



GRANDATION CAPITAL

RESEARCH DEPARTMENT

Lisa Liu, Managing Director

Phone: +1 626 345 5648

Email: lisaliu@grandationcapital.com

Jimmy Tse, Equity Analyst

Phone: +1 626 639 3024

Email: jimmytse@grandationcapital.com

Companies mentioned in this report (price as 6/25/19 market close)

Ticker	Price 6/25/19	WoW
INCY.O	\$ 87.61	3.95%
BGNE.O	\$ 121.02	3.85%
STIM.O	\$ 11.93	3.74%
BIIB.O	\$ 240.29	3.12%
ILMN.O	\$ 358.08	2.94%
DNLI.O	\$ 20.20	2.28%
ALXN.O	\$ 125.15	2.27%
REGN.O	\$ 312.90	2.04%
BSX	\$ 41.72	1.91%
HZNP.O	\$ 23.88	1.49%
DHR	\$ 142.20	0.84%
ISRG.O	\$ 520.53	0.63%
IDXX.O	\$ 271.31	0.59%
MRK.N	\$ 83.54	-1.12%
MGNX.O	\$ 16.42	-1.97%
NVCR.O	\$ 57.43	-3.96%
CELG.O	\$ 93.19	-4.08%
PBYI.O	\$ 12.77	-8.85%
MRNA.O	\$ 13.77	-12.52%
IMGN.O	\$ 1.82	-15.35%

BIOTECH INDUSTRY REPORT

2/28/2019

VOLUME 1, ISSUE 3

Announcement: We start to publish our biotech industry report on a monthly basis starting from Jun'19.

Key takeaways: The market holds high expectation for the upcoming G20 kick-off on Jun'28 where President Trump and president Xi will set the new tone to resume the trade talk. Notably, the stock market has the best month since Oct'15 while biotech sector has missed the recent stock rally. **Biotech Industry:** NASDAQ Biotech Index was closed at 3,366 on Jun 25, up 4.1% MoM and 10% YTD. The recent rally is given to the recent mega AbbVie's \$63bn acquisition of Allergan. **Individual stocks:** in our screening portfolio, the best stock performers are ILMN, ISRG and ALXN, up 16.8%, 10.4% and 9.3%, respectively.

U.S. Micro Economic Indicators:

- **U.S. GDP quarterly data (Figure 1):** on 5/20/19, U.S. department of commerce released Q1'19 GDP growth at 3.1% YoY, topped the expectation of 2.5% YoY.
- **U.S. employment monthly data (Figure 2):** on 6/7/19, U.S. department of labor released May'19 unemployment rate of 3.6%, remained at 50-year record low. However, non-farm payroll increased 75,000, weakened-than-expected 180,000.
- **U.S. pending home sales index monthly data (Figure 3):** on 5/30/19, National Association of Realtors released Apr'19 pending home sales declined 1.5% MoM, weaken-than-expected 0.9% MoM growth.



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH

- **U.S. retail sales monthly data (Figure 4):** on 6/14/19, U.S. department of commerce released May'19 retail sales of \$519bn, up 0.5% MoM, in line with the expectation of 0.6% MoM.
- **U.S. E-Commerce sales quarterly data (Figure 5):** on 5/17/19, U.S. department of commerce released Q1'19 E-commerce sales of \$137bn, accounting for 12.4% of the total retail sales, up 3.6% QoQ.

China Indicators:

- **China GDP quarterly data (Figure 6):** on 4/18/19, China bureau of statistics released Q1'19 GDP growth at 6.4% YoY, in line with the expectation of 6.3% YoY, including 2.7% YoY, 6.1% YoY and 7.0% YoY in primary, secondary and tertiary industries, respectively.
- **China total social financing monthly data (Figure 7):** on 6/15/19, the People Bank of China released Jun'19 total social financing of RMB1,400bn, in line with consensus of RMB1,410bn, high-than-expected of \$1,270bn.
- **China export monthly data (Figure 8):** on 6/10/19, China department of customs released May'19 export of RMB143.6bn, up 10.5% MoM and 7.7% YoY and import of RMB115.7bn, down 4.2% MoM and 2.5% YoY.
- **China CPI monthly data (Figure 9):** on 6/12/19, China bureau of statistics released May'19 CPI growth at 2.7% YoY, with food price up 7.7% and non-food price up 1.6%.
- **China PMI monthly data (Figure 10):** on 6/3/19, IHS Markit and Caixin released May'19 PMI of 50.2.
- **China industrial output data (Figure 11):** on 6/14/19, China bureau of statistics released industrial output growth at 5.0% YoY.

What happened?

- **AbbVie acquired Allergan for \$63bn.** On 6/24/19, ABBV announced to acquire Allergan at \$188.24/share, including \$120.3 in cash and 0.866 shares of ABBV, representing 27% stock premium of Allergan. The acquisition will diversify ABBV's current market portfolio, create \$48bn yearly revenue and provide \$2bn cost reduction from pre-tax synergies and other CAPEX. The deal is expected to close in early 2020.
- **Pfizer acquired Array Biopharma for \$11.4bn.** On 6/17/19, Pfizer announced to acquire Array Biopharma at \$48/share, representing 55% premium on ARRY stock prior day closing. Pfizer plans to proceed majority of the transaction with debt, resulting in \$4-5c Adj EPS dilution in 2020-2021. The acquisition will strengthen Pfizer's biopharmaceutical business, expand market share in oncology and add research talents for Pfizer.
- **National Health Commission of China solicits copycats for a list of off patent drugs.** On 6/20/19, following similar actions of FDA, National Health Commission of China listed 34 drugs to solicit drug makers to develop with the benefit of regulator's priority review pathway, which was exclusive to innovative drugs only.
- **City of Hope invests \$1bn plus in Comprehensive Cancer Center.** The new building of comprehensive cancer center is scheduled to open in 2021 in FivePoint Gateway, Orange County, California. City of Hope currently operate 20 cancer clinic sites in Southern California.
- **Merck hosted annual investor day.** On 6/20/19, Merck hosted its first analyst meeting in 5 years, providing an update of product and pipeline overview, led by key oncology drugs (Keytruda, Lynparza), vaccines (Gardasil, pneumococcal vaccines) and animal health. Notably, leading drug Keytruda's sales is expected to reach to \$20bn by 2024 given its category expansion and ramp up outside of the U.S.



Data Tracker:

- **Pipeline tracker (Figure 12).** from the ta66ble, we believe the companies in our portfolio remain healthy pipeline.
- **M&A tracker (Figure 13):** entering to Jun'19, AbbVie acquired Allergan for \$63bn, and Pfizer acquired Array Biopharma for \$11.4bn.
- **Key catalyst tracker (Figure 14):** FDA will review three major cases in Jan'19. They are Sotagliflozin for Sanofi, Romosozumab for Amgen and Uloric for Takeda.
- **Top 10 best selling drugs in 2019 (Figure 15):**
- **Estimated earning schedule table (Figure 15):** We expect LULU to report Q1'19 earnings next week.
- **Earnings surprise table (Figure 16):** On 6/20/19, Momo reported Q1'19 earnings with revenue and EPS beats.
- **Stock performance (Figure 17):** Over the past week, social media index underperformed the S&P 500. Individual stocks performed diversely. JD and WB were up 10.7% and 5.3% WTD, respectively.
- **Short interest tracker (Figure 18):** The latest short interest data with an 2/15/19 settlement was released on 2/27/19. Short interest, when compared with the 1/31/19 settlement data is down 3.07% for SNAP and down 1.22% for JD
- **Yield Curve Tracker (Figure 20-22):** the spread between the 10YR vs. 2YR has widened by 2bps WoW to 26bps.
- **Currency Tracker (Figure 23-26):** YTD, the USD has appreciated against the CNY and EUR and depreciated against JPY, GBP, CAD and INR.



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



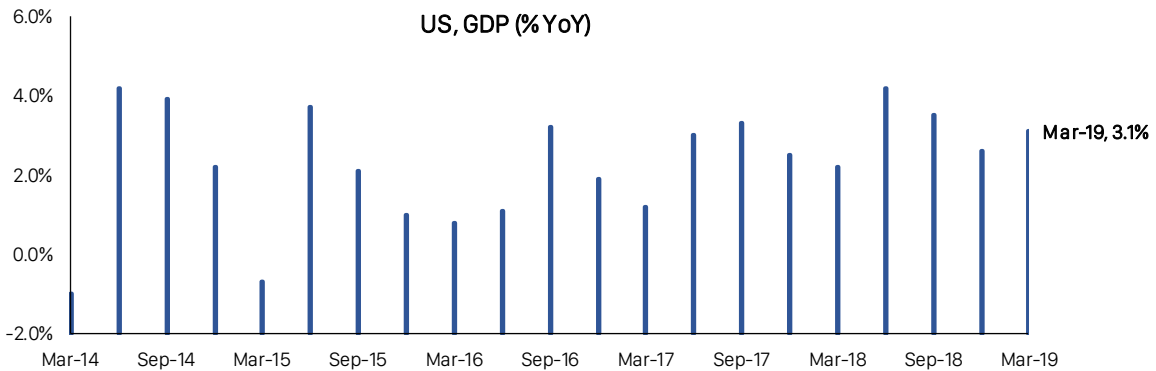
WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH

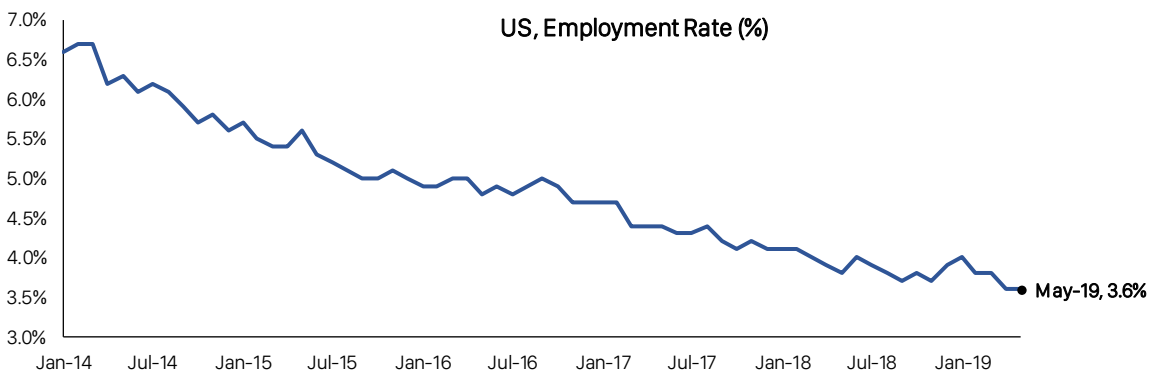
U.S. Macro Economic Indicator

Figure 1: U.S. GDP Tracker -- on 5/20/19, U.S. department of commerce released Q1'19 GDP of 3.1%, topped the expectation of 2.5%.



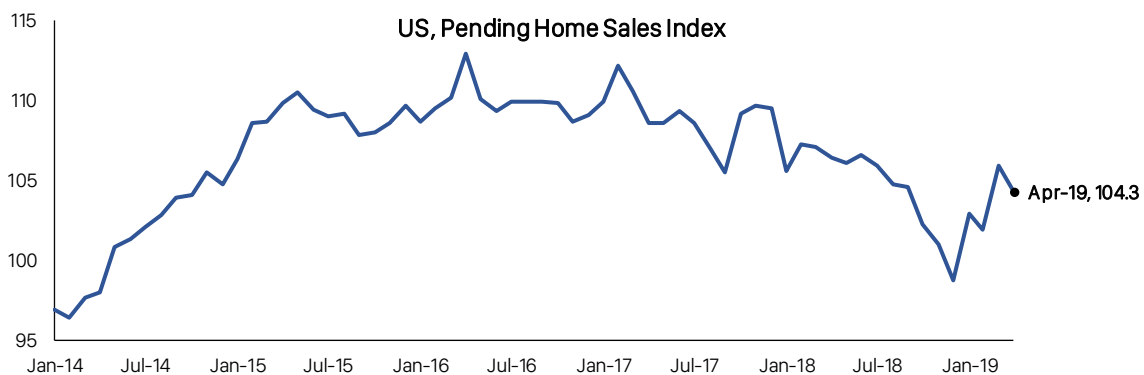
Source: U.S. BEU, Grandation Research

Figure 2: U.S. employment tracker -- on 6/7/19, U.S. department of labor released May'19 unemployment rate of 3.6%, remained 50-year low. Non-farm payroll increased 75,000, weakened-than-expected 180,000.



Source: U.S. BLS, Grandation Research

Figure 3: U.S. pending home sales index tracker -- on 5/30/19, National Association of Realtors released Apr'19 pending home sales declined 1.5% MoM, weaken-than-expected 0.9% MoM growth.



Source: U.S. NAR, Grandation Research



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648

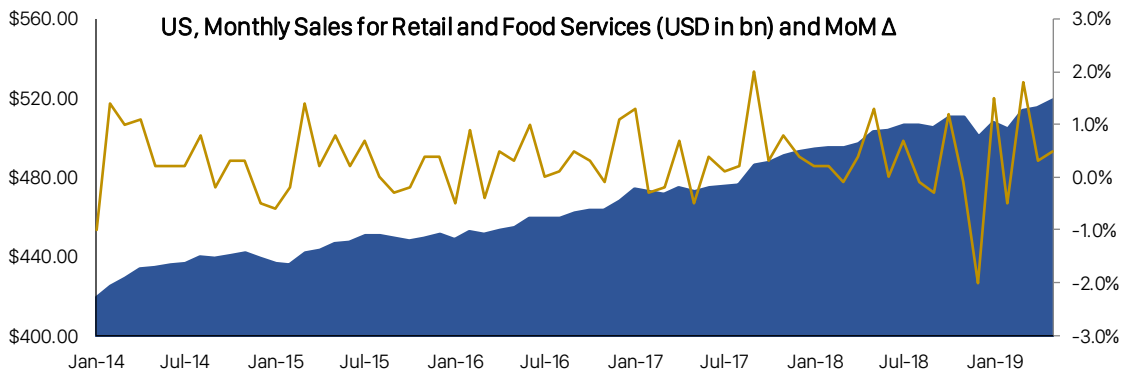


WWW.GRANDATIONCAPITAL.COM



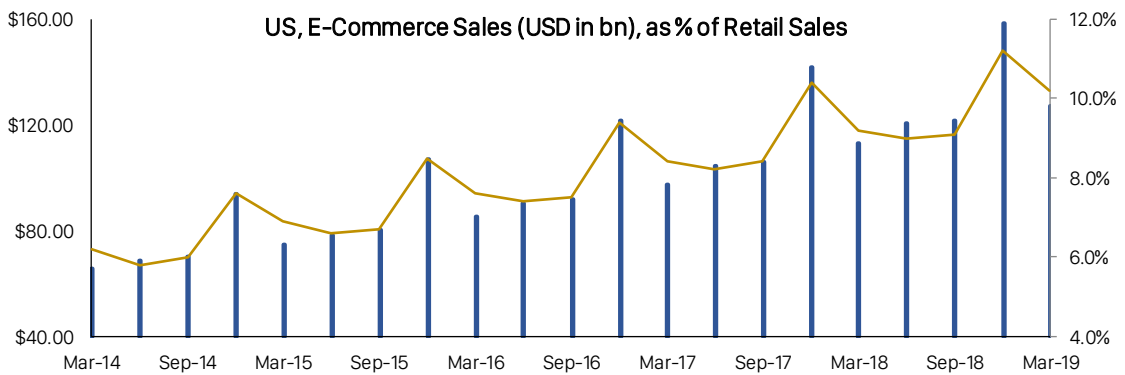
WECHAT: GRANDATION RESEARCH

Figure 4: U.S. retail sales tracker -- on 6/14/19, U.S. department of commerce released May'19 retail sales of \$519bn, up 0.5% MoM, in line with the expectation of 0.6% MoM.



Source: U.S. Consensus gov, Grandation Research

Figure 5: U.S. E-Commerce sales tracker -- on 5/17/19, U.S. department of commerce released Q1'19 E-commerce sales of \$137bn as 12.4% of total retail sales, up 3.6% QoQ.



Source: U.S. Consensus gov, Grandation Research



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



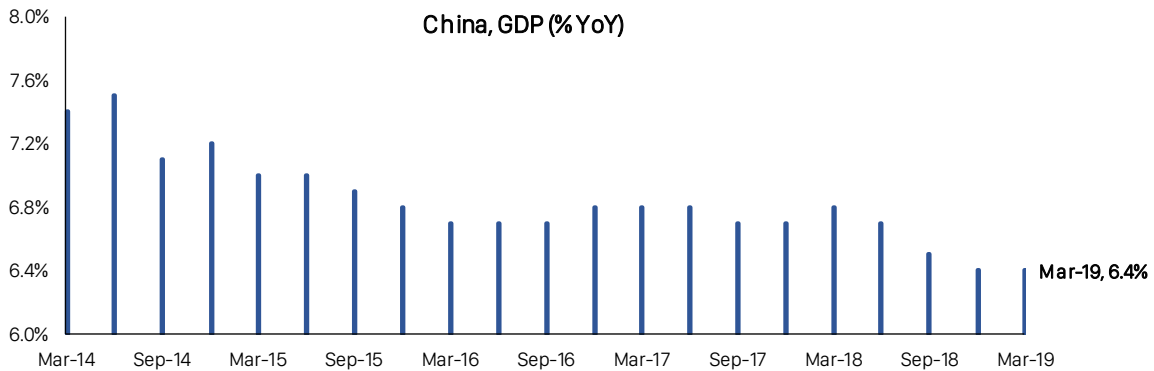
WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH

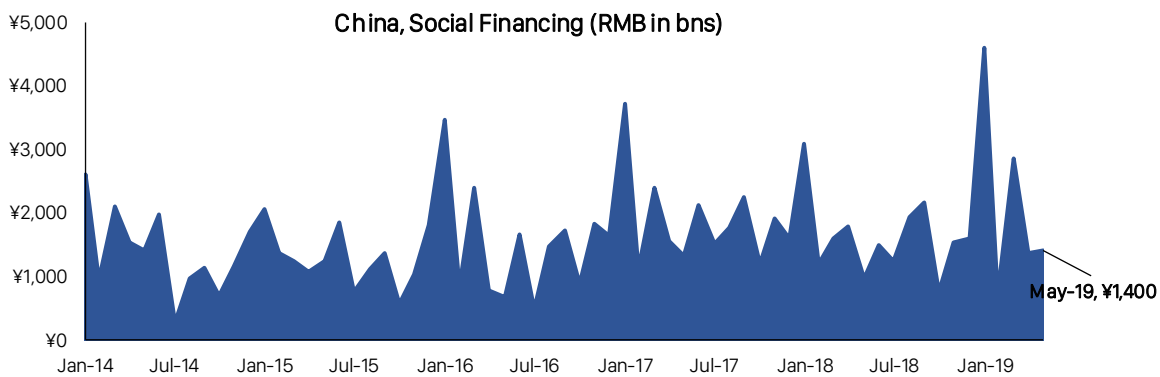
China Macro Economic Indicator

Figure 6: China GDP tracker -- on 4/18/19, China bureau of statistics released Q1'19 GDP growth of 6.4% YoY, in line with the expectation of 6.3% YoY.



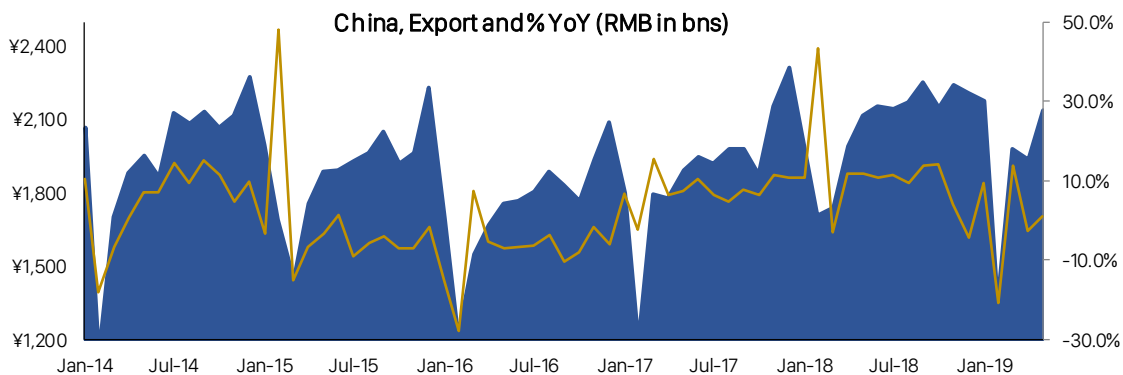
Source: China Stats, Grandation Research

Figure 7: China total social financing tracker -- on 6/15/19, the People Bank of China released May'19 total social financing of RMB1,400bn, in line with consensus of RMB1,410bn, high-than-expected of \$1,270bn.



Source: Trading Economics, Grandation Research

Figure 8: China export tracker -- on 6/10/19, China department of customs released May'19 export of RMB143.6bn, up 10.5% MoM and 7.7% YoY and import of RMB115.7bn, down 4.2% MoM and 2.5% YoY.



Source: China Customs, Grandation Research



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH

Figure 9: China CPI tracker-- on 6/12/19, China bureau of statistics released May'19 CPI growth of 2.7% YoY, with food price up 7.7% and non-food price up 1.6%.



Source: China Stats, Grandation Research

Figure 10: China PMI tracker -- on 6/3/19, HIS Markit and Caixin released May'19 PMI of 50.2.



Source: China Stats, Grandation Research

Figure 11: China industrial output tracker -- on 6/14/19, China bureau of statistics released industrial output growth at 5.0% YoY.



Source: China Stats, Grandation Research



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH

Industry Data Tracker

Figure 12: Pipeline tracker— Key companies remain healthy pipeline.

Ticker	Company	Key Candidates	Application	Drug Development					Date Added	Key Focus
				IND	Phase I	Phase II	Phase III	NDA		
REGN	Regeneron	Cemiplimab	Non-small cell lung cancer				✓		6.26.19	Immuno-Onco
		REGN2810	Non-small cell lung cancer			✓			6.26.19	Immuno-Onco
		REGN3500	Asthma			✓			6.26.19	Chronic Disease
		REGN1979	Non-Hodgkin Lymphoma		✓				6.26.19	Immuno-Onco
MGNX	MacroGenics	Margetuximab	HER 2 positive Breast Cancer					✓	6.26.19	Immuno-Onco
		MGA009	Solic tumors		✓				6.26.19	Immuno-Onco
NVCR	NovoCure	TTFIELDS	Non-small cell lung cancer				✓		6.26.19	Immuno-Onco
		TTFIELDS	Ovarian cancer				✓		6.26.19	Immuno-Onco
		TTFIELDS	Pancreatic cancer				✓		6.26.19	Immuno-Onco
		Optune	GBM			✓			6.26.19	Immuno-Onco
ALXN	Alexion Pharmaceuticals	CAEL-101	Al amyloidosis				✓		6.26.19	Heart
		ALXN1840	Wilson disease				✓		6.26.19	Rare genetic disorder
		Ultomiris	gMG				✓		6.26.19	Muscle
		ALXN1830	WAIHA			✓			6.26.19	Autoimmune

Source: Google Search, Grandation Research

Figure 13: M&A tracker – BMY acquired CELG, valued at \$84bn on 1/3/19, and LLY acquired LOXO, valued at \$8bn on 1/7/19.

Date	Acquirer	Ticker	Acquiree	Deal Size (\$ in bn)	Price/share (\$)	Description
6/24/2019	AbbVie	ABBV	Allergan	\$ 63.00	\$ 188.24	\$120 Cash per share plus 0.87 ABBV share
6/17/2019	Pfizer	PFE	Array Biopharma	\$ 11.40	\$ 48.00	Cash
1/7/2019	Lilly	LLY	LOXO Oncology	\$ 8.00	\$ 235.00	Cash
1/3/2019	Bristol-Myers Squibb	BMY	Celgene	\$ 74.00	\$ 102.43	\$50 Cash per share plus 1 BMY share

Source: Google Search, Grandation Research



Figure 14: Key catalyst tracker – Due to government shutdown, FDA reviewing process is delayed. Three major cases are under reviewing, which are Sotagliflozin for Sanofi, Romosozumab for Amgen and Uloric for Takeda.

Date	Company	Ticker	Drug/Therapy	Area of Practice	Stage/Status	Catalyst
1/17/2019	Sonofi-Aventis	SAN.F	Sotagliflozin	Type I Diabetes	NDA Submission	↑
1/16/2019	Amgen	AMGN	Romosozumab	Osteoporosis	Safety Review	↓
1/11/2019	Takeda	4502.JP	Uloric	Hyperuricemia	NDA Submission	↑
12/24/2018	Pfizer/Merck	PFE/MRK	Bavencio	Ovarian Cancer	Phase III Discontinued	
12/21/2018	Loxo Oncology	LOXO	LOXO-305	Genomically Defined Cancers	Phase I/II Initiation	
12/21/2018	AbbVie Inc	ABBV	Upadacitinib	RA(rheumatoid arthritis)	NDA Submission	
12/21/2018	Alexion	ALXN	Ultomiris	PNH(Paroxysmal Nocturnal Hemoglobinuria)	FDA Early Approval	
12/17/2018	Biogen	BIIB	BIIB098 (Diroximel Fumarate)	MS (multiple sclerosis)	NDA Submission	

Source: Google Search, Grandation Research

Figure 15: Top 10 drugs launched in 2019 – We estimated the total sales of top 10 drugs is \$19bn by 2024.

Top 10	Drug	Company	Category	Sales estimates by 2024	Disease	Launch Date
1	Ultomiris	Alexion	Other	\$ 3.48	paroxysmal nocturnal hemoglobinuria	4/22/2019
2	upadacitinib	AbbVie	Immunology	\$ 2.18	rheumatoid arthritis	Aug'19
3	Skyrizi	AbbVie	Immunology	\$ 2.10	psoriasis	Apr'19
4	Zynteglo	Bluebird	Gene therapy	\$ 1.88	beta thalassemia	Jun'19 in EU
5	roxadustat	AstraZeneca	Other	\$ 1.87	anemia due to chronic kidney disease	2H19
6	AR101	Aimmune	Immunology	\$ 1.75	peanut allergy	2019
7	Zolgensma	Novartis	Gene therapy	\$ 1.56	spinal muscular atrophy	May'19
8	brolocizumab	Novartis	Other	\$ 1.38	wet age-related macular degeneration	Oct'19
9	Mayzent	Novartis	Immunology	\$ 1.30	secondary progressive multiple sclerosis	2019
10	Spravato	Johnson & Johnson	Other	\$ 1.30	major depressive disorder	Jan'19

Source: Google Search, Grandation Research



Figure 16: Estimated earning schedule tracker-- We expect DHR and ISRG to report earnings on 7/18/2019.

Next Earnings Schedule (Est)	Company	Ticker	Stock Price 6/24/2019	Street PT	Grandation PT	% PT/ Price	Consensus Revenue	Consensus EPS
7/18/2019	Danaher Corp	DHR	\$142	\$145	NA	1.70%	\$5,084.67	\$1.16
7/18/2019	Intuitive Surgical Inc	ISRG.O	\$521	\$574	NA	10.34%	\$1,031.49	\$2.87
7/23/2019	Biogen Inc	BIIB.O	\$240	\$254	NA	5.69%	\$3,463.91	\$7.44
7/23/2019	Boston Scientific Corp	BSX	\$42	\$44	NA	5.96%	\$2,641.45	\$0.38
7/24/2019	Celgene Corp	CELG.O	\$93	\$97	NA	4.49%	\$4,237.66	\$2.62
7/24/2019	Novocure Ltd	NVCR.O	\$57	\$54	NA	-5.28%	\$80.78	-\$0.07
7/24/2019	Alexion Pharmaceuticals Inc	ALXN.O	\$125	\$160	NA	28.03%	\$1,170.76	\$2.33
7/25/2019	ImmunoGen Inc	IMGN.O	\$2	\$5	NA	165.57%	\$10.25	-\$0.26
7/29/2019	Incyte Corp	INCY.O	\$88	\$88	NA	0.53%	\$495.37	\$0.49
7/29/2019	Illumina Inc	ILMN.O	\$358	\$348	NA	-2.91%	\$888.18	\$1.42
7/30/2019	IDEXX Laboratories Inc	IDXX.O	\$271	\$277	NA	2.17%	\$627.26	\$1.36
7/30/2019	Merck & Co Inc	MRK.N	\$84	\$91	NA	8.67%	\$10,940.52	\$1.16
7/31/2019	Regeneron Pharmaceuticals Inc	REGN.O	\$313	\$392	NA	25.18%	\$1,799.92	\$5.31
8/5/2019	MacroGenics Inc	MGNX.O	\$16	\$33	NA	103.41%	\$14.45	-\$0.99
8/7/2019	Puma Biotechnology Inc	PBYI.O	\$13	\$22	NA	70.04%	\$61.85	-\$0.82
8/8/2019	Moderna Inc	MRNA.O	\$14	\$30	NA	119.23%	\$18.80	-\$0.44
8/8/2019	Horizon Therapeutics PLC	HZNP.O	\$24	\$33	NA	36.93%	\$297.97	\$0.38
8/9/2019	Beigene Ltd	BGNE.O	\$121	\$184	NA	52.07%	\$65.55	-\$3.04
8/12/2019	Denali Therapeutics Inc	DNLI.O	\$20	\$28	NA	36.96%	\$3.92	-\$0.46
8/15/2019	Neuronetics Inc	STIM.O	\$12	\$30	NA	147.28%	\$15.80	-\$0.41

Source: Thomson Reuters, Grandation Research

Figure 17: Earnings surprise tracker—on 6/20/19, Momo reported Q1'19 earnings with revenue and EPS beats.

Ticker	Company Name	Earnings Release	Revenue	GM	EBITDA	EBIT	EPS
MRNA.O	Moderna Inc	5/8/2019	-50.1%	-	-20.1%	-2.5%	-9.8%
DNLI.O	Denali Therapeutics Inc	5/8/2019	-53.9%	-	-47.4%	-29.1%	-1.7%
BIIB.O	Biogen Inc	4/24/2019	2.8%	-1.9%	-4.2%	0.2%	1.7%
CELG.O	Celgene Corp	4/25/2019	0.4%	0.7%	6.9%	4.6%	4.8%
MGNX.O	MacroGenics Inc	5/1/2019	-48.6%	-	18.2%	-17.0%	-15.2%
IMGN.O	ImmunoGen Inc	5/3/2019	-19.0%	0.0%	24.3%	1.7%	-50.0%
INCY.O	Incyte Corp	4/30/2019	2.4%	0.0%	-	117.4%	53.8%
NVCR.O	Novocure Ltd	5/2/2019	0.6%	5.0%	-8478.0%	-28.6%	9.3%
ALXN.O	Alexion Pharmaceuticals Inc	4/25/2019	1.3%	1.5%	-5.7%	7.8%	9.3%
REGN.O	Regeneron Pharmaceuticals	5/7/2019	-2.8%	-6.9%	-11.1%	-18.1%	-18.7%
STIM.O	Neuronetics Inc	5/7/2019	0.3%	2.5%	-27.0%	-8.1%	-4.0%
BSX	Boston Scientific Corp	4/24/2019	-1.6%	-1.4%	-1.9%	-1.5%	-1.7%
DHR	Danaher Corp	4/18/2019	2.0%	-0.8%	2.8%	3.9%	5.4%
ISRG.O	Intuitive Surgical Inc	4/18/2019	0.0%	0.4%	-1.1%	-2.0%	-3.3%
IDXX.O	IDEXX Laboratories Inc	5/1/2019	0.2%	1.6%	7.3%	7.9%	11.3%
HZNP.O	Horizon Therapeutics PLC	5/8/2019	17.6%	0.7%	98.0%	88.3%	149.2%
MRK.N	Merck & Co Inc	4/30/2019	3.2%	0.5%	-	12.8%	15.1%
BGNE.O	Beigene Ltd	5/9/2019	39.5%	-3.1%	-	20.9%	18.3%
PBYI.O	Puma Biotechnology Inc	5/9/2019	47.3%	-	-	144.1%	61.9%
ILMN.O	Illumina Inc	4/25/2019	1.4%	0.7%	7.3%	9.5%	19.6%

Source: Thomson Reuters, Grandation Research



Figure 18: Stock performance tracker--

Ticker	Name	Price 6/26/2019	Market Cap (\$bn)	WTD	MTD	YTD
Index:						
.SPX	Standard & Poor's Corp	2917.38	NA	-1.2%	5.9%	16.2%
.NBI	NASDAQ Stock Exchange	3359.48	NA	-3.3%	5.9%	9.2%
Companies:						
ILMN.O	illumina Inc	358.08	52.64	-1.4%	16.1%	18.8%
ISRG.O	Intuitive Surgical Inc	520.53	60.09	-2.6%	10.5%	7.3%
ALXN.O	Alexion Pharmaceuticals Inc	125.15	28.06	-5.3%	10.3%	28.7%
INCY.O	Incyte Corp	87.61	18.79	-3.5%	8.9%	34.7%
BIIB.O	Biogen Inc	240.29	46.59	-0.4%	8.6%	-20.9%
IDXX.O	IDEXX Laboratories Inc	271.31	23.33	-1.5%	8.1%	45.1%
IMGN.O	ImmunoGen Inc	1.82	0.27	-1.0%	7.8%	-59.6%
BSX	Boston Scientific Corp	41.72	57.56	-0.7%	7.8%	17.1%
NVCR.O	Novocure Ltd	57.43	5.50	-5.3%	6.9%	69.7%
DHR	Danaher Corp	142.2	100.88	-1.9%	6.8%	36.7%
BGNE.O	Beigene Ltd	121.02	7.16	2.7%	5.7%	-11.1%
MRK.N	Merck & Co Inc	83.54	215.09	-1.2%	5.5%	9.3%
REGN.O	Regeneron Pharmaceuticals Inc	312.9	33.71	-4.7%	1.1%	-18.3%
DNLI.O	Denali Therapeutics Inc	20.2	1.93	0.0%	0.0%	0.0%
HZNP.O	Horizon Therapeutics PLC	23.88	4.42	-0.5%	-0.8%	21.0%
CELG.O	Celgene Corp	93.19	65.72	-6.6%	-1.5%	44.2%
STIM.O	Neuronetics Inc	11.93	0.22	-15.0%	-6.2%	-44.2%
MGNX.O	MacroGenics Inc	16.42	0.80	-2.6%	-11.7%	27.6%
PBYI.O	Puma Biotechnology Inc	12.77	0.49	-10.9%	-16.8%	-39.6%
MRNA.O	Moderna Inc	13.77	4.53	-6.8%	-34.1%	-10.3%

Source: Thomson Reuters, Grandation Research

Figure 19: Short Interest tracker-- The latest short interest data with an 6/14/19 settlement was released on 6/25/19. Short interest, when compared with the 5/31/19 settlement data is down 1.19% for PBYI and down 1.04% for DNLI

Ticker	Company	3mon avg daily volume	Short Interest	Days To Cover	Company Shares	Free Float	% of Free Float	SI /Float	SI/Float vs. Prior (% change)
MRNA.O	Moderna Inc	1,218,136	9,435,144	6.69	329,010,929	249,302,482	75.8%	3.78%	-0.52%
DNLI.O	Denali Therapeutics Inc	385,967	9,132,746	27.72	95,478,391	87,038,410	91.2%	10.49%	-1.04%
BIIB.O	Biogen Inc	2,218,598	3,955,945	2.30	193,893,397	192,792,155	99.4%	2.05%	0.07%
CELG.O	Celgene Corp	6,796,852	10,872,371	2.42	705,259,536	703,773,081	99.8%	1.54%	-0.06%
MGNX.O	MacroGenics Inc	832,884	2,837,291	2.79	48,805,620	45,302,176	92.8%	6.26%	-0.64%
IMGN.O	ImmunoGen Inc	3,452,221	10,884,611	2.56	149,530,946	147,095,388	98.3%	7.40%	-0.14%
INCY.O	Incyte Corp	1,347,155	7,083,851	5.73	214,438,549	213,178,820	99.4%	3.32%	0.04%
NVCR.O	Novocure Ltd	516,339	3,779,410	7.89	95,766,474	77,875,641	81.3%	4.85%	0.14%
ALXN.O	Alexion Pharmaceuticals In	1,401,264	3,303,766	2.42	224,237,214	223,739,691	99.8%	1.48%	-0.04%
REGN.O	Regeneron Pharmaceutica	851,886	2,124,811	2.44	107,727,418	81,235,984	75.4%	2.62%	-0.12%
STIM.O	Neuronetics Inc	100,286	608,958	5.42	18,308,125	18,066,542	98.7%	3.37%	-1.91%
BSX	Boston Scientific Corp	8,087,364	14,140,699	1.82	1,390,652,506	1,387,247,847	99.7%	1.02%	-0.03%
DHR	Danaher Corp	2,355,908	5,747,598	2.58	715,933,649	635,700,061	88.8%	0.90%	-0.01%
ISRG.O	Intuitive Surgical Inc	821,306	2,278,257	3.04	115,448,658	114,320,978	99.0%	1.99%	0.26%
IDXX.O	IDEXX Laboratories Inc	431,727	1,115,865	2.56	86,006,332	84,725,629	98.5%	1.32%	-0.15%
HZNP.O	Horizon Therapeutics PLC	1,500,276	7,610,220	4.78	184,883,881	182,796,071	98.7%	4.16%	0.79%
MRK.N	Merck & Co Inc	3,229,786	17,313,626	1.94	2,574,644,410	2,572,647,256	99.9%	0.67%	-0.02%
BGNE.O	Beigene Ltd	303,462	3,727,047	12.50	777,556,626	53,465,882	99.4%	6.97%	0.19%
PBYI.O	Puma Biotechnology Inc	1,107,742	3,932,437	2.93	38,612,447	33,361,756	86.3%	11.79%	-1.19%
ILMN.O	illumina Inc	925,123	2,498,902	2.93	147,000,000	146,460,083	99.6%	1.71%	-0.24%

Source: Thomson Reuters, Grandation Research



Figure 20: Compsheet

Ticker	Company	Market Cap (\$bn)	Price	YTD Δ	MTD Δ	Revenue Growth		EPS		FCF Yield	EV /Sales	EV /EBITDA	PE			PEG	Div. Yield
			6/25/19			This yr /Last yr	Next yr /this yr	FY0	FY1				LTM	FY0	FY1		
MRNA.O	Moderna Inc	4.53	13.77	-9.8%	-33.7%	-41.4%	10.7%	(1.63)	-1.81	-9.9%	35.7x	NA	NA	(8.4x)	(7.6x)	NA	NA
DNLI.O	Denali Therapeutics Inc	1.93	20.20	-2.2%	5.9%	-90.9%	515.2%	(1.46)	-1.50	NA	22.2x	NA	NA	(13.8x)	(13.5x)	NA	NA
BIIB.O	Biogen Inc	46.59	240.29	-20.1%	9.6%	3.8%	-0.4%	29.60	30.56	11.6%	3.5x	6.2x	10.3x	8.1x	7.9x	1.3x	NA
CELG.O	Celgene Corp	65.72	93.19	45.4%	-0.6%	12.3%	12.1%	10.74	12.56	12.9%	4.3x	7.3x	14.3x	8.7x	7.4x	NA	NA
MGNX.O	MacroGenics Inc	0.8	16.42	29.3%	-10.5%	-0.4%	12.0%	(3.98)	-3.98	NA	7.6x	NA	NA	(4.1x)	(4.1x)	NA	NA
IMGN.O	ImmunoGen Inc	0.27	1.82	-62.1%	1.1%	-27.6%	10.0%	(1.04)	-0.93	NA	0.1x	NA	NA	(1.7x)	(2.0x)	NA	NA
INCY.O	Incyte Corp	18.79	87.61	37.8%	11.4%	10.7%	15.9%	2.27	2.92	NA	7.7x	34.1x	74.9x	38.6x	30.1x	0.9x	NA
NVCR.O	Novocure Ltd	5.5	57.43	71.5%	8.1%	37.8%	39.5%	(0.20)	0.53	0.6%	13.6x	224.9x	NA	(287.2x)	108.4x	NA	NA
ALXN.O	Alexion Pharmaceuticals Inc	28.06	125.15	28.5%	10.1%	15.8%	13.6%	9.43	10.77	NA	5.7x	10.0x	89.5x	13.3x	11.6x	0.8x	NA
REGN.O	Regeneron Pharmaceuticals Inc	33.71	312.90	-16.2%	3.7%	9.5%	9.6%	21.66	24.12	NA	4.1x	10.2x	15.2x	14.4x	13.0x	6.0x	NA
STIM.O	Neuronetics Inc	0.22	11.93	-38.3%	3.6%	19.9%	20.6%	(1.64)	-1.60	NA	NA	NA	NA	(7.3x)	(7.5x)	NA	NA
BSX	Boston Scientific Corp	57.56	41.72	18.1%	8.6%	8.5%	9.3%	1.56	1.79	8.3%	6.1x	21.1x	33.7x	26.7x	23.3x	2.1x	NA
DHR	Danaher Corp	100.88	142.20	37.9%	7.7%	3.5%	21.8%	4.78	5.71	3.4%	4.8x	21.7x	42.0x	29.8x	24.9x	3.2x	0.5%
ISRG.O	Intuitive Surgical Inc	60.09	520.53	8.7%	12.0%	14.9%	14.8%	11.72	13.52	2.6%	12.6x	32.6x	54.5x	44.4x	38.5x	3.4x	NA
IDXX.O	IDEXX Laboratories Inc	23.33	271.31	45.8%	8.6%	9.1%	10.1%	4.82	5.53	1.5%	9.6x	36.7x	60.9x	56.3x	49.1x	2.8x	NA
HZNP.O	Horizon Therapeutics PLC	4.42	23.88	22.2%	0.2%	4.7%	9.0%	1.74	2.00	NA	3.8x	11.0x	306.6x	13.7x	12.0x	NA	NA
MRK.N	Merck & Co Inc	215.09	83.54	9.3%	5.5%	5.7%	5.7%	4.75	5.32	6.2%	5.1x	12.6x	25.2x	17.9x	16.0x	1.7x	2.6%
BGNE.O	Beigene Ltd	7.16	121.02	-13.7%	2.6%	67.7%	20.1%	(13.01)	-12.01	NA	21.5x	NA	NA	(9.3x)	(10.1x)	NA	NA
PBYI.O	Puma Biotechnology Inc	0.49	12.77	-37.2%	-13.7%	16.0%	-2.9%	(2.37)	-1.98	NA	1.7x	NA	NA	(5.4x)	(6.5x)	NA	NA
ILMN.O	Illumina Inc	52.64	358.08	19.4%	16.7%	13.0%	14.6%	6.69	7.67	1.9%	12.7x	40.2x	62.1x	53.5x	46.7x	2.4x	NA

Source: Thomson Reuters, Grandation Research



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH

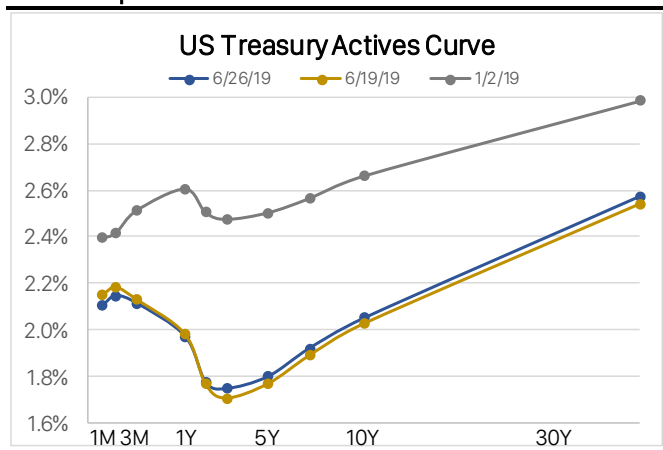
Yield Curve Tracker

Figure 21: Yield Curve tracker -- the spread between the 10YR vs. 2YR has widened by 2bps WoW to 26bps.

Yield Curve (unit: bps)	6/26/19	6/19/19	WoW Δ	1/2/19	YTD Δ	6/26/18	YoY Δ
US Generic Govt 1MT Yield	2.103	2.148 ▲	-2.1%	2.394 ▲	-12.2%	1.77	19.1%
US Generic Govt 3MT Yield	2.146	2.182 ▲	-1.6%	2.417 ▲	-11.2%	1.94	10.8%
US Generic Govt 6MT Yield	2.114	2.129 ▲	-0.7%	2.513 ▲	-15.9%	2.13	-0.6%
US Generic Govt 1YT Yield	1.973	1.981 ▲	-0.4%	2.605 ▲	-24.3%	2.33	-15.3%
US Generic Govt 2YT Yield	1.775	1.766 ▲	0.5%	2.504 ▲	-29.1%	2.54	-30.0%
US Generic Govt 3YT Yield	1.747	1.707 ▲	2.4%	2.475 ▲	-29.4%	2.63	-33.6%
US Generic Govt 5YT Yield	1.799	1.768 ▲	1.7%	2.503 ▲	-28.1%	2.75	-34.6%
US Generic Govt 7YT Yield	1.919	1.889 ▲	1.6%	2.564 ▲	-25.1%	2.84	-32.4%
US Generic Govt 10YT Yield	2.050	2.027 ▲	1.1%	2.661 ▲	-23.0%	2.88	-28.8%
US Generic Govt 30YT Yield	2.572	2.540 ▲	1.3%	2.982 ▲	-13.7%	3.03	-15.0%
US 10YR & 2YR Spread	28	26 ▲	1	16 ▲	12	34	-7

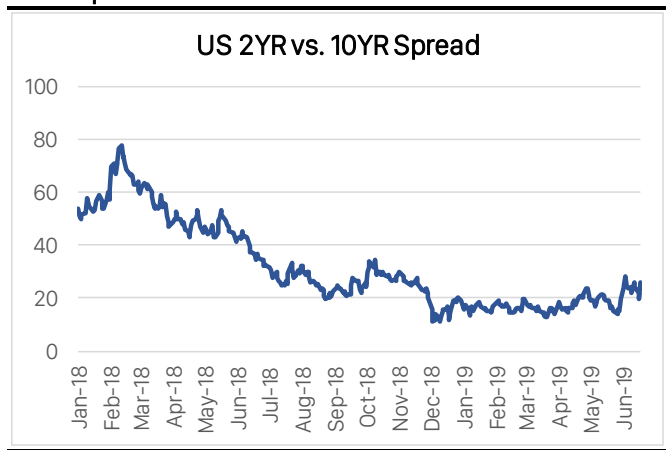
Source: Thomson Reuters, Grandation Research

Figure 22: The US Treasury Actives Curve inverted and steepened WoW.



Source: Thomson Reuters, Grandation Research

Figure 23: The 10YR vs. 2YR spread was up 2bps WoW to 26bps.



Source: Thomson Reuters, Grandation Research



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH

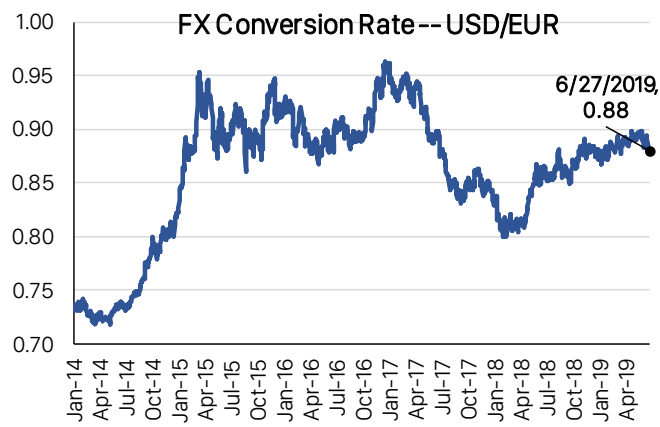
Currency Tracker

Figure 24: Currency tracker—YTD, the USD has appreciated against the CNY and EUR and depreciated against JPY, GBP, CAD and INR.

Currency	6/26/19	6/19/19	WoW Δ	1/2/19	YTD Δ	6/27/18	YoY Δ
USD/EUR	0.880	0.891	-1.3%	0.882	-0.2%	0.87	1.6%
USD/JPY	107.770	108.090	-0.3%	108.870	-1.0%	110.25	-2.2%
USD/CNY	6.878	6.900	-0.3%	6.860	0.3%	6.60	4.2%
USD/GBP	0.788	0.791	-0.4%	0.793	-0.6%	0.76	3.3%
USD/CAD	1.313	1.328	-1.2%	1.358	-3.3%	1.33	-1.6%
USD/INR	69.240	69.640	-0.6%	69.98	-1.1%	68.63	0.9%

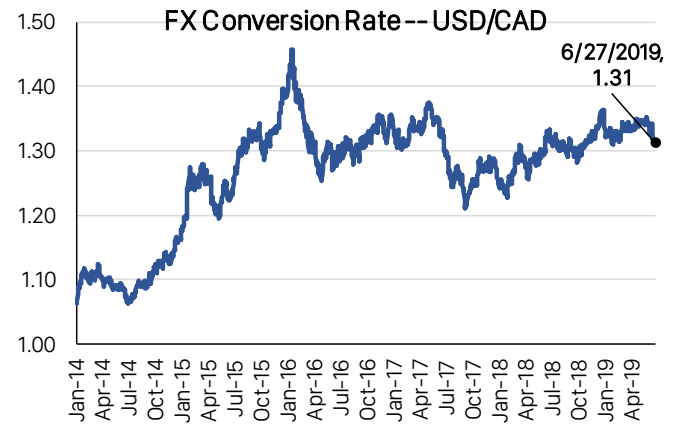
Source: Thomson Reuters, Grandation Research

Figure 25: USD/EUR appreciated 1.3% to 0.88.



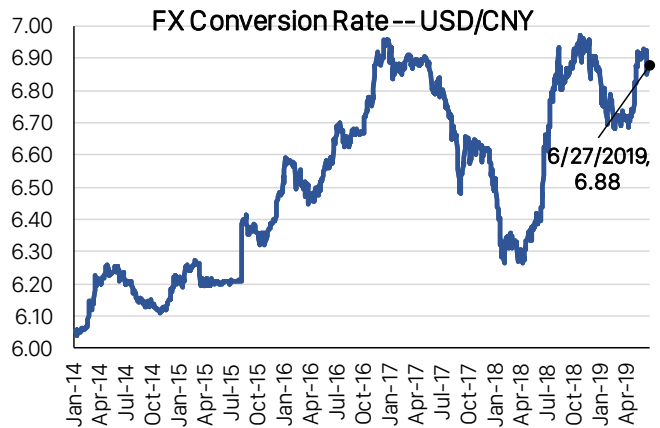
Source: Thomson Reuters, Grandation Research

Figure 26: USD/CAD depreciated 1.2% to 1.31



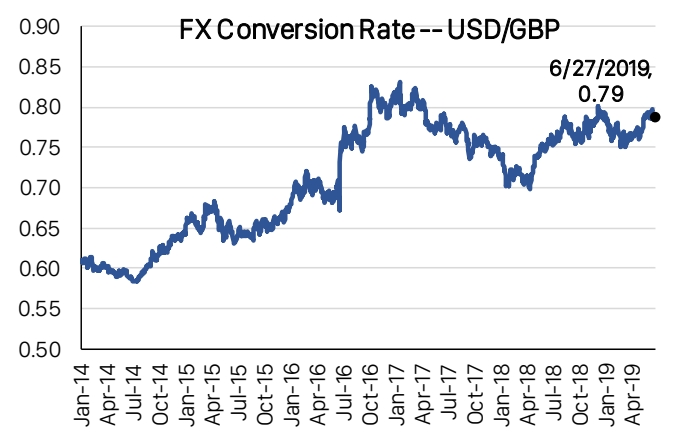
Source: Thomson Reuters, Grandation Research

Figure 27: USD/CNY depreciated 0.3% WoW to 6.88.



Source: Thomson Reuters, Grandation Research

Figure 28: USD/GBP appreciated 0.4% to 0.79.



Source: Thomson Reuters, Grandation Research



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH

Important Disclaimer and Disclosure

This research report is made available to our designated clients and may also be available through third- party vendors or alternate electronic version upon approval.

All information, material and facts in this report is from public sources and is not guaranteed to be complete or accurate but reflect our analysts' best views about the subject industry and companies. Our analysts do not receive any compensation directly and indirectly from the subject securities. Any estimates or recommendations in this report are subject to change without notice. This report should not be used as a complete analysis of the company, industry or security discussed in the report; therefore, readers should not make their investment decision solely based on this report. The adjustments should be made based on investors' risk profile, investment preference as well as their legal and regulatory constraints. Additionally, an investment in the securities may involve risks and uncertainties that could cause actual results to differ materially from the forward-looking statements.

For detailed disclaimer and disclosure information, please contact Grandation Capital at 626-345-5648 or mail inquiries to 150 S Los Robles Ave, Ste 930, Pasadena, CA 91101.

Rating on Investment Recommendations

Our rating system attempts to incorporate industry, company and/or overall market risks and volatilities; therefore, our investment recommendations on based on the security's 12-month price target from the date this report is issued.

- **STRONG BUY:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return exceeding 25% over the next 12-month period.
- **BUY:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return between 10% to 25% over the next 12-month period.
- **NEUTRAL:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return between -10% to 10% over the next 12-month period.
- **SELL:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return between -25% to -10% over the next 12-month period.
- **STRONG SELL:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return exceeding -25% over the next 12-month period.

Grandation Capital Research Department

Office: Los Angeles, U.S.
Address: 150 S Los Robles, Ste 930
Pasadena, CA 91101
Phone: +1 626-345-5648
Email: info@grandationcapital.com

Effective Date: 1/1/2019



EMAIL: INFO@GRANDATIONCAPITAL.COM



PHONE: +1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



WECHAT: GRANDATION RESEARCH