



Rating
Buy

Asia
China

Consumer
Textiles & Apparel

Company
Anta

Reuters 2020.HK Bloomberg 2020 HK Exchange HSI Ticker 2020
ADR Ticker ANPDY ISIN US03662P1075

Date
14 June 2018

Company Update

Price at 14 Jun 2018 (HKD)	45.15
Price target - 12mth (HKD)	47.00
52-week range (HKD)	49.00 - 22.80
HANG SENG INDEX	30,725

John Chou

Research Analyst
(+852) 2203 6196
john.chou@db.com

Anne Ling

Research Analyst
(+852) 2203 6177
anne.ling@db.com

Our takes on the short-seller report

Concerns on (1) Profitability, (2) Cash, and (3) Fila by a short-seller

On June 12 2018, a short-seller published a report questioning Anta's accounting quality. It raised concerns on (1) Anta's higher profitability vs. peers, (2) large amount of cash in hand, and (3) Fila Korea's slower royalty revenue growth vs. Fila China (which is operated by Anta) retail sales growth. We use this opportunity to provide our takes on these recurring questions and recommend investors to focus on Anta's retail sales growth.

Short-sellers' questions and our takes

- **Why Anta is so profitable:** (1) Nike China and Adidas China are actually more profitable than Anta. We believe it is Nike and Adidas' global management team (demand planning, global sourcing coordination...etc.) that led to higher expenses such that their consolidated EBIT margins are lower than Anta's (Figure 1). (2) Anta has in-house production (Figure 2). (3) Li Ning is less profitable vs. Anta (in terms of EBIT margin) mainly due to revenue scale and operating leverage (Figure 3).
- **Is Anta's cash real?** (1) Anta earned a 2% interest income (cash inflow) on its cash and deposits in 2017 (a mix of time deposit and cash deposits); we view the rate as fair. (2) Anta's balance sheets suggest its cash management is not aggressive with most being bank deposits. (3) We continue to believe Anta is holding excessive cash for M&As.
- **Fila China and Fila Korea: it is Fila Korea's profit sharing that matters, not the wholesale royalty revenue.** We note that Fila Korea has two earnings streams from Fila China (1) 15% profit sharing from Full Prospect (the holding entity that holds Fila China; Figure 4), (2) 4.5% royalty on Fila China's wholesale revenue (which is insignificant as there are only c.20 wholesale stores out of 1,086 in China). Fila Korea's robust earnings growth has been driven by the 15% profit sharing instead of the royalty revenue, based on Fila Korea's financial reports.

What will worry us? Decelerating retail sales growth

We continue to recommend that investors focus on Anta's off-line retail sales YoY. [Our channel checks covering April-1 to May-10 suggest decelerating growth vs. that in 1Q18.](#) We will have more updates.

Price/price relative



Performance (%)	1m	3m	12m
Absolute	4.9	17.1	114.4
HANG SENG INDEX	-1.3	-2.8	18.8

Source: Deutsche Bank

Valuation and risks

We value Anta using DCF methodology as we expect investors to focus on their long-term growth profile. Cost of equity of 10.6%: risk-free rate = 3.9% (Deutsche Bank assumption), equity risk premium = 5.6% (Deutsche Bank assumption), beta of 1.3. We assume a perpetual growth rate of 2%, in line with Hong Kong & China consumer discretionary space of 1-2%.

Downside risks to our view: (1) intense competition and any increase in industry discounting; (2) weaker-than-expected macro conditions that would dampen demand; (3) higher-than-expected channel inventory; and (4) Fila failing to drive sustainable growth.

Forecasts And Ratios

	2016A	2017A	2018E	2019E	2020E
Year End Dec 31					
Sales (CNYm)	13,345.8	16,692.5	21,129.2	25,671.3	30,281.3
DB EPS FD(CNY)	0.95	1.17	1.42	1.77	2.11
DB EPS growth (%)	16.5	23.6	21.1	24.5	19.2
PER (x)	17.4	20.3	26.0	20.9	17.5
Yield (net) (%)	4.2	3.4	2.7	3.4	4.0

Source: Deutsche Bank estimates, company data

¹ DB EPS is fully diluted and excludes non-recurring items

² Multiples and yields calculations use average historical prices for past years and spot prices for current and future years, except P/B which uses

Deutsche Bank AG/Hong Kong

Distributed on: 14/06/2018 09:45:46 GMT

Deutsche Bank does and seeks to do business with companies covered in its research reports. Thus, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. DISCLOSURES AND ANALYST CERTIFICATIONS ARE LOCATED IN APPENDIX 1. MCI (P) 091/04/2018.



Model updated: 05 April 2018

Running the numbers

Asia

China

Textiles & Apparel

Anta

Reuters: 2020.HK

Bloomberg: 2020 HK

Buy

Price (14 Jun 18)	HKD 45.15
Target Price	HKD 47.00
52 Week range	HKD 22.80 - 49.00
Market Cap (m)	HKDm 112,926
	USDm 14,389

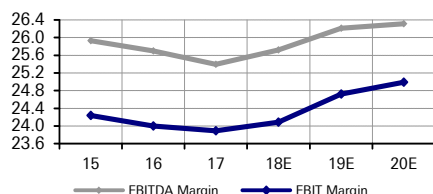
Company Profile

Anta Sports Products Limited designs, develops, manufactures, and markets sportswear, including sports footwear and apparel for professionals and the general public.

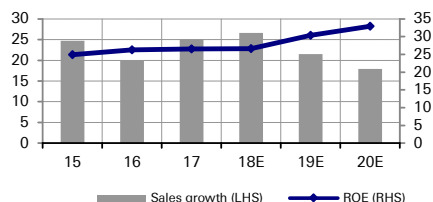
Price Performance



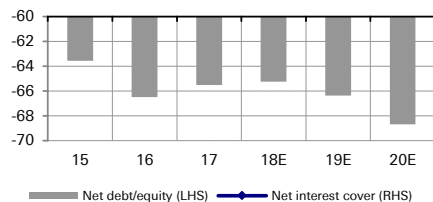
Margin Trends



Growth & Profitability



Solvency



Fiscal year end 31-Dec

Financial Summary

	2015	2016	2017	2018E	2019E	2020E
DB EPS (CNY)	0.81	0.95	1.17	1.42	1.77	2.11
Reported EPS (CNY)	0.81	0.95	1.17	1.42	1.77	2.11
DPS (CNY)	0.57	0.70	0.81	0.99	1.24	1.47
BVPS (CNY)	3.4	3.8	5.1	5.5	6.1	6.7
Weighted average shares (m)	2,499	2,508	2,634	2,678	2,678	2,678
Average market cap (CNYm)	36,961	41,415	62,671	92,159	92,159	92,159
Enterprise value (CNYm)	31,358	34,835	53,265	81,996	80,823	79,207

Valuation Metrics

P/E (DB) (x)	18.2	17.4	20.3	26.0	20.9	17.5
P/E (Reported) (x)	18.2	17.4	20.3	26.0	20.9	17.5
P/BV (x)	5.03	5.19	6.01	6.65	6.07	5.49
FCF Yield (%)	4.8	6.2	3.2	3.2	4.5	5.6
Dividend Yield (%)	3.8	4.2	3.4	2.7	3.4	4.0
EV/Sales (x)	2.8	2.6	3.2	3.9	3.1	2.6
EV/EBITDA (x)	10.9	10.2	12.6	15.1	12.0	9.9
EV/EBIT (x)	11.6	10.9	13.4	16.1	12.7	10.5

Income Statement (CNYm)

Sales revenue	11,126	13,346	16,692	21,129	25,671	30,281
Gross profit	5,185	6,459	8,241	10,783	13,416	16,074
EBITDA	2,885	3,429	4,239	5,434	6,729	7,969
Depreciation	188	226	250	344	382	402
Amortisation	0	0	0	0	0	0
EBIT	2,697	3,203	3,989	5,090	6,347	7,566
Net interest income/(expense)	133	108	322	201	218	243
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	2,829	3,311	4,311	5,291	6,565	7,810
Income tax expense	741	866	1,152	1,413	1,753	2,085
Minorities	48	59	71	78	82	86
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	2,041	2,386	3,088	3,800	4,730	5,638
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	2,041	2,386	3,088	3,800	4,730	5,638

Cash Flow (CNYm)

Cash flow from operations	2,228	2,994	2,856	3,996	5,189	6,105
Net Capex	-463	-421	-861	-845	-770	-606
Free cash flow	1,766	2,573	1,995	3,151	4,419	5,499
Equity raised/(bought back)	0	0	2,932	0	0	0
Dividends paid	-1,424	-1,746	-2,178	-2,394	-3,246	-3,883
Net inc/(dec) in borrowings	-18	-392	-790	0	0	0
Other investing/financing cash flows	-170	78	78	0	0	0
Net cash flow	154	512	2,037	757	1,173	1,616
Change in working capital	-106	291	-640	-1,285	-345	-354

Balance Sheet (CNYm)

Cash and other liquid assets	6,933	7,517	9,554	10,311	11,484	13,100
Tangible fixed assets	2,214	2,595	3,302	3,804	4,192	4,395
Goodwill/intangible assets	0	0	0	0	0	0
Associates/investments	0	0	0	0	0	0
Other assets	3,355	4,111	6,218	7,376	8,553	9,751
Total assets	12,502	14,224	19,074	21,490	24,228	27,246
Interest bearing debt	1,330	938	148	148	148	148
Other liabilities	2,358	3,390	4,566	5,764	7,001	8,241
Total liabilities	3,688	4,327	4,714	5,912	7,149	8,389
Shareholders' equity	8,580	9,549	13,706	14,846	16,266	17,957
Minorities	235	348	654	732	814	901
Total shareholders' equity	8,814	9,896	14,361	15,579	17,080	18,858
Net debt	-5,603	-6,579	-9,406	-10,163	-11,336	-12,952

Key Company Metrics

Sales growth (%)	24.7	20.0	25.1	26.6	21.5	18.0
DB EPS growth (%)	19.5	16.5	23.6	21.1	24.5	19.2
EBITDA Margin (%)	25.9	25.7	25.4	25.7	26.2	26.3
EBIT Margin (%)	24.2	24.0	23.9	24.1	24.7	25.0
Payout ratio (%)	69.7	73.4	69.4	70.0	70.0	70.0
ROE (%)	24.9	26.3	26.6	26.6	30.4	33.0
Capex/sales (%)	4.2	3.2	5.2	4.0	3.0	2.0
Capex/depreciation (x)	2.5	1.9	3.4	2.5	2.0	1.5
Net debt/equity (%)	-63.6	-66.5	-65.5	-65.2	-66.4	-68.7
Net interest cover (x)	nm	nm	nm	nm	nm	nm

Source: Company data, Deutsche Bank estimates

John Chou

+852 2203 6196

john.chou@db.com



Figure 1: (A) indeed Anta's consolidated operating margin is higher, but (B) such is driven by lower other expenses, (C) Nike and Adidas recognize higher headquarter expenses, while Xtep had extraordinary provisions in 2016 and 2017;;stripping such, their expenses-to-revenue ratios are actually at par vs. Anta's. (D) Nike and Adidas' China EBIT margin much higher than that of Anta and Xtep's.

Analysis												
1. Common-size analysis												
	Anta			Xtep			Nike			Adidas		
	2015	2016	2017	2015	2016	2017	FY15	FY16	FY17	2015	2016	2017
Revenue	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
COGS	-53%	-52%	-51%	-58%	-57%	-56%	-54%	-54%	-55%	-52%	-51%	-50%
Gross Profit	47%	48%	49%	42%	43%	44%	46%	46%	45%	48%	49%	50%
Promotion (demand creation)	-12%	-11%	-11%	-15%	-12%	-13%	-10%	-10%	-10%	-14%	-13%	n.a.
(B) Other overhead expenses	-11%	-13%	-16%	-12%	-21%	-23%	-22%	-22%	-21%	-29%	-30%	n.a.
Total OPEX	-23%	-25%	-27%	-27%	-32%	-36%	-32%	-32%	-31%	-43%	-43%	-42%
D&A	-2%	-2%	-1%	-1%	-1%	-1%						
(A) Operating Income	22%	22%	21%	15%	10%	7%	14%	14%	14%	5%	6%	9%
Other income	2%	2%	3%	3%	2%	3%	0%	0%	1%	1%	2%	1%
EBIT	24%	24%	24%	17%	12%	10%	14%	14%	14%	6%	8%	10%
Net interest income (expense)	1%	1%	2%	-1%	-1%	-1%	0%	0%	0%	0%	0%	0%
Pre-tax	25%	25%	26%	17%	11%	9%	14%	14%	14%	6%	7%	10%
Discontinued	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Income tax	-7%	-6%	-7%	-5%	-5%	-4%	-3%	-3%	-2%	-2%	-2%	-3%
Minority	0%	0%	0%	0%	-1%	-1%	0%	0%	0%	0%	0%	0%
Net Income	18%	18%	18%	12%	4%	4%	11%	12%	12%	4%	5%	5%
	Anta			Xtep			Nike			Adidas		
	2015	2016	2017	2015	2016	2017	FY15	FY16	FY17	2015	2016	2017
2. What is in overhead?												
Other overhead + D&A as a % of sales	-13%	-15%	-18%	-13%	-22%	-24%	-22%	-22%	-21%	-29%	-30%	n.a.
(C) strip-off: global brand & headquarter expenses							-9%	-2%	-11%	-12%	-10%	-11%
Adjusted Overhead to Sales	-13%	-15%	-18%	-13%	-12%	-22%	-11%	-11%	-11%	-18%	-19%	n.a.
3. China												
(D) China EBIT margin	24%	24%	24%	17%	12%	10%	32%	36%	36%	35%	35%	35%
Financial												
	Anta			Xtep			Nike			Adidas		
	2015	2016	2017	2015	2016	2017	FY15	FY16	FY17	2015	2016	2017
Revenue	11,126	13,346	16,692	5,295	5,397	5,113	30,601	32,376	34,350	16,915	19,290	21,218
COGS	(5,941)	(6,887)	(8,451)	(3,058)	(3,065)	(2,869)	(16,534)	(17,405)	(19,038)	(8,747)	(9,911)	(10,514)
Gross Profit	5,185	6,459	8,241	2,237	2,331	2,244	14,067	14,971	15,312	8,168	9,379	10,704
Promotion (demand creation)	(1,279)	(1,521)	(1,769)	(781)	(637)	(658)	(3,213)	(3,278)	(3,341)	(2,348)	(2,521)	na
Other overhead expenses	(1,248)	(1,768)	(2,691)	(623)	(1,115)	(1,186)	(6,679)	(7,191)	(7,222)	(4,942)	(5,742)	na
Total OPEX	(2,528)	(3,289)	(4,460)	(1,403)	(1,753)	(1,844)	(9,892)	(10,469)	(10,563)	(7,290)	(8,263)	(8,883)
D&A	(188)	(226)	(250)	(57)	(53)	(58)						
Operating Income	2,470	2,944	3,531	776	526	342	4,175	4,502	4,749	878	1,116	1,821
Other income	227	260	458	145	99	158	58	140	196	182	374	248
EBIT	2,697	3,203	3,989	921	624	500	4,233	4,642	4,945	1,060	1,490	2,069
Supplement Data												
Note:												
D&A- Nike & Adidas							(649)	(662)	(716)	(393)	(396)	(443)
Nike EBIT breakdown												
North America							3,645	3,763	3,875			
Western Europe							1,275	1,434	1,203			
Central & Eastern Europe							249	289	244			
Greater China							993	1,372	1,507			
Japan							100	174	224			
Emerging Markets							818	892	818			
Global Brand Divisions							(2,266)	(2,596)	(2,677)			
Total NIKE Brand EBIT							4,814	5,328	5,194			
Other Businesses (Continuing: Converse, Hurley, NIKE Golf)							517	487	477			
Other Businesses (Discontinued: Cole Haan and Umbro)												
Corporate							(1,097)	(1,173)	(724)			
Total NIKE Inc. EBIT (GAAP) (NC to other firms)							4,234	4,642	4,947			
Adidas EBIT breakdown												
Western Europe										909	951	1,178
North America										69	213	468
Greater China										866	1,059	1,342
Russia/CIS										85	106	136
Latin America										235	227	267
Japan										147	207	266
MEAA										664	721	847
Other Businesses										(89)	(14)	68
HQ/Consolidation										(1,827)	(1,980)	(2,503)
Total										1,059	1,490	2,069

Source: Deutsche Bank, company data



Figure 2: Value breakdown of a pair of regular running shoes: if brands decide to produce the products 100% in-house, the brands can increase profit by c.40% (assuming manufacturers make only 7% operating margin, which is conservative)

		Base case
	Factory FoB Costs	25.0
	ODM labor costs	7.0
	ODM material costs	12.2
	ODM expenses	3.8
	ODM tax	0.3
	ODM profit	1.7
	Sea Freight & Insurance	1.0
	Duty (assume 20% of FoB)	5.0
Land Cost		31.0
	Brand expenses	15.0
	Brand tax	2.0
	Brand profit	4.5
Brand mark-up		21.5
Wholesale price		52.5
	Retail discount	22.0
	Retail expenses	17.0
	Retail tax	3.0
	Retailer profit	5.5
Retailer mark-up & retail discount		47.5
Tag price		100.0
Actual retail price		78.0
Profit margins		
ODM		6.6%
Brand		8.6%
Retailer		7.1%

Source: Deutsche Bank estimates



Figure 3: Anta vs. Li Ning: it's all about operating leverage

Figure 25: LN vs. Anta: all about operating leverage

	Li Ning		Benchmark-Anta Brand (ex. Fila)			
	2015A	2016A	2015A	LN vs. Anta	2016A	LN vs. Anta
1. Revenue						
1-1. Wholesale	3,862	4,058	8,375	-54%	9,074	-55%
(a) PSD	854	859	966	-12%	1,046	-18%
(c) Average store count	4,521	4,724	8,670		8,675	
1-2. Retail	2,357	2,528				
(b) PSD	1,735	1,618	2,231	-22%	2,454	-34%
Average store count	1,359	1,563				
1-3. e-commerce & others	871	1,429	834	4%	1,601	-11%
Revenue	7,089	8,015	9,210	-23%	10,676	-25%
2. Gross margin						
2-1. Retail Discount (retail operation)	36%	33%	30%	-7 ppt	29%	-4 ppt
2-2. Sourcing cost (if tag price = 100)	26.1	26.0	22.3	17%	22.7	14%
2-3. Wholesale discount (%-off)	55%	55%	60%	-5 ppt	60%	-5 ppt
2-4. Rebate to wholesalers	12%	10%	4%	-8.06 ppt	4%	-6.05 ppt
Gross Profit	3,124	3,689	3,979.61	-22%	4,617	-20%
Gross margin	44%	46%	43%	1 ppt	43%	3 ppt
Wholesale	34%	36%	42%	-8 ppt	41%	-5 ppt
Retail	59%	61%				
e-commerce & others	47%	49%	55%	-8 ppt	57%	-8 ppt
Total OPEX	3,187	3,455	1,874	70%	2,272	68%
EBIT (before other revenue)	(63)	235	2,106	n.a.	2,345	-90%
(d) EBIT Margin	-1%	3%	23%	-24 ppt	22%	-19 ppt

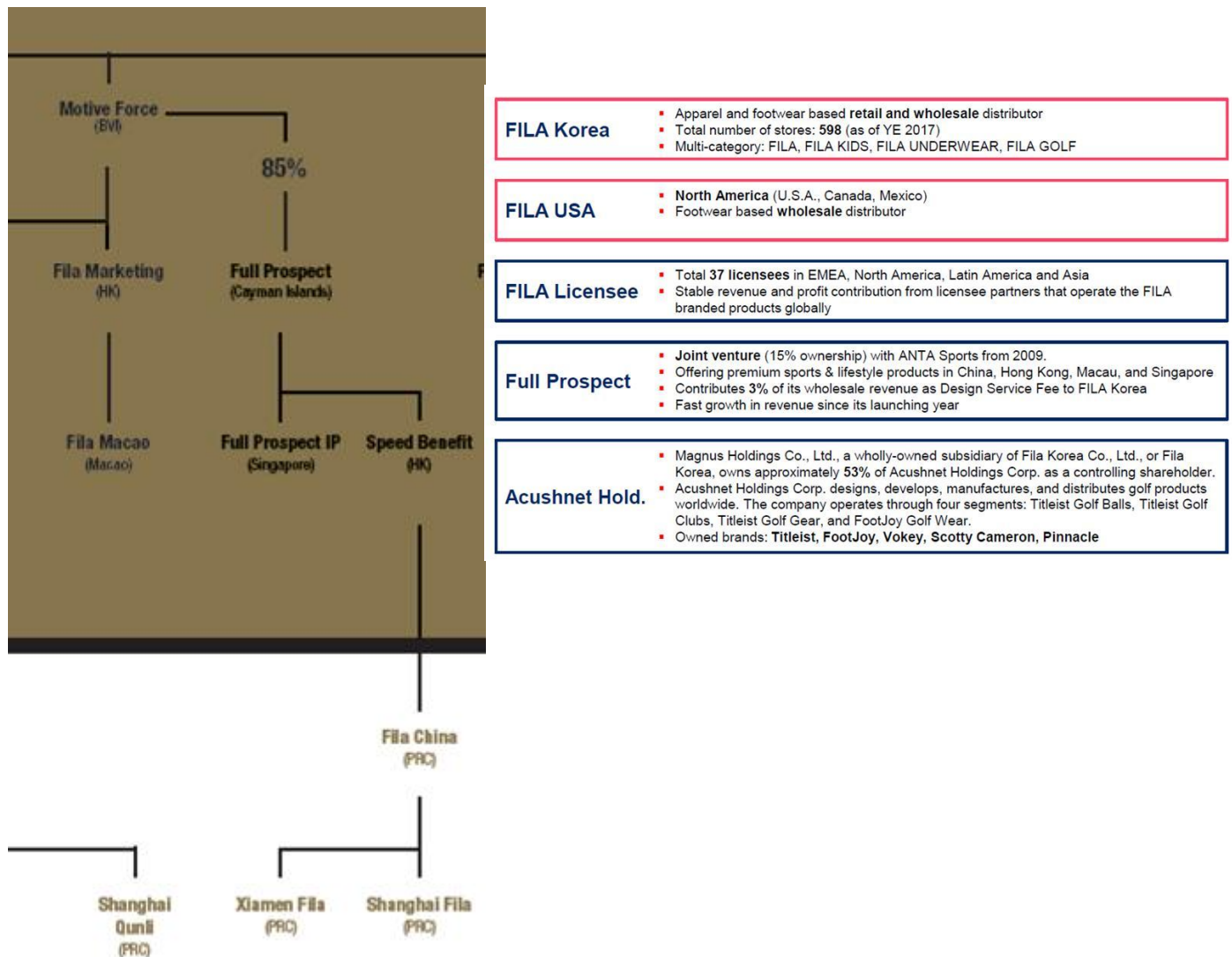
Source: Deutsche Bank estimates, company data

- LN vs. Anta: a game of operating leverage. Figure 25 illustrates that LN's weak EBIT margin in 2015 and 2016 vs. the Anta brand (excluding Fila) were driven by poor operating leverage. In greater detail, poor operating leverage stemmed from lower per-store sell-in ("a"), which is a result of lower per-store sellthrough ("b"). It also had a smaller number of stores ("c").

Source: Deutsche Bank estimates, company data, for full analysis please refer to "FY17 preview: Best shape in five years to trigger laggard catch-ups" dated 2018 Feb 23



Figure 4: Fila China and Fila Korea's profit sharing via "Full Prospect" (LHS: a snapshot from Anta's 2017 annual report: Anta holds 85% in Full Prospect that holds Fila China. RHS: a snapshot from Fila Korea's 2017 investor presentation, it holds the rest 15% in Full Prospect)



Source: Deutsche Bank, company data Link to Fila Korea's investor presentation: <http://info.fila.co.kr/ir/ENG/DATA/FILA%20Korea%202017%204Q%20IR%20material.pdf>



Appendix 1

Important Disclosures

*Other information available upon request

Disclosure checklist

Company	Ticker	Recent price*	Disclosure
Anta	2020.HK	45.15 (HKD) 14 Jun 18	14,15

Prices are current as of the end of the previous trading session unless otherwise indicated and are sourced from local exchanges via Reuters, Bloomberg and other vendors. Other information is sourced from Deutsche Bank, subject companies, and other sources. For disclosures pertaining to recommendations or estimates made on securities other than the primary subject of this research, please see the most recently published company report or visit our global disclosure look-up page on our website at <https://research.db.com/Research/Disclosures/CompanySearch>. Aside from within this report, important conflict disclosures can also be found at <https://research.db.com/Research/Topics/Equities?topicId=RB0002> under the "Disclosures Lookup" and "Legal" tabs. Investors are strongly encouraged to review this information before investing.

Important Disclosures Required by U.S. Regulators

Disclosures marked with an asterisk may also be required by at least one jurisdiction in addition to the United States. See Important Disclosures Required by Non-US Regulators and Explanatory Notes.

14. Deutsche Bank and/or its affiliate(s) has received non-investment banking related compensation from this company within the past year.
15. This company has been a client of Deutsche Bank Securities Inc. within the past year, during which time it received non-investment banking securities-related services.

For disclosures pertaining to recommendations or estimates made on securities other than the primary subject of this research, please see the most recently published company report or visit our global disclosure look-up page on our website at <https://research.db.com/Research/Disclosures/Company?ric=2020.HK>

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst(s) about the subject issuer and the securities of the issuer. In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. John Chou



Historical recommendations and target price: Anta (2020.HK)
(as of 6/13/2018)



1. 28/07/2016:	Buy, Target Price Change HKD20.50 John Chou	7. 12/09/2017:	Buy, Target Price Change HKD35.00 John Chou
2. 29/08/2016:	Buy, Target Price Change HKD23.00 John Chou	8. 10/10/2017:	Buy, Target Price Change HKD37.00 John Chou
3. 26/09/2016:	Buy, Target Price Change HKD24.00 John Chou	9. 04/01/2018:	Buy, Target Price Change HKD40.00 John Chou
4. 20/02/2017:	Downgrade to Hold, Target Price Change HKD26.50 John Chou	10. 22/02/2018:	Buy, Target Price Change HKD43.50 John Chou
5. 22/02/2017:	Hold, Target Price Change HKD25.00 John Chou	11. 01/03/2018:	Buy, Target Price Change HKD44.80 John Chou
6. 05/07/2017:	Upgrade to Buy, Target Price Change HKD29.50 John Chou	12. 05/04/2018:	Buy, Target Price Change HKD47.00 John Chou

Equity rating key

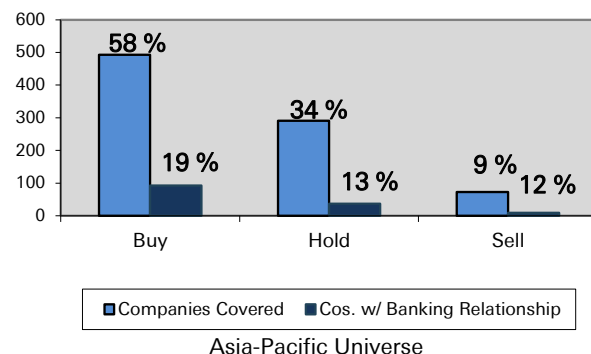
Buy: Based on a current 12- month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus projected dividend yield) , we recommend that investors buy the stock.

Sell: Based on a current 12-month view of total share-holder return, we recommend that investors sell the stock

Hold: We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.

Newly issued research recommendations and target prices supersede previously published research.

Equity rating dispersion and banking relationships





Additional Information

The information and opinions in this report were prepared by Deutsche Bank AG or one of its affiliates (collectively "Deutsche Bank"). Though the information herein is believed to be reliable and has been obtained from public sources believed to be reliable, Deutsche Bank makes no representation as to its accuracy or completeness. Hyperlinks to third-party websites in this report are provided for reader convenience only. Deutsche Bank neither endorses the content nor is responsible for the accuracy or security controls of those websites.

If you use the services of Deutsche Bank in connection with a purchase or sale of a security that is discussed in this report, or is included or discussed in another communication (oral or written) from a Deutsche Bank analyst, Deutsche Bank may act as principal for its own account or as agent for another person.

Deutsche Bank may consider this report in deciding to trade as principal. It may also engage in transactions, for its own account or with customers, in a manner inconsistent with the views taken in this research report. Others within Deutsche Bank, including strategists, sales staff and other analysts, may take views that are inconsistent with those taken in this research report. Deutsche Bank issues a variety of research products, including fundamental analysis, equity-linked analysis, quantitative analysis and trade ideas. Recommendations contained in one type of communication may differ from recommendations contained in others, whether as a result of differing time horizons, methodologies, perspectives or otherwise. Deutsche Bank and/or its affiliates may also be holding debt or equity securities of the issuers it writes on. Analysts are paid in part based on the profitability of Deutsche Bank AG and its affiliates, which includes investment banking, trading and principal trading revenues.

Opinions, estimates and projections constitute the current judgment of the author as of the date of this report. They do not necessarily reflect the opinions of Deutsche Bank and are subject to change without notice. Deutsche Bank provides liquidity for buyers and sellers of securities issued by the companies it covers. Deutsche Bank research analysts sometimes have shorter-term trade ideas that may be inconsistent with Deutsche Bank's existing longer-term ratings. Some trade ideas for equities are listed as SOLAR ideas on the Research Website (<https://research.db.com/Research/>), and can be found on the general coverage list and also on the covered company's page. A SOLAR idea represents a high-conviction belief by an analyst that a stock will outperform or underperform the market and/or a specified sector over a time frame of no less than two weeks and no more than six months. In addition to SOLAR ideas, analysts may occasionally discuss with our clients, and with Deutsche Bank salespersons and traders, trading strategies or ideas that reference catalysts or events that may have a near-term or medium-term impact on the market price of the securities discussed in this report, which impact may be directionally counter to the analysts' current 12-month view of total return or investment return as described herein. Deutsche Bank has no obligation to update, modify or amend this report or to otherwise notify a recipient thereof if an opinion, forecast or estimate changes or becomes inaccurate. Coverage and the frequency of changes in market conditions and in both general and company-specific economic prospects make it difficult to update research at defined intervals. Updates are at the sole discretion of the coverage analyst or of the Research Department Management, and the majority of reports are published at irregular intervals. This report is provided for informational purposes only and does not take into account the particular investment objectives, financial situations, or needs of individual clients. It is not an offer or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy. Target prices are inherently imprecise and a product of the analyst's judgment. The financial instruments discussed in this report may not be suitable for all investors, and investors must make their own informed investment decisions. Prices and availability of financial instruments are subject to change without notice, and investment transactions can lead to losses as a result of price fluctuations and other factors. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the investment. Past performance is not necessarily indicative of future results. Performance calculations exclude transaction costs, unless otherwise indicated. Unless otherwise indicated, prices are current as of the end of the previous trading session and are sourced from local exchanges via Reuters, Bloomberg and other vendors. Data is also sourced from Deutsche Bank, subject companies, and other parties.

The Deutsche Bank Research Department is independent of other business divisions of the Bank. Details regarding our organizational arrangements and information barriers we have to prevent and avoid conflicts of interest with respect to our research are available on our website (<https://research.db.com/Research/>) under Disclaimer.



Macroeconomic fluctuations often account for most of the risks associated with exposures to instruments that promise to pay fixed or variable interest rates. For an investor who is long fixed-rate instruments (thus receiving these cash flows), increases in interest rates naturally lift the discount factors applied to the expected cash flows and thus cause a loss. The longer the maturity of a certain cash flow and the higher the move in the discount factor, the higher will be the loss. Upside surprises in inflation, fiscal funding needs, and FX depreciation rates are among the most common adverse macroeconomic shocks to receivers. But counterparty exposure, issuer creditworthiness, client segmentation, regulation (including changes in assets holding limits for different types of investors), changes in tax policies, currency convertibility (which may constrain currency conversion, repatriation of profits and/or liquidation of positions), and settlement issues related to local clearing houses are also important risk factors. The sensitivity of fixed-income instruments to macroeconomic shocks may be mitigated by indexing the contracted cash flows to inflation, to FX depreciation, or to specified interest rates – these are common in emerging markets. The index fixings may – by construction – lag or mis-measure the actual move in the underlying variables they are intended to track. The choice of the proper fixing (or metric) is particularly important in swaps markets, where floating coupon rates (i.e., coupons indexed to a typically short-dated interest rate reference index) are exchanged for fixed coupons. Funding in a currency that differs from the currency in which coupons are denominated carries FX risk. Options on swaps (swaptions) the risks typical to options in addition to the risks related to rates movements.

Derivative transactions involve numerous risks including market, counterparty default and illiquidity risk. The appropriateness of these products for use by investors depends on the investors' own circumstances, including their tax position, their regulatory environment and the nature of their other assets and liabilities; as such, investors should take expert legal and financial advice before entering into any transaction similar to or inspired by the contents of this publication. The risk of loss in futures trading and options, foreign or domestic, can be substantial. As a result of the high degree of leverage obtainable in futures and options trading, losses may be incurred that are greater than the amount of funds initially deposited – up to theoretically unlimited losses. Trading in options involves risk and is not suitable for all investors. Prior to buying or selling an option, investors must review the "Characteristics and Risks of Standardized Options", at <http://www.optionsclearing.com/about/publications/character-risks.jsp>. If you are unable to access the website, please contact your Deutsche Bank representative for a copy of this important document.

Participants in foreign exchange transactions may incur risks arising from several factors, including: (i) exchange rates can be volatile and are subject to large fluctuations; (ii) the value of currencies may be affected by numerous market factors, including world and national economic, political and regulatory events, events in equity and debt markets and changes in interest rates; and (iii) currencies may be subject to devaluation or government-imposed exchange controls, which could affect the value of the currency. Investors in securities such as ADRs, whose values are affected by the currency of an underlying security, effectively assume currency risk.

Deutsche Bank is not acting as a financial adviser, consultant or fiduciary to you or any of your agents with respect to any information provided in this report. Deutsche Bank does not provide investment, legal, tax or accounting advice, and is not acting as an impartial adviser. Information contained herein is being provided on the basis that the recipient will make an independent assessment of the merits of any investment decision, and is not meant for retirement accounts or for any specific person or account type. The information we provide is directed only to persons we believe to be financially sophisticated, who are capable of evaluating investment risks independently, both in general and with regard to particular transactions and investment strategies, and who understand that Deutsche Bank has financial interests in the offering of its products and services. If this is not the case, or if you or your agent are an IRA or other retail investor receiving this directly from us, we ask that you inform us immediately.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction. Aside from within this report, important conflict disclosures can also be found at <https://research.db.com/Research/> on each company's research page. Investors are strongly encouraged to review this information before investing.

United States: Approved and/or distributed by Deutsche Bank Securities Incorporated, a member of FINRA, NFA and SIPC. Analysts located outside of the United States are employed by non-US affiliates that are not subject to FINRA regulations, including those regarding contacts with issuer companies.



Germany: Approved and/or distributed by Deutsche Bank AG, a joint stock corporation with limited liability incorporated in the Federal Republic of Germany with its principal office in Frankfurt am Main. Deutsche Bank AG is authorized under German Banking Law and is subject to supervision by the European Central Bank and by BaFin, Germany's Federal Financial Supervisory Authority.

United Kingdom: Approved and/or distributed by Deutsche Bank AG acting through its London Branch at Winchester House, 1 Great Winchester Street, London EC2N 2DB. Deutsche Bank AG in the United Kingdom is authorised by the Prudential Regulation Authority and is subject to limited regulation by the Prudential Regulation Authority and Financial Conduct Authority. Details about the extent of our authorisation and regulation are available on request.

Hong Kong: Distributed by Deutsche Bank AG, Hong Kong Branch or Deutsche Securities Asia Limited (save that any research relating to futures contracts within the meaning of the Hong Kong Securities and Futures Ordinance Cap. 571 shall be distributed solely by Deutsche Securities Asia Limited). The provisions set out above in the "Additional Information" section shall apply to the fullest extent permissible by local laws and regulations, including without limitation the Code of Conduct for Persons Licensed or Registered with the Securities and Futures Commission. .

India: Prepared by Deutsche Equities India Private Limited (DEIPL) having CIN: U65990MH2002PTC137431 and registered office at 14th Floor, The Capital, C-70, G Block, Bandra Kurla Complex Mumbai (India) 400051. Tel: + 91 22 7180 4444. It is registered by the Securities and Exchange Board of India (SEBI) as a Stock broker bearing registration nos.: NSE (Capital Market Segment) - INB231196834, NSE (F&O Segment) INF231196834, NSE (Currency Derivatives Segment) INE231196834, BSE (Capital Market Segment) INB011196830; Merchant Banker bearing SEBI Registration no.: INM000010833 and Research Analyst bearing SEBI Registration no.: INH000001741. DEIPL may have received administrative warnings from the SEBI for breaches of Indian regulations. The transmission of research through DEIPL is Deutsche Bank's determination and will not make a recipient a client of DEIPL. Deutsche Bank and/or its affiliate(s) may have debt holdings or positions in the subject company. With regard to information on associates, please refer to the "Shareholdings" section in the Annual Report at: <https://www.db.com/ir/en/annual-reports.htm>.

Japan: Approved and/or distributed by Deutsche Securities Inc.(DSI). Registration number - Registered as a financial instruments dealer by the Head of the Kanto Local Finance Bureau (Kinsho) No. 117. Member of associations: JSDA, Type II Financial Instruments Firms Association and The Financial Futures Association of Japan. Commissions and risks involved in stock transactions - for stock transactions, we charge stock commissions and consumption tax by multiplying the transaction amount by the commission rate agreed with each customer. Stock transactions can lead to losses as a result of share price fluctuations and other factors. Transactions in foreign stocks can lead to additional losses stemming from foreign exchange fluctuations. We may also charge commissions and fees for certain categories of investment advice, products and services. Recommended investment strategies, products and services carry the risk of losses to principal and other losses as a result of changes in market and/or economic trends, and/or fluctuations in market value. Before deciding on the purchase of financial products and/or services, customers should carefully read the relevant disclosures, prospectuses and other documentation. "Moody's", "Standard & Poor's", and "Fitch" mentioned in this report are not registered credit rating agencies in Japan unless Japan or "Nippon" is specifically designated in the name of the entity. Reports on Japanese listed companies not written by analysts of DSI are written by Deutsche Bank Group's analysts with the coverage companies specified by DSI. Some of the foreign securities stated on this report are not disclosed according to the Financial Instruments and Exchange Law of Japan. Target prices set by Deutsche Bank's equity analysts are based on a 12-month forecast period..

Korea: Distributed by Deutsche Securities Korea Co.

South Africa: Deutsche Bank AG Johannesburg is incorporated in the Federal Republic of Germany (Branch Register Number in South Africa: 1998/003298/10).

Singapore: This report is issued by Deutsche Bank AG, Singapore Branch or Deutsche Securities Asia Limited, Singapore Branch (One Raffles Quay #18-00 South Tower Singapore 048583, +65 6423 8001), which may be contacted in respect of any matters arising from, or in connection with, this report. Where this report is issued or promulgated by Deutsche Bank in Singapore to a person who is not an accredited investor, expert investor or institutional investor (as defined in the applicable Singapore laws and regulations), they accept legal responsibility to such person for its contents.



Taiwan: Information on securities/investments that trade in Taiwan is for your reference only. Readers should independently evaluate investment risks and are solely responsible for their investment decisions. Deutsche Bank research may not be distributed to the Taiwan public media or quoted or used by the Taiwan public media without written consent. Information on securities/instruments that do not trade in Taiwan is for informational purposes only and is not to be construed as a recommendation to trade in such securities/instruments. Deutsche Securities Asia Limited, Taipei Branch may not execute transactions for clients in these securities/instruments.

Qatar: Deutsche Bank AG in the Qatar Financial Centre (registered no. 00032) is regulated by the Qatar Financial Centre Regulatory Authority. Deutsche Bank AG - QFC Branch may undertake only the financial services activities that fall within the scope of its existing QFCRA license. Its principal place of business in the QFC: Qatar Financial Centre, Tower, West Bay, Level 5, PO Box 14928, Doha, Qatar. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available only to Business Customers, as defined by the Qatar Financial Centre Regulatory Authority.

Russia: The information, interpretation and opinions submitted herein are not in the context of, and do not constitute, any appraisal or evaluation activity requiring a license in the Russian Federation.

Kingdom of Saudi Arabia: Deutsche Securities Saudi Arabia LLC Company (registered no. 07073-37) is regulated by the Capital Market Authority. Deutsche Securities Saudi Arabia may undertake only the financial services activities that fall within the scope of its existing CMA license. Its principal place of business in Saudi Arabia: King Fahad Road, Al Olaya District, P.O. Box 301809, Faisaliah Tower - 17th Floor, 11372 Riyadh, Saudi Arabia.

United Arab Emirates: Deutsche Bank AG in the Dubai International Financial Centre (registered no. 00045) is regulated by the Dubai Financial Services Authority. Deutsche Bank AG - DIFC Branch may undertake only the financial services activities that fall within the scope of its existing DFSA license. Its principal place of business in the DIFC: Dubai International Financial Centre, The Gate Village, Building 5, PO Box 504902, Dubai, U.A.E. This information has been distributed by Deutsche Bank AG. Related financial products or services are available only to Professional Clients, as defined by the Dubai Financial Services Authority.

Australia and New Zealand: This research is intended only for "wholesale clients" within the meaning of the Australian Corporations Act and New Zealand Financial Advisors Act, respectively. Please refer to Australia-specific research disclosures and related information at <https://australia.db.com/australia/content/research-information.html>. Where research refers to any particular financial product recipients of the research should consider any product disclosure statement, prospectus or other applicable disclosure document before making any decision about whether to acquire the product.

Additional information relative to securities, other financial products or issuers discussed in this report is available upon request. This report may not be reproduced, distributed or published without Deutsche Bank's prior written consent. Copyright © 2018 Deutsche Bank AG



David Folkerts-Landau

Group Chief Economist and Global Head of Research

Raj Hindocha
Global Chief Operating Officer
Research

Michael Spencer
Head of APAC Research
Global Head of Economics

Steve Pollard
Head of Americas Research
Global Head of Equity Research

Anthony Klarman
Global Head of
Debt Research

Paul Reynolds
Head of EMEA
Equity Research

Dave Clark
Head of APAC
Equity Research

Pam Finelli
Global Head of
Equity Derivatives Research

Andreas Neubauer
Head of Research - Germany

Spyros Mesomeris
Global Head of Quantitative
and QIS Research

International locations

Deutsche Bank AG

Deutsche Bank Place
Level 16
Corner of Hunter & Phillip Streets
Sydney, NSW 2000
Australia
Tel: (61) 2 8258 1234

Deutsche Bank AG

Mainzer Landstrasse 11-17
60329 Frankfurt am Main
Germany
Tel: (49) 69 910 00

Deutsche Bank AG

Filiale Hongkong
International Commerce Centre,
1 Austin Road West, Kowloon,
Hong Kong
Tel: (852) 2203 8888

Deutsche Securities Inc.

2-11-1 Nagatacho
Sanno Park Tower
Chiyoda-ku, Tokyo 100-6171
Japan
Tel: (81) 3 5156 6770

Deutsche Bank AG London

1 Great Winchester Street
London EC2N 2EQ
United Kingdom
Tel: (44) 20 7545 8000

Deutsche Bank Securities Inc.

60 Wall Street
New York, NY 10005
United States of America
Tel: (1) 212 250 2500
