 경유는 L/P 0.5%, Bunker-C는 380cst/4.0% 기준임

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SK 증권

Petrochemical Price Data

Daily Price			11/19	11/16	11/15	11/14	11/13	11/12	11/09	11/08	11/07	11/06
Spot Price	**Naphtha**	CFR Japan	542.8	542.0	525.0	520.5	540.3	548.5	547.6	557.5	578.0	584.3
	Ethylene	CFR SE Asia	950.0	940.0	910.0	880.0	860.0	860.0	860.0	835.0	835.0	835.0
	Propylene	FOB Korea	900.0	900.0	920.0	945.0	990.0	1,000.0	1,000.0	1,020.0	1,020.0	1,020.0
	Butadiene	FOB Korea	1,090.0	1,050.0	1,050.0	1,050.0	1,050.0	1,050.0	1,050.0	1,045.0	1,045.0	1,045.0
	HDPE	CFR FE Asia	1,160.0	1,160.0	1,170.0	1,170.0	1,180.0	1,180.0	1,190.0	1,210.0	1,210.0	1,230.0
	LDPE	CFR FE Asia	1,030.0	1,030.0	1,030.0	1,030.0	1,040.0	1,040.0	1,040.0	1,040.0	1,040.0	1,060.0
	LLDPE	CFR FE Asia	1,030.0	1,030.0	1,030.0	1,030.0	1,040.0	1,040.0	1,040.0	1,040.0	1,040.0	1,060.0
	MEG	CFR China	728.0	727.0	707.0	690.0	695.0	707.0	723.0	740.0	753.0	790.0
	PP	CFR FE Asia	1,150.0	1,150.0	1,160.0	1,170.0	1,180.0	1,190.0	1,200.0	1,200.0	1,200.0	1,200.0
	PX	CFR China	1,097.7	1,094.3	1,093.3	1,093.3	1,115.3	1,118.3	1,112.8	1,133.7	1,134.0	1,165.7
	PTA	CFR China	909.0	910.0	910.0	910.0	925.0	920.0	920.0	920.0	920.0	920.0
	Benzene	FOB Korea	680.0	678.3	662.7	654.3	683.3	688.3	689.3	695.3	691.3	716.0
	Toluene	FOB Korea	645.5	650.5	649.0	649.0	689.0	709.0	719.0	720.0	749.0	784.0
	Xylene	FOB Korea	792.0	788.0	785.0	778.0	817.0	841.0	836.0	854.0	854.0	865.0
	SM	FOB Korea	1,012.5	1,012.5	1,003.0	991.0	1,019.0	1,062.0	1,081.0	1,065.0	1,076.0	1,106.0

Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2016avg.	2017avg.	2018acc.
Spot Price	**Naphtha**	CFR Japan	545.0	543.0	669.5	634.5	643.0	574.5	484.5	399.5	493.5	630.4
	Change, %			*0.4*	*(18.6)*	*(14.1)*	*(15.2)*	*(5.1)*	*12.5*	*36.4*	*10.4*	*(13.6)*
	Ethylene	CFR SE Asia	925.0	850.0	980.0	1,275.0	1,265.0	1,165.0	990.0	1,040.9	1,090.9	1,183.7
	Change, %			*8.8*	*(5.6)*	*(27.5)*	*(26.9)*	*(20.6)*	*(6.6)*	*(11.1)*	*(15.2)*	*(21.9)*
	Propylene	CFR SE Asia	870.0	970.0	1,090.0	1,047.5	990.0	810.0	815.0	705.7	823.6	1,065.7
	Change, %			*(10.3)*	*(20.2)*	*(16.9)*	*(12.1)*	*7.4*	*6.7*	*23.3*	*5.6*	*(18.4)*
	Butadiene	CFR SE Asia	1,075.0	1,075.0	1,030.0	1,675.0	1,650.0	965.0	2,100.0	1,116.8	1,481.1	1,422.6
	Change, %			*0.0*	*4.4*	*(35.8)*	*(34.8)*	*11.4*	*(48.8)*	*(3.7)*	*(27.4)*	*(24.4)*
	Benzene	CFR SE Asia	657.5	690.0	815.0	890.0	830.0	860.0	822.5	646.7	838.8	852.1
	Change, %			*(4.7)*	*(19.3)*	*(26.1)*	*(20.8)*	*(23.5)*	*(20.1)*	*1.7*	*(21.6)*	*(22.8)*
	Toluene	CFR SE Asia	710.0	800.0	855.0	820.0	790.0	715.0	690.0	630.5	689.5	790.0
	Change, %			*(11.3)*	*(17.0)*	*(13.4)*	*(10.1)*	*(0.7)*	*2.9*	*12.6*	*3.0*	*(10.1)*
	Xylene	CFR SE Asia	820.0	875.0	890.0	845.0	822.5	670.0	675.0	627.7	668.8	814.2
	Change, %			*(6.3)*	*(7.9)*	*(3.0)*	*(0.3)*	*22.4*	*21.5*	*30.6*	*22.6*	*0.7*
Spread	**Ethylene**	-Naphtha	380.0	307.0	310.5	640.5	622.0	590.5	505.5	641.4	597.4	553.3
	Change, %			*23.8*	*22.4*	*(40.7)*	*(38.9)*	*(35.6)*	*(24.8)*	*(40.8)*	*(36.4)*	*(31.3)*
	Propylene	-Naphtha	325.0	427.0	420.5	413.0	347.0	235.5	330.5	306.2	330.1	435.2
	Change, %			*(23.9)*	*(22.7)*	*(21.3)*	*(6.3)*	*38.0*	*(1.7)*	*6.2*	*(1.5)*	*(25.3)*
	Butadiene	-Naphtha	530.0	532.0	360.5	1,040.5	1,007.0	390.5	1,615.5	717.3	987.6	792.2
	Change, %			*(0.4)*	*47.0*	*(49.1)*	*(47.4)*	*35.7*	*(67.2)*	*(26.1)*	*(46.3)*	*(33.1)*
	Benzene	-Naphtha	112.5	147.0	145.5	255.5	187.0	285.5	338.0	247.2	345.3	221.7
	Change, %			*(23.5)*	*(22.7)*	*(56.0)*	*(39.8)*	*(60.6)*	*(66.7)*	*(54.5)*	*(67.4)*	*(49.3)*
	Toluene	-Naphtha	165.0	257.0	185.5	185.5	147.0	140.5	205.5	231.0	196.0	159.6
	Change, %			*(35.8)*	*(11.1)*	*(11.1)*	*12.2*	*17.4*	*(19.7)*	*(28.6)*	*(15.8)*	*3.4*
	Xylene	-Naphtha	275.0	332.0	220.5	210.5	179.5	95.5	190.5	228.2	175.3	183.8
	Change, %			*(17.2)*	*24.7*	*30.6*	*53.2*	*188.0*	*44.4*	*20.5*	*56.9*	*49.7*

자료 : Cischem, Platts, Bloomberg, SK증권
참고 : Spread는 Polymer와 Naphtha의 가격차이임

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Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2016avg.	2017avg.	2018acc.
Spot Price	HDPE	CFR SE Asia	1,127.5	1,147.5	1,177.5	1,217.5	1,227.5	1,197.5	1,142.5	1,134.6	1,142.5	1,231.5
	Change, %			(1.7)	(4.2)	(7.4)	(8.1)	(5.8)	(1.3)	(0.6)	(1.3)	(8.4)
	MEG	CFR SE Asia	737.5	737.5	872.5	922.5	935.0	892.5	847.5	660.8	850.6	945.2
	Change, %			0.0	(15.5)	(20.1)	(21.1)	(17.4)	(13.0)	11.6	(13.3)	(22.0)
	PVC	CFR SE Asia	850.0	850.0	840.0	950.0	940.0	850.0	920.0	823.4	899.9	926.4
	Change, %			0.0	1.2	(10.5)	(9.6)	0.0	(7.6)	3.2	(5.5)	(8.2)
	PP	CFR SE Asia	1,212.5	1,232.5	1,252.5	1,232.5	1,242.5	1,147.5	1,032.5	978.4	1,099.6	1,252.7
	Change, %			(1.6)	(3.2)	(1.6)	(2.4)	5.7	17.4	23.9	10.3	(3.2)
	2-EH	CFR Korea	1,125.0	1,155.0	1,195.0	1,130.0	1,100.0	990.0	865.0	772.4	970.0	1,124.8
	Change, %			(2.6)	(5.9)	(0.4)	2.3	13.6	30.1	45.7	16.0	0.0
	ABS	CFR SE Asia	1,530.0	1,600.0	1,780.0	1,960.0	1,920.0	1,930.0	1,635.0	1,347.1	1,844.7	1,949.6
	Change, %			(4.4)	(14.0)	(21.9)	(20.3)	(20.7)	(6.4)	13.6	(17.1)	(21.5)
	SBR	CFR SE Asia	1,470.0	1,520.0	1,545.0	1,875.0	1,760.0	1,590.0	2,000.0	1,483.0	1,980.5	1,731.8
	Change, %			(3.3)	(4.9)	(21.6)	(16.5)	(7.5)	(26.5)	(0.9)	(25.8)	(15.1)
	SM	CFR SE Asia	1,045.0	1,100.0	1,295.0	1,470.0	1,395.0	1,280.0	1,205.0	1,064.6	1,253.8	1,383.2
	Change, %			(5.0)	(19.3)	(28.9)	(25.1)	(18.4)	(13.3)	(1.8)	(16.7)	(24.4)
	Caustic	FOB NEA	324.0	324.0	410.0	421.0	420.0	700.0	422.5	316.6	491.2	501.9
	Change, %			0.0	(21.0)	(23.0)	(22.9)	(53.7)	(23.3)	2.3	(34.0)	(35.4)
	PX	CFR SE Asia	1,102.5	1,120.0	1,245.0	1,185.0	1,005.0	892.5	855.0	790.4	844.4	1,061.4
	Change, %			(1.6)	(11.4)	(7.0)	9.7	23.5	28.9	39.5	30.6	3.9
	PO	CFR China	1,647.5	1,717.5	1,932.5	1,870.0	1,812.5	1,782.5	1,562.5	1,396.8	1,601.2	1,865.3
	Change, %			(4.1)	(14.7)	(11.9)	(9.1)	(7.6)	5.4	17.9	2.9	(11.7)
	Caprolactam	CFR SE Asia	2,080.0	2,080.0	2,190.0	2,155.0	2,155.0	2,040.0	1,850.0	1,344.9	1,936.4	2,130.1
	Change, %			0.0	(5.0)	(3.5)	(3.5)	2.0	12.4	54.7	7.4	(2.4)
	PTA	CFR SE Asia	920.0	930.0	1,002.5	972.5	855.0	707.5	642.5	613.7	667.8	873.4
	Change, %			(1.1)	(8.2)	(5.4)	7.6	30.0	43.2	49.9	37.8	5.3
Spread	HDPE		582.5	604.5	508.0	583.0	584.5	623.0	658.0	735.1	649.0	601.0
	Change, %			(3.6)	14.7	(0.1)	(0.3)	(6.5)	(11.5)	(20.8)	(10.2)	(3.1)
	MEG		192.5	194.5	203.0	288.0	292.0	318.0	363.0	261.3	357.1	314.8
	Change, %			(1.0)	(5.2)	(33.2)	(34.1)	(39.5)	(47.0)	(26.3)	(46.1)	(38.8)
	PVC		305.0	307.0	170.5	315.5	297.0	275.5	435.5	423.9	406.4	295.9
	Change, %			(0.7)	78.9	(3.3)	2.7	10.7	(30.0)	(28.0)	(25.0)	3.1
	PP		667.5	689.5	583.0	598.0	599.5	573.0	548.0	578.9	606.1	622.3
	Change, %			(3.2)	14.5	11.6	11.3	16.5	21.8	15.3	10.1	7.3
	2-EH		580.0	612.0	525.5	495.5	457.0	415.5	380.5	372.9	476.5	494.3
	Change, %			(5.2)	10.4	17.1	26.9	39.6	52.4	55.6	21.7	17.3
	ABS		985.0	1,057.0	1,110.5	1,325.5	1,277.0	1,355.5	1,150.5	947.6	1,351.2	1,319.1
	Change, %			(6.8)	(11.3)	(25.7)	(22.9)	(27.3)	(14.4)	3.9	(27.1)	(25.3)
	SBR	BD spread	395.0	445.0	515.0	200.0	110.0	625.0	(100.0)	366.2	499.4	309.2
	Change, %			(11.2)	(23.3)	97.5	259.1	(36.8)	(495.0)	7.9	(20.9)	27.7
	SM		500.0	557.0	625.5	835.5	752.0	705.5	720.5	665.1	760.3	752.7
	Change, %			(10.2)	(20.1)	(40.2)	(33.5)	(29.1)	(30.6)	(24.8)	(34.2)	(33.6)
	Caustic											
	Change, %											
	PX		557.5	577.0	575.5	550.5	362.0	318.0	370.5	390.9	351.0	430.9
	Change, %			(3.4)	(3.1)	1.3	54.0	75.3	50.5	42.6	58.9	29.4
	PO	propylene sprea	777.5	747.5	842.5	822.5	822.5	972.5	747.5	691.1	777.6	799.6
	Change, %			4.0	(7.7)	(5.5)	(5.5)	(20.1)	4.0	12.5	(0.0)	(2.8)
	Caprolactam	benzene spreac	1,422.5	1,390.0	1,375.0	1,265.0	1,325.0	1,180.0	1,027.5	698.2	1,097.6	1,278.0
	Change, %			2.3	3.5	12.5	7.4	20.6	38.4	103.7	29.6	11.3
	PTA	px spread	148.3	146.0	131.0	143.0	151.5	82.8	44.0	60.4	76.7	130.4
	Change, %			1.5	13.2	3.7	(2.1)	79.2	236.9	145.3	93.3	13.7

자료 : Cischem, Platts, SK증권

참고 : Spread는 Naphtha spread로 일괄적용

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Global peers

	Currency	11/19	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER 18E	PER 19E	PBR 18E	PBR 19E	EV/EBITDA 18E	EV/EBITDA 19E
Petrochemical																
DowDuPont	USD	57.8	(2.3)	0.2	0.5	(14.7)	(14.5)	(18.3)	(18.8)	168,245	17.7	14.9	1.8	1.7	10.2	9.2
Eastman	USD	81.8	(1.6)	0.2	1.3	(16.2)	(24.9)	(8.8)	(11.7)	13,550	11.6	10.7	2.5	2.2	8.7	8.1
BASF	EUR	68.8	(1.0)	1.6	1.8	(11.5)	(22.4)	(25.0)	(25.0)	101,214	14.6	13.6	2.4	2.2	7.8	7.4
Akzo Nobel	EUR	73.3	(1.1)	(0.6)	(1.2)	(7.7)	(3.8)	(5.5)	0.4	22,073	17.0	15.8	3.0	2.8	9.3	8.8
Arkema	EUR	87.2	(4.5)	(7.2)	(6.4)	(17.2)	(20.5)	(16.4)	(14.2)	9,270	13.2	12.2	1.7	1.6	6.3	6.0
Lanxess	EUR	51.1	(2.4)	(6.0)	(8.9)	(23.9)	(26.9)	(21.0)	(22.9)	7,282	15.5	13.1	2.1	1.9	9.3	8.2
Sumitomo Chemical	JPY	592	0.9	(3.0)	1.0	(3.6)	(11.6)	(26.4)	(26.9)	11,911	10.1	10.5	1.3	1.2	7.4	8.0
Mitsubishi Chemical	JPY	925	0.4	(1.6)	0.1	(3.3)	(12.5)	(21.2)	(25.2)	16,544	9.2	8.7	1.3	1.2	6.3	6.1
Shin-Etsu Chemical	JPY	9,693	2.8	(4.7)	8.8	(7.9)	(16.0)	(21.6)	(15.3)	43,948	18.5	16.6	1.9	1.8	8.1	7.4
Asahi Kasei	JPY	1,215	(0.9)	(2.3)	(17.8)	(21.9)	(20.3)	(15.4)	(16.4)	18,109	14.4	13.6	1.5	1.4	7.4	7.0
JSR	JPY	1,746	1.1	(2.5)	(7.1)	(17.6)	(21.9)	(20.6)	(21.3)	4,455	14.5	13.4	1.2	1.1	7.7	7.2
Nitto Denko	JPY	6,038	0.2	(2.6)	(22.4)	(27.7)	(28.7)	(45.1)	(39.7)	15,450	15.7	14.6	2.1	1.9	7.3	7.0
SABIC	SAR	118.8	(0.2)	(4.0)	(4.8)	(3.4)	1.2	18.9	17.1	80,773	14.2	13.7	1.7	1.7	7.3	7.1
Yansab	SAR	65.0	1.6	(3.8)	2.0	(10.2)	(10.0)	18.0	10.2	8,861	13.7	13.9	2.2	1.9	9.0	8.9
Formosa Plastics	TWD	102.0	1.0	1.0	(1.0)	(6.4)	(8.9)	10.7	3.3	21,114	14.4	13.9	1.8	1.8	18.9	19.2
Formosa Fiber	TWD	108.0	0.0	0.5	(4.8)	(8.5)	(8.1)	16.3	4.9	20,511	13.7	13.4	1.7	1.7	11.6	11.5
Nan Ya Plastics	TWD	78.8	1.0	1.9	3.0	(5.4)	(9.7)	5.5	1.2	20,648	14.8	15.3	1.7	1.7	16.2	16.4
Sinopec Shanghai	CNY	5.27	0.2	0.8	(5.4)	1.9	(14.4)	(18.7)	(16.7)	9,462	12.0	12.6	2.2	2.0	6.8	7.3
Sinopec Yizheng(Fibe	CNY	1.98	(1.0)	0.0	3.1	3.7	(9.6)	(35.1)	(25.8)	5,394	50.4	66.3	5.3	5.0	13.9	10.3
Reliance	INR	1,150	2.0	6.5	4.4	(4.5)	23.1	26.1	26.4	93,404	14.4	12.9	1.7	1.5	9.4	8.7
Industries Qatar	QAR	138.6	2.2	(0.9)	(3.1)	16.0	28.3	44.4	42.9	16,144	14.5	13.9	1.6	1.5	46.4	27.2
PTT Chemical	THB	77.8	1.0	(1.3)	1.6	(4.9)	(17.9)	(1.3)	(8.5)	11,766	10.7	10.4	1.4	1.3	5.5	5.4
Petronas	MYR	9.3	(1.0)	(2.7)	(0.9)	1.9	7.1	27.7	20.9	15,624	16.1	15.5	2.0	1.9	9.2	8.9
LG화학	KRW	345,500	0.3	3.6	4.7	(5.5)	0.4	(15.4)	(14.7)	27,313	13.8	12.8	1.8	1.6	6.5	6.1
롯데케미칼	KRW	291,500	(0.7)	1.9	12.1	(13.2)	(24.1)	(18.0)	(20.8)	11,632	5.5	5.2	0.9	0.8	3.6	3.3
한화케미칼	KRW	17,850	3.2	0.8	7.2	(12.5)	(37.4)	(41.1)	(43.5)	5,050	5.7	5.5	0.8	0.7	6.7	6.5
금호석유	KRW	89,800	(0.1)	(1.3)	6.0	(12.4)	(16.5)	23.7	(9.7)	2,969	14.1	11.9	1.6	1.5	9.3	8.4
SKC	KRW	35,500	1.4	(0.6)	(5.1)	(20.5)	(11.8)	(15.5)	(24.5)	1,643	9.9	8.7	1.1	1.0	8.8	7.9
국도화학	KRW	47,750	0.5	0.2	0.5	(18.7)	(26.4)	(20.0)	(24.3)	359	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
효성	KRW	4,975	3.2	4.2	(1.3)	(19.5)	(28.7)	(31.5)	(34.4)	4,595	8.2	7.3	1.1	1.0	7.2	6.8
Average			**0.2**	**(0.7)**	**(1.1)**	**(9.9)**	**(12.9)**	**(8.4)**	**(11.1)**							
Refinery																
Valero	USD	80.7	(3.9)	(6.1)	(13.0)	(27.3)	(33.1)	(2.6)	(12.2)	40,608	14.1	13.4	2.0	2.0	6.9	6.9
Conoco Phillips	USD	66.4	0.5	2.0	(8.3)	(4.8)	(4.5)	32.5	21.0	66,136	34.0	25.9	2.2	2.2	7.2	6.7
Formosa Petrochemic	TWD	115.0	2.7	(1.7)	(3.8)	(5.0)	(7.3)	8.5	(0.4)	37,040	18.2	18.7	3.2	3.2	11.7	12.1
Andeavor	USD	153.5	0.0	0.0	0.0	6.0	6.1	45.7	34.2	17,904	12.9	11.4	1.8	1.7	7.3	7.1
Marathon Petroleum	USD	63.4	(3.1)	(3.8)	(14.2)	(17.8)	(20.3)	1.8	(3.9)	32,812	15.0	12.8	2.6	2.7	7.7	7.5
Devon Energy	USD	29.6	0.2	(6.1)	(15.2)	(27.0)	(29.4)	(23.4)	(28.5)	22,192	17.5	14.0	2.7	2.3	8.4	7.4
Hollyfrontier	USD	62.3	(2.3)	(1.7)	(1.3)	(9.2)	(14.6)	40.4	21.7	9,094	16.8	15.2	1.8	1.8	8.0	8.0
Phillips 66	USD	94.9	(1.8)	(2.8)	(7.7)	(17.8)	(21.1)	2.4	(6.2)	51,561	15.6	14.5	2.3	2.2	9.0	8.8
Murphy Oil	USD	31.7	1.1	3.8	(9.2)	7.4	1.1	13.1	1.9	5,548	162.4	113.2	1.2	1.1	4.9	4.5
JX Holdings	JPY	681.7	(0.4)	(6.0)	(14.7)	(9.2)	(10.7)	12.0	(6.2)	22,130	8.8	8.0	0.9	0.9	7.0	6.6
Idemitsu	JPY	4,135.0	(3.6)	(13.6)	(21.4)	(20.2)	1.7	17.5	(8.6)	8,360	7.9	7.5	1.0	0.9	6.8	6.8
Nesteoil	EUR	70.2	(2.5)	(2.1)	(0.4)	(3.7)	2.5	40.8	31.5	16,473	16.7	16.7	2.9	2.7	10.2	10.3
Ashland	USD	80.3	(2.4)	(2.3)	7.6	(5.3)	3.3	13.5	12.8	4,550	21.6	18.7	1.3	1.3	10.2	9.6
Fuchs Petrolub	EUR	40.1	(1.8)	(0.7)	(11.4)	(17.9)	(12.5)	(12.0)	(9.4)	7,127	22.1	20.9	4.1	3.7	13.0	12.3
SK이노베이션	KRW	203,000	3.0	2.5	(4.5)	1.0	(1.5)	(0.2)	(0.7)	17,975	7.9	7.7	0.9	0.9	4.9	4.8
S-Oil	KRW	111,500	0.5	0.0	(12.5)	(10.8)	0.0	(7.9)	(4.7)	12,400	9.3	8.1	1.8	1.6	7.6	6.6
GS	KRW	51,500	0.0	1.2	0.8	(4.1)	(17.5)	(14.5)	(17.2)	5,467	6.0	5.5	0.7	0.6	6.9	6.3
Average			**(0.8)**	**(2.2)**	**(7.6)**	**(9.7)**	**(9.3)**	**9.9**	**1.5**							

* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임
* 국내업체의 multiple은 Dataguidepro 기준임

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Global peers

	Currency	11/19	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER		PBR		EV/EBITDA	
											18E	19E	18E	19E	18E	19E
E&P/Shale																
Exxon Mobil	USD	79	0.3	(0.8)	(3.4)	1.2	(2.6)	(1.3)	(5.3)	335,402	16.7	13.9	1.7	1.7	7.4	6.4
BP	GBP	523	(0.4)	(1.0)	(6.2)	(4.7)	(10.8)	6.0	0.0	134,830	11.3	10.4	1.3	1.3	4.6	4.2
Shell	EUR	2,395	(0.5)	(1.5)	(5.0)	(3.2)	(11.8)	2.4	(3.4)	256,480	11.4	9.4	1.3	1.2	5.4	4.9
Chevron	USD	119	0.3	1.7	1.1	1.4	(6.6)	4.1	(4.6)	228,185	14.2	12.4	1.5	1.4	5.8	5.2
Total	EUR	50	(0.9)	(1.3)	(6.2)	(5.4)	(9.0)	7.1	7.6	152,449	10.4	9.1	1.2	1.1	5.2	4.6
Sinopec	CNY	6	1.3	(0.8)	(2.9)	(3.2)	(17.5)	2.2	0.0	106,433	9.4	9.2	1.0	1.0	3.5	3.5
Petrochina	CNY	8	0.6	(2.6)	(7.2)	(1.0)	(6.8)	(2.6)	(2.2)	199,775	22.5	19.7	1.2	1.1	5.1	4.9
CNOOC	CNY	10	0.3	(2.2)	1.0	(2.4)	(17.7)	(13.2)	(6.4)	76,044	9.2	8.2	1.3	1.2	3.7	3.5
Gazprom	RUB	154	0.6	2.1	(4.5)	9.3	5.8	18.9	18.1	55,586	2.7	2.8	0.3	0.3	2.4	2.3
Rosneft	RUB	424	0.8	(8.5)	(9.2)	(0.4)	9.6	41.0	45.5	68,486	6.4	5.3	1.0	0.9	4.0	3.8
Anadarko	USD	56	(1.4)	(1.2)	(15.7)	(10.4)	(21.2)	15.5	3.7	28,043	19.9	13.3	2.4	2.1	5.8	4.9
Petrobras	BRL	26	0.8	2.6	0.3	40.8	1.4	62.3	61.5	94,109	9.1	7.0	1.1	0.9	5.2	4.5
Lukoil	USD	4,846	0.4	(5.5)	3.2	10.8	8.9	46.6	45.3	54,780	5.3	5.4	0.8	0.7	N/A	N/A
Kinder	USD	17	0.8	(0.3)	(3.1)	(3.0)	8.4	2.4	(3.6)	47,497	21.1	16.9	1.1	1.1	10.1	9.9
Equinor ASA	NOK	205	(1.6)	(3.4)	(8.0)	(3.3)	(7.2)	25.2	17.2	80,937	11.6	10.0	1.9	1.7	3.1	2.7
BHP	AUD	32	0.1	(3.0)	(2.1)	(1.0)	(4.9)	19.5	9.6	120,023	12.7	14.1	2.3	2.3	6.0	6.3
PTT E&P	THB	133	(0.4)	(4.0)	(8.3)	(1.5)	(8.9)	44.0	32.5	15,982	12.5	10.9	1.3	1.2	3.8	3.5
Petronas gas	MYR	19	0.0	0.2	2.6	3.0	5.0	13.0	7.6	8,884	19.6	19.5	2.8	2.7	10.7	10.7
Chesapeake	USD	3	(2.8)	0.6	(25.8)	(19.3)	(14.3)	(13.4)	(12.1)	3,180	4.3	4.1	#N/A N/A	4.4	6.3	5.6
Noble Energy	USD	25	(0.9)	(0.6)	(14.6)	(13.3)	(31.2)	(3.9)	(14.4)	11,966	23.8	17.5	1.2	1.1	6.2	5.3
Average		**0**	**(0.1)**	**(1.5)**	**(5.7)**	**(0.3)**	**(6.6)**	**13.8**	**9.8**							
PV																
WACKER	EUR	79.7	(5.7)	(5.9)	(12.1)	(33.8)	(48.4)	(43.1)	(50.9)	4,760	12.1	12.7	1.2	1.2	4.5	4.7
GCL-Poly	HKD	0.5	0.0	(6.9)	16.1	1.9	(43.2)	(61.7)	(61.4)	1,264	11.1	7.5	0.4	0.4	7.5	6.7
SunPower	USD	6.4	(2.5)	0.2	(9.4)	(4.4)	(31.7)	(20.2)	(24.7)	896	#N/A N/A	#N/A N/A	28.9	17.5	20.1	11.5
Canadian Solar	USD	16.3	2.0	17.7	8.7	24.5	(5.3)	(8.3)	(3.2)	956	7.3	9.7	0.9	0.8	6.8	7.8
JA Solar	USD	7.5	0.0	0.0	0.0	0.0	4.0	0.5	0.4	356	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
Yingli	USD	0.2	(32.0)	3.0	(15.0)	(43.3)	(90.3)	(92.3)	(89.9)	3	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
First Solar	USD	43.9	(1.0)	2.9	(5.7)	(13.8)	(37.2)	(27.0)	(34.9)	4,606	29.0	14.1	0.9	0.8	7.4	3.4
한화큐셀	USD	9.7	(0.1)	(0.2)	0.3	18.3	26.8	22.5	38.0	807	17.3	35.9	#N/A N/A	#N/A N/A	9.4	9.6
OCI	KRW	98,300	(0.9)	(0.8)	7.3	(10.6)	(36.2)	(20.7)	(27.7)	2,082	0.0	15.1	0.0	0.7	0.0	5.4
웅진에너지	KRW	1,700	3.0	0.9	(14.1)	(43.8)	(70.7)	(79.5)	(79.3)	45	N/A	0.0	0.7	0.0	5.4	0.0
신성솔라에너지	KRW	1,135	3.2	2.7	1.3	(19.8)	(34.0)	(39.3)	(40.7)	174	N/A	0.7	0.0	5.4	0.0	0.4
Average			**(3.1)**	**1.2**	**(2.1)**	**(11.4)**	**(33.3)**	**(33.6)**	**(34.0)**							
Gas Company																
Towngas China	HKD	5.8	0.7	2.5	0.3	(18.3)	(27.1)	(7.8)	(8.3)	2,067	11.2	10.0	0.9	0.9	10.9	9.9
Kulun	HKD	9.3	0.6	(4.5)	6.2	37.3	29.5	40.6	14.4	9,595	11.7	10.4	1.5	1.4	5.9	5.5
Beijing Enterprise	HKD	45.0	2.3	0.3	6.1	29.7	4.0	0.8	(3.0)	7,251	7.6	6.9	0.8	0.7	15.1	12.8
ENN Energy	HKD	70.0	1.6	2.3	4.3	(3.1)	(9.9)	21.9	25.5	10,051	16.0	13.6	3.3	2.9	10.0	8.7
China Resources Gas	HKD	29.5	(0.3)	(2.5)	(8.0)	(12.6)	1.0	6.1	3.9	8,362	14.4	12.9	2.6	2.3	8.1	7.3
China Gas Holdings	HKD	25.8	1.2	0.2	12.2	1.2	(14.3)	16.3	19.2	16,673	16.6	14.0	3.7	3.1	13.2	11.2
Shenzen Gas	HKD	15.3	0.0	0.5	5.4	14.3	(7.1)	4.2	3.1	4,139	9.1	8.1	1.2	1.1	5.4	5.1
Shann Xi	CNY	7.9	1.3	1.9	10.9	9.8	(0.4)	(0.3)	(6.2)	1,269	19.0	16.7	1.5	1.5	#N/A N/A	#N/A N/A
Suntien	HKD	2.1	(1.0)	(4.6)	5.6	0.0	(24.4)	5.1	0.5	987	5.5	4.8	0.7	0.6	8.2	7.2
China Oil & Gas	HKD	0.6	(1.8)	0.0	3.8	(8.3)	(6.8)	1.9	(35.3)	410	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
Average			**0.5**	**(0.4)**	**4.7**	**5.0**	**(5.5)**	**8.9**	**1.4**							
EV																
LG화학	KRW	345,500	0.3	3.6	4.7	(5.5)	0.4	(15.4)	(14.7)	21,659	15.1	13.6	1.5	1.4	6.7	6.0
삼성SDI	KRW	222,500	1.1	1.6	(11.9)	4.2	14.1	1.1	8.8	13,587	19.9	13.3	1.3	1.2	11.8	8.7
Panasonic	JPY	1115.0	0.4	(3.9)	(9.5)	(18.6)	(30.7)	(34.1)	(32.4)	24,325	10.3	9.2	1.4	1.3	4.2	3.9
GS Yuasa	JPY	2512.0	(1.2)	(2.4)	3.4	(0.1)	(11.2)	(13.1)	(10.4)	1,848	15.1	13.9	1.1	1.1	6.9	6.4
NEC	JPY	3370.0	0.0	2.0	9.4	14.2	10.9	15.7	10.9	7,807	24.4	13.9	1.0	0.9	9.0	6.6
BYD Auto	CNY	54.7	6.1	6.0	16.3	28.9	1.3	(14.0)	(15.9)	21,121	42.5	30.7	2.6	2.4	14.2	11.9
Tesla Motors	USD	353.5	(0.2)	6.7	36.0	15.7	27.7	12.2	13.5	60,702	#N/A N/A	59.5	10.4	9.8	32.8	17.3
Kandi Technologies	USD	4.4	(4.3)	(4.3)	(4.3)	8.6	(27.3)	(43.2)	(35.3)	227	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
Average			**0.3**	**1.1**	**5.5**	**5.9**	**(1.9)**	**(11.3)**	**(9.4)**							

* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임