

Recommendation

BUY \star \star \star \star

Price 12-Mo. Target Price USD 125.89 (as of market close Jun 04, 2021) USD 160.00

Report Currency USD

Investment Style Large-Cap Growth

Equity Analyst Angelo Zino, CFA

GICS Sector Information Technology Sub-Industry Technology Hardware, Storage and Peripherals

Summary Apple is a prominent provider of consumer computing devices, including the iPhone, iPad tablets, Mac computers, and wearables.

Key Stock Statistics (Source: CFRA, S&P Global Market Intelligence (SPGMI), Company Reports)

USD 143.16 - 80.58 USD 5.20 52-Wk Range Oper.EPS2021**E** Market Capitalization[B] USD 2100.81 1.20 Trailing 12-Month EPS USD 4.45 Oper.EPS2022**E USD 5.20** Yield [%] 0.7 3-yr Proj. EPS CAGR[%] 23 Trailing 12-Month P/E 24.21 Dividend Rate/Share **USD 0.88** 28.3 P/E on Oper.EPS2021E SPGMI's Quality Ranking USD 10K Invested 5 Yrs Ago 55,049.0 Common Shares Outstg.[M] 16,686.00 Institutional Ownership [%] 53.0



Source: CFRA, S&P Global Market Intelligence

Past performance is not an indication of future performance and should not be relied upon as such. Analysis prepared by Angelo Zino, CFA on Apr 29, 2021 11:42 AM ET, when the stock traded at USD 134.69.

Highlights

- ▶ We expect sales to rise 28% in FY 21 (Sep.) and 2.8% in FY 22. AAPL is seeing significant momentum for its 5G enabled iPhone 12 devices, specifically related to its larger-screen phones and in China (up 87% in Mar-Q). We think double-digit percentage growth in AAPL's installed base, higher paid subscriptions [660M plus; 40M added in Mar-Q alone), and bundling opportunities will allow Services to grow at a 15% plus clip despite tough comparisons ahead [up 27% in Mar-Q]. We think Wearables can sustain a 20% growth pace, driven by the Apple Watch/AirPods/AirTags, while augmented reality glasses and an Apple car represent longer-term revenue drivers. AAPL posted iPad growth of 79% and Mac increase of 70%, reflecting the ongoing benefits from the pandemic.
- ► We see the gross margin widening to 40%-41% in FY 21 and FY 22 versus 38% in FY 20. We like the recent Services margin expansion (70.1% in Mar-Q vs. 65.4% a year earlier) while the hardware margin appears to finally be improving (36.1% vs. 30.3% a year earlier).
- ► We like AAPL's net cash position of \$88 billion (aims to be net cash neutral over time), with our view of annual free cash flow potential of \$90 billion or more driving share repurchases.

Investment Rationale/Risk

- ► Our Buy reflects our view of AAPL's ecosystem, high customer retention rates, and expanding addressable market in Services/Wearables. We see stable replacement cycles from 5G expansion and robust free cash flow aiding growth initiatives/shareholder return. While we see near-term upside potential to forward consensus estimates, we believe it will largely come from hardware, which is not as highly valued to investors as Services. We think AAPL's pipeline remains attractive (e.g., AR glasses, Apple car, health care, shift towards hardware as a service) while Huawei issues create a better competitive landscape. We see the 2021 fall iPhone lineup looking similar to 2020's [4 devices at same starting point).
- ► Risks to our recommendation and target price include less success with product launches/ innovations, longer-than-expected hardware replacement cycles, potential higher tax rate, and regulatory scrutiny within its Services
- ▶ Our 12-month target of \$160 is based on a P/E of 30.8x our FY 22 EPS estimate of \$5.20, above peers. We believe an aging and growing installed base of 1 billion-plus phones will allow AAPL to see growth through FY 22 and support greater penetration for Services.

Update: please see the analyst's latest research note in the research notes section

Analyst's Risk Assessment

MEDIUM

Our risk assessment reflects our view of Apple's ability to shift towards higher-margin and more recurring Services offerings, which reduce the future earnings volatility of the company. In addition, we have a favorable view of the company's scale, enormous cash position, and free cash flow potential. Despite a seemingly ever-evolving market for consumer-oriented technology products and the company's need to rely on the success of product innovations, we forecast Apple's ecosystem will continue to sustain retention rates higher than 90%.

Revenue/Earnings Data

LOW

Revenue (Million USD)

(,			
10	2Q	30	4Q	Year
E 114,948	E 84,031	E 77,176	E 85,127	E 361,282
111,439	89,584	E 71,147	E 79,277	E 351,447
91,819	58,313	59,685	64,698	274,515
84,310	58,015	53,809	64,040	260,174
88,293	61,137	53,265	62,900	265,595
78,351	52,896	45,408	52,579	229,234
	E 114,948 111,439 91,819 84,310 88,293	E 114,948 E 84,031 111,439 89,584 91,819 58,313 84,310 58,015 88,293 61,137	E 114,948 E 84,031 E 77,176 111,439 89,584 E 71,147 91,819 58,313 59,685 84,310 58,015 53,809 88,293 61,137 53,265	E 114,948 E 84,031 E 77,176 E 85,127 111,439 89,584 E 71,147 E 79,277 91,819 58,313 59,685 64,698 84,310 58,015 53,809 64,040 88,293 61,137 53,265 62,900

Earnings Per Share (USD)

	10	20	3Q	4Q	Year
2022	E 1.75	E 1.19	E 1.05	E 1.19	E 5.20
2021	1.68	1.40	E 1.00	E 1.12	E 5.20
2020	1.25	0.64	0.64	0.74	3.28
2019	1.04	0.62	0.54	0.76	2.97
2018	0.97	0.68	0.58	0.73	2.98
2017	0.84	0.52	0.42	0.52	2.30

Fiscal Year ended Sep 30. EPS Estimates based on CFRA's Operating Earnings; historical GAAP earnings are as reported in Company reports.

Dividend D	Dividend Data											
Amount (USD)	Date Decl.	Ex-Div. Date	Stk. of Record	Payment Date								
0.2200	Apr 28	May 07	May 10	May 13 '21								
0.2050	Jan 27	Feb 05	Feb 08	Feb 11 '21								
0.2050	Oct 29	Nov 06	Nov 09	Nov 12 '20								
0.2050	Jul 30	Aug 07	Aug 10	Aug 13 '20								

Dividends have been paid since 2012. Source: Company reports Past performance is not an indication of future performance and should not be relied as such.

Forecasts are not reliable indicator of future performance.

Redistribution or reproduction is prohibited without written permission. Copyright © 2021 CFRA. This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of any specific person who may receive this report. Investors should seek independent financial advice regarding the suitability and/or appropriateness of making an investment or implementing the investment strategies discussed in this document and should understand that statements regarding future prospects may not be realized. Investors should note that income from such investments, if any, may fluctuate and that the value of such investments may rise or fall. Accordingly, investors may receive back less than they originally invested. Investors should seek advice concerning any impact this investment may have on their personal tax position from their own tax advisor. Please note the publication date of this document. It may contain specific information that is no longer current and should not be used to make an investment decision. Unless otherwise indicated, there is no intention to update this document.



Business Summary April 29, 2021

CORPORATE OVERVIEW. Apple [AAPL] makes smartphones, tablet devices, computers, and portable digital media players, and sells a variety of related software, services, and accessories.

AAPL's iPhone directly accounted for 50% of FY 20 revenues, with iPhone sales falling 3%, largely reflecting lower units amid a tough geopolitical landscape due to Covid-19. In October 2020, AAPL announced its next generation of iPhones (4 opposed to 3 the prior year), all which will possess 5G capabilities, OLED screens, a new A14 processor, and a host of new colors. The smaller 5.4-inch iPhone 12 mini (starts at \$699) and 6.1inch iPhone 12 (\$799) feature a new aluminum flat-edge design, ceramic shield front cover, and duel camera system. The 6.1-inch iPhone 12 Pro (\$999 start) and 6.7-inch iPhone 12 Pro Max (\$1,099) include a LiDAR Scanner for better AR capabilities, begins with 128 GB memory, and boosts better camera functionality. AAPL also said it will remove the power adapter and EarPods from iPhone packaging and announced a host of accessories related to its MagSafe Charger and Leather Wallet.

Released in April 2010, the iPad quickly became the best-selling tablet computer by far. Before the iPad, unit sales for similar computing devices were less than 200,000 units, according to market researchers. In FY 10, the first year of availability, AAPL sold over 7 million iPads, accounting for around 8% of total revenues. During FY 20, iPad sales [9% of revenue] grew 11%, largely reflecting Apple benefiting from a surge in demand from the work from home and learn from home themes during the pandemic.

Sales of AAPL's computers, commonly known as Macs, made up 10% of revenues in FY 20, with revenue increasing 11%. Macs saw a similar benefit amid the pandemic as iPads.

Revenue from Services and other hardware products comprised about 31% of sales in FY 20 versus 27% in FY 19. Wearables, Home and Accessories products (11% of FY 20 revenue and grew 25%) include sales of the Apple TV, Apple Watch, AirPods, Beats products, HomePod, and iPod as well as Apple-branded and thirdparty accessories. We note Services were 20% of FY 20 sales and grew an impressive 16%. Services includes revenue from the App Store, iCloud, Apple TV+, AppleCare, licensing and other services. In September 2020, AAPL announced Apple Fitness+ (\$9.99 per month or \$79.99 per year) and its Apple One Subscription Plan (priced from \$14.95 to \$29.95 monthly), which offers bundling options for a host of its services. We believe AAPL's bundle strategy will provide greater recurring revenue opportunities.

COMPETITIVE LANDSCAPE. AAPL primarily competes in the handset, tablet, computer, and media player markets. We think AAPL uses its ability to design and develop its own operating system, hardware, application software, and services to differentiate itself from competitors. We see the appeal behind the products having a lot to do with its stated goal of providing customers with products that have superior ease of use, seamless integration and innovative industrial design. Reflecting what we view as AAPL's perceived quality and notable cachet, the company is able to compete in the middle to high-end segments of its target markets, and charge above-average prices for its products.

AAPL has a substantial hardware presence across key categories, and we think this helps garner interest from third-party application developers who continue to produce content and applications for the iPhone and iPad. We think AAPL's application business is one of the key elements that helps differentiate its devices from other products, and is very important to future sales growth and pricing power. Further, we view the App Store as an effective way of not only distributing content effectively, but also keeping the customer base entrenched. We think iCloud functionality encourages customers to buy more AAPL products and use them more regularly.

LEGAL/REGULATORY ISSUES. On April 17, 2019, Apple and QUALCOMM [QCOM] announced an agreement to end all legal issues between the two companies worldwide. QCOM and Apple agreed to a six-year license agreement, effective April 1, 2019, including a two-year option to extend, and a multiyear chipset supply agreement. We also note that the settlement includes an undisclosed payment from Apple to QCOM. This case originated in January 2017 after Apple announced a lawsuit against QCOM, alleging QCOM used its commanding position as a maker of smartphone baseband chips to demand unfair terms for its technology.

FINANCIAL TRENDS. Although AAPL's sales are affected by broader macroeconomic conditions, we think the company has generally been less cyclical than peers, given its strong brand, innovative and high-quality products, loyal customer base, and exposure to fast-growing markets. Thus, AAPL has been able to command significant pricing power for its offerings and has over time successfully increased prices for most of its product lines. While AAPL will see iPhone and wearables decline amid the Covid-19 pandemic, we see 5G potentially stabilizing iPhone shipments and see substantial growth potential within AAPL's Wearables business and economic conditions improve, driven by greater consumer adoption.

AAPL has what we view as a very strong balance sheet, with about \$204.4 billion in cash and investments, and about \$116.6 billion in debt as of March 2021. AAPL boasts return metrics, such as return on equity [74% in FY 20], that are relatively high compared with other large/mega-cap hardware and software companies. In March 2012, AAPL announced a dividend and a share repurchase plan. As of March 2021, we calculate AAPL has returned more than \$550 billion of cash to shareholders and note the company began returning cash in calendar year 2012. On April 28, 2021, Apple announced a new \$90 billion share authorization program and hiked its dividend by 7%.

In early November 2018, AAPL announced its decision to stop providing unit data for iPhones/iPads/Macs. While we think less clarity within hardware segments is a notable negative, we like greater margin transparency around Services.

AAPL executed a 4-for-1 stock split in August 2020 (its first since August 2014), which we expect will help support liquidity and attract new investors.

Corporate information

Investor contact

N. Paxton (408-996-1010)

Office

One Apple Park Way, Cupertino, California, 95014

Telephone

408-996-1010

Fax

N/A

Website

www.apple.com

Officers

Independent Non-Executive Chairman of the Board

A. D. Levinson

J. E. Williams

Chief Operating Officer

CFO & Senior VP

L. Maestri

CEO & Director T. D. Cook

Board Members

M. C. Lozano A. A. Gore A. D. Levinson R. D. Sugar S. L. Wagner A. Jung T. D. Cook J. A. Bell

Domicile

California

Founded 1977

Employees

147,000

Stockholders

22.797

Senior VP, General Counsel

& Secretary

K. L. Adams

Chief Technology Officer

J. Wilson

Senior Director of Corporate Accounting

C. Kondo

Auditor

Ernst & Young LLP





Quantitative Evaluations										
Fair Value Rank		1	2	3	4	5				
		LOWEST	DΛ'e nron	rietary gua	ntitative m	HIGHEST				
		Based on CFRA's proprietary quantitative model, stocks are ranked from most overvalued [1] to most undervalued [5].								
Fair Value Calculation	USD 74.75	Analysis of the stock's current worth, based on CFRA's proprietary quantitative model suggests that AAPL is overvalued by USD 51.14 or 40.62%								
Volatility		LOW AVERAGE HIGH								
Technical Evaluation	NEUTRAL	Since May, 2021, the technical indicators for AAPL have been NEUTRAL"								

Expanded Ratio Analysis				
	2020	2019	2018	2017
Price/Sales	7.17	3.91	4.25	3.53
Price/EBITDA	25.45	13.30	13.80	11.32
Price/Pretax Income	29.33	15.47	15.48	12.63
P/E Ratio	34.23	18.42	18.94	16.73
Avg. Diluted Shares Outstg. [M]	17528.21	18595.65	20000.44	21006.77
Figures based on fiscal year-end price				

Key Growth Rates and Averages			
Past Growth Rate (%)	1 Year	3 Years	5 Years
Net Income	3.90	5.89	1.46
Sales	5.51	6.19	3.27
Ratio Analysis (Annual Avg.)			
Net Margin [%]	20.91	21.52	21.37
% LT Debt to Capitalization	57.06	48.53	43.91
Return on Equity (%)	73.69	59.66	50.55

Por Chara Pata (UCD)	0000	0010	0010	0017	0010	0015	001"	0010	0010	0011
Per Share Data (USD)	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Tangible Book Value	3.85	5.09	5.63	6.54	5.60	4.94	4.38	4.68	4.29	2.77
Free Cash Flow	4.23	3.19	3.23	2.48	2.44	3.03	2.05	1.72	1.58	1.16
Earnings	3.28	2.97	2.98	2.30	2.08	2.30	1.61	1.42	1.58	0.99
Earnings (Normalized)	2.39	2.21	2.28	1.91	1.74	1.96	1.36	1.20	1.32	0.82
Dividends	0.80	0.75	0.68	0.60	0.54	0.50	0.46	0.41	0.10	N/A
Payout Ratio [%]	25.00	26.00	23.00	26.00	27.00	22.00	28.00	29.00	6.00	NM 15.10
Prices: High	137.98	58.37	57.42	41.24 26.02	30.96	33.64	25.94	24.33	25.18	15.10
Prices: Low	53.15	35.50	37.56		22.37	23.00	16.94	13.75	12.65	9.82
P/E Ratio: High	42.10	19.70	19.30	17.90	14.90	14.60	16.10	17.10	16.00	15.30
P/E Ratio: Low	16.20	12.00	12.60	11.30	10.80	10.00	10.50	9.70	8.00	9.90
Income Statement Analysis (Million USD)										
Revenue	274,515	260,174	265,595	229,234	215,639	233,715	182,795	170,910	156,508	108,249
Operating Income	66,288	63,930	70,898	61,344	60,024	71,230	52,503	48,999	55,241	33,790
Depreciation + Amortization	11,056	12,547	10,903	10,157	10,505	11,257	7,946	6,757	3,277	1,814
Interest Expense	2,873	3,576	3,240	2,323	1,456	733.00	384.00	136.00	N/A	N/A
Pretax Income	67,091	65,737	72,903	64,089	61,372	72,515	53,483	50,155	55,763	34,205
Effective Tax Rate	14.40	15.90	18.30	24.60	25.60	26.40	26.10	26.20	25.20	24.20
Net Income	57,411	55,256	59,531	48,351	45,687	53,394	39,510	37,037	41,733	25,922
Net Income (Normalized)	41,881	41,105	45,564	40,056	38,358	45,322	33,427	31,347	34,852	21,378
Balance Sheet and Other Financial Data (Million USD)										
Cash	90,943	100,557	66,301	74,181	67,155	41,995	25,158	40,590	29,129	25,952
Current Assets	143,713	162,819	131,339	128,645	106,869	89,378	68,531	73,286	57,653	44,988
Total Assets	323,888	338,516	365,725	375,319	321,686	290,345	231,839	207,000	176,064	116,371
Current Liabilities	105,392	105,718	115,929	100,814	79,006	80,610	63,448	43,658	38,542	27,970
Long Term Debt	98,667	91,807	93,735	97,207	75,427	53,329	28,987	16,960	N/A	N/A
Total Capital	187,617	198,535	221,630	249,727	215,281	183,696	146,842	140,509	118,210	76,615
Capital Expenditures	7,309	10,495	13,313	12,451	12,734	11,247	9,571	8,165	8,295	4,260
Cash from Operations	80,674	69,391	77,434	64,225	66,231	81,266	59,713	53,666	50,856	37,529
Current Ratio	1.36	1.54	1.13	1.28	1.35	1.11	1.08	1.68	1.50	1.61
% Long Term Debt of Capitalization	57.10	46.20	42.30	38.90	35.00	29.00	19.70	12.10	N/A	N/A
% Net Income of Revenue	20.90	21.20	22.40	21.10	21.20	22.80	21.60	21.70	26.70	23.90
% Return on Assets	12.51	11.35	11.96	11.00	12.26	17.05	14.96	15.99	23.61	22.05
% Return on Equity	73.70	55.90	49.40	36.90	36.90	46.20	33.60	30.60	42.80	41.70

Source: S&P Global Market Intelligence. Data may be preliminary or restated; before results of discontinued operations/special items. Per share data adjusted for stock dividends; EPS diluted. E-Estimated. NA-Not Available. NM-Not Meaningful. NR-Not Ranked. UR-Under Review.



Sub-Industry Outlook

Our fundamental outlook for the Technology Hardware, Storage & Peripherals sub-industry for the next 12 months is positive. While 2020 was undoubtedly a challenging one as the industry had to contend with an unthinkable pandemic, we see pockets of strength emerging in many areas of the market. We like secular opportunities and prospects for the broader hardware space in 2021 and 2022, led by advancements in 5G, demand for wearables, and new services capabilities driving interest for next-generation devices. We also see easier comparables as we lap depressed results from the pandemic.

We think a host of 5G phones that were launched since last fall are seeing better-than-expected demand, specifically related to Apple's iPhones and a number of those from Chinese hardware makers. While the smartphone space likely declined by 5.9% in 2020, which marks the fourth consecutive year of declines, we see a 6% rebound for 2021 and 3% rise in 2022, led by greater penetration and consumer adoption for 5G phones. We continue to believe 5G will help boost demand and improve replacement cycles within the broader smartphone space. We forecast that average selling prices for smartphones will trend up in 2021, driven by the ongoing shift by highend phone manufacturers to offer consumers more features and greater costs associated with producing a 5G device.

Rising demand for PCs from businesses, schools, and consumers, along with a notable backlog of orders from last year, is likely to generate growth of 18% to 20% for the PC market in 2021. Both PCs and tablets have witnessed a surprise surge to year-over-year growth in recent quarters, driven by more consumers working from home amid the Covid-19 pandemic, which has pulled in orders for commercial notebooks. In addition, we note the education space has been placing significant orders as more students and schools permanently transition to a post-pandemic world. While we see opportunities related to thinner and lighter devices as well as from gaming, we think longer replacement cycles will likely hinder growth for the

space. Ultimately, we expect PC and tablet unit volume to normalize by 2022 as work-from-home benefits appear unsustainable.

CFRA anticipates shipments for wearable devices to increase at a double-digit percentage basis through 2022, as we see future growth driven by greater adoption of smartwatches. Greater focus on health care initiatives will likely support long-term demand and open greater opportunities from corporate wellness programs, in our view. We also expect ear-worn devices like AirPods to gain traction with consumers, reflecting the ongoing shift away from wired devices.

Demand for data storage will be driven by content digitization of old media, the growing popularity of social networking websites, and longer record retention for compliance with government regulations, in our view. We think the storage software market will be driven by business continuity and disaster recovery efforts, compliance and risk management activities, and the increasing prevalence of data mining and related analytics. We see demand for traditional storage offerings declining, while products related to all-flash arrays are seeing momentum in the data center space.

Year-to-date through April 1, the S&P 1500 Technology Hardware, Storage & Peripherals Index declined 5.7%, while the S&P 1500 rose 7.8%. For 2020, the S&P 1500 Technology Hardware, Storage & Peripherals Index increased 41.6%, while the S&P 1500 rose 15.8%.

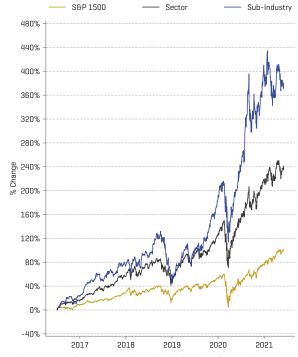
/ Angelo Zino, CFA

Industry Performance

GICS Sector: Information Technology Sub-Industry: Technology Hardware, Storage and Peripherals

Based on S&P 1500 Indexes

Five-Year market price performance through Jun 05, 2021



 $\ensuremath{\mathsf{NOTE}}\xspace$ A sector chart appears when the sub-industry does not have sufficient historical index data.

All Sector & Sub-Industry information is based on the Global Industry Classification Standard [GICS].

Past performance is not an indication of future performance and should not be relied upon as such.

Source: CFRA, S&P Global Market Intelligence

Sub-Industry: Technology Hardware, Storage and Peripherals Peer Group*: Technology Hardware, Storage and Peripherals												
Peer Group	Stock Symbol	Exchange	Currency	Recent Stock Price	Stk. Mkt. Cap. (M)	30-Day Price Chg. (%)	1-Year Price Chg. (%)	P/E Ratio	Fair Value Calc.	Yield (%)	Return on Equity (%)	LTD to Cap (%)
Apple Inc.	AAPL	NasdaqGS	USD	125.89	2,100,806.0	-1.7	56.2	38.0	74.75	0.7	73.7	57.1
Canon Inc.	CAJ	NYSE	USD	23.77	24,648.0	0.7	13.4	33.0	N/A	N/A	3.4	2.5
Dell Technologies Inc.	DELL	NYSE	USD	103.53	79,064.0	5.2	110.4	25.0	77.84	N/A	65.5	75.2
FUJIFILM Holdings Corporation	FUJI.Y	OTCPK	USD	69.81	27,864.0	6.6	54.0	17.0	N/A	N/A	8.7	17.6
HP Inc.	HPQ	NYSE	USD	30.63	36,794.0	-11.1	86.0	15.0	33.31	2.5	-166.3	124.7
Hewlett Packard Enterprise Company	HPE	NYSE	USD	16.22	21,182.0	1.6	54.8	NM	15.80	3.0	-1.9	39.5
Logitech International S.A.	LOGI	NasdaqGS	USD	132.21	19,994.0	17.2	124.4	24.0	N/A	N/A	50.5	0.9
Razer Inc.	RZZR.Y	OTCPK	USD	5.60	19,757.0	-20.4	68.2	8764.0	N/A	N/A	0.1	1.1
Seagate Technology Holdings plc	STX	NasdaqGS	USD	97.57	22,331.0	10.3	80.5	26.0	N/A	2.7	50.8	69.5
Western Digital Corporation	WDC	NasdaqGS	USD	77.17	23,649.0	12.5	67.8	NM	50.98	N/A	-2.6	48.7
Xiaomi Corporation	XIAC.Y	OTCPK	USD	14.70	88,020.0	N/A	80.8	114.0	N/A	N/A	19.8	7.8

^{*}For Peer Groups with more than 10 companies or stocks, selection of issues is based on market capitalization.

NA-Not Available; NM-Not Meaningful.

Note: Peers are selected based on Global Industry Classification Standards and market capitalization. The peer group list includes companies with similar characteristics, but may not include all the companies within the same industry and/or that engage in the same line of business.



Analyst Research Notes and other Company News

June 08, 2021

00:06 am ET.. CFRA Maintains Buy Opinion on Shares of Apple Inc. (AAPL 125.90****)

AAPL held its keynote at the 2021 WWDC and while it didn't release any hardware products, the company announced iOS 15 details. Key updates were made to FaceTime, including spatial audio, new microphone modes, a new portrait mode, and availability beyond Apple devices. AAPL introduced SharePlay, updates to memories [provides integration to Apple Music], and Live Text [recognizes text in a photo with the ability to take action]. AAPL showed updates to Maps, greater availability of digital car keys/Ultra-Wideband support, ability to add Identity Cards [e.g., driver's license] in Apple Wallet, and new privacy features. Apple also previewed iPadOS 15 features [new Home Screen design, App Library, and note taking with Quick Note]. AAPL's macOS [Monterey] lets users work with a single mouse and keyboard and move between Mac and iPad for a seamless experience. We believe the event showcased how AAPL continues to find ways to integrate its ecosystem of devices while also promoting new AR/Al platform capabilities.

April 29, 2021

08:50 AM ET... CFRA Maintains Buy Opinion on Shares of Apple Inc. (AAPL 136.77****):

We keep our 12-month target at \$160 on P/E of 30.8x our FY 22 EPS view. We up our FY 21 EPS estimate to \$5.20 from \$4.55 and FY 22's to \$5.20 from \$4.67, after the company crushed earnings expectations last night [see prior note for details]. AAPL had significant beats on the top line from core hardware product lines [iPhones, Macs, and iPads] and is finally seeing signs of margin expansion [gross margin of 42.5% vs. 38.4% a year ago], which we think offers upside over time as Services becomes an increasing contributor. Gross margin in Services was 70.1% vs. 36.1% for hardware. We think double-digit percentage growth in AAPL's installed base and higher paid subscriptions [660M plus; 40M added in Mar-Q alone] will allow Services to grow at a 15% plus clip despite tough comparisons ahead. While we do expect hardware growth to decelerate in the coming quarters, we are optimistic about AAPL's long-term business prospects and pipeline [e.g., AR glasses, Apple car, health care, shift towards hardware as a service]. / Angelo Zino, CFA

April 28, 2021

05:10 PM ET... CFRA Maintains Buy Opinion on Shares of Apple Inc. (AAPL 133.58****):

AAPL posted March quarter revenue and EPS of \$89.6B and \$1.40, both well ahead of our \$76.9B and \$1.03 estimates, respectively. We view the biggest positives from the quarter being Services growth of 27% (we forecasted 17%) as well as 87% growth in China, which likely benefited from consumers gravitating towards AAPL's higher priced iPhone 12 devices coupled with easy comparisons. AAPL posted iPad growth of 79% and Mac increase of 70%, reflecting the ongoing benefits from the pandemic. Wearables growth of 25% was a modest beat but also had to go against tough comparisons for the segment versus a year earlier. From a capital allocation perspective, AAPL hiked its dividend by 7% and announced a new \$90B share repurchase program (bought back \$43.3B in Mar-Q) as the company continues towards aiming to be net cash neutral (about \$91B net cash at the moment). Despite well-known industry chip supply constraints, we believe AAPL is executing extremely well and is seeing robust demand across all business line. / Angelo Zino, CFA

April 20, 2021

 $04:27 \text{ PM ET... CFRA Maintains Buy Opinion on Shares of Apple Inc. (AAPL <math>133.11****$):

AAPL hosted its Spring Event where it announced a slew of products. AAPL launched its first major iMac redesign in nearly 7 years with new colors, a 1080p camera, and its internally developed M1 chip that provides better processing/thinner design [starts at \$1,299]. Its two high-end iPad Pros now have 5G capability, an M1 chip, and the larger one [12.9 inch model] has a Liquid Retina XDR Display [MiniLeds], which offers brighter colors/more details [11-inch starts at \$799; 12.9-inch at \$1,099]. While we like the iMac and iPad updates amid a robust demand landscape, we expect segment revenue to considerably slow by the end of FY 21 [Sep.]. We view the unveiling of AirTags as the most positive release [can be purchased in one/four packs for \$29/\$99] to drive incremental growth to the wearables business. Separately, AAPL unveiled its next gen Apple TV 4K [includes A12 Bionic chip, new Siri remote, graphics boost starting at \$179], new iPhone purple color, Apple Card

Family, and Podcasts Subscriptions. / Angelo Zino, CFA

April 12, 2021

06:43 AM ET... CFRA Maintains Buy Opinion on Shares of Apple Inc. (AAPL 132.99****):

We keep our 12-month target at \$160, on P/E of 34.3x our FY 22 EPS view. We raise our FY 21 EPS estimate to \$4.55 from \$4.44 and FY 22 to \$4.67 from \$4.59, as we raise iPhone estimates to reflect robust demand in China and for AAPL's bigger screens. Momentum for iPads and Macs are likely to persist through FY 21, while wearables will sustain 20% growth. We see Services growing at 15% to 17% in the Mar-Q and June-Q, on tougher pandemic comparisons. We forecast AAPL hiking its dividend by 5%-10% and see an ongoing commitment towards aggressive repurchases. While we see upside potential to consensus estimates, it will likely come from AAPL's hardware businesses, which is not as highly valued to investors as Services. AAPL's pipeline remains attractive [e.g., AR glasses, Apple car, health care, shift towards hardware as a service] while risks include a higher tax rate, regulatory scrutiny within Services, and tougher comparisons. AAPL is set to report March quarter earnings results after the close on April 28. / Angelo Zino, CFA

February 08, 2021

09:47 AM ET... CFRA Adds Apple to the High-Quality Capital Appreciation Portfolio [AAPL 135.37****]:

AAPL's ecosystem/potential to upsell paid services, high customer retention rates [90%+ on the hardware side], and free cash flow generation [\$70B+ annually] continue to make the stock a compelling long-term story and ideal addition to the portfolio. We believe an aging and growing installed base of 1 billion-plus phones will allow AAPL to see growth through FY 22 and support greater penetration for Services, which we believe can grow at a low-to-mid-teens pace, aided by bundling opportunities, while Wearables can sustain a 15%-20% growth pace. Recent progress around margin expansion in Dec-Q, autonomous/electric cars, and the transition to Hardware-as-a-Service all remain catalysts and help support the valuation. AAPL replaces International Business Machines [IBM 122 ****], which was recently downgraded to Hold from Buy, on reduced confidence in the company's ability to meet outlined growth objectives and a quality ranking [A- to B+] that no longer meet the requirements to remain in the portfolio. / David Holt

January 28, 2021

07:47 AM ET... CFRA Maintains Buy Opinion on Shares of Apple Inc. (AAPL 139.00****):

After posting better-than-expected Dec-Q revenue/EPS results last night, we reiterate our Buy and 12-month target at \$160, on a P/E of 34.9x our FY 22 EPS estimate, above peers to reflect the company's opportunities in Services and what we believe to be an attractive pipeline of potential products on the hardware side. We raise our FY 21 EPS estimate to \$4.44 from \$4.20 and FY 22 to \$4.59 from \$4.57. We believe an aging and growing installed base of 1B+ phones will allow AAPL to see iPhone growth through FY 22, but acknowledge Macs/iPads/Services comparisons will get tougher by the June-Q as it will lap pandemic benefits. We like free cash flow potential (projected \$70B plus annual run rate) and note an \$83.5B net cash position (\$196B total cash) will support attractive cash return to shareholders (share count down over 35% since 2012) and long-term growth initiatives (e.g., entry into EV/AV auto space, AR glasses, etc.). We see a more favorable forex rate and potential gross margin expansion as tailwinds. / Angelo Zino, CFA

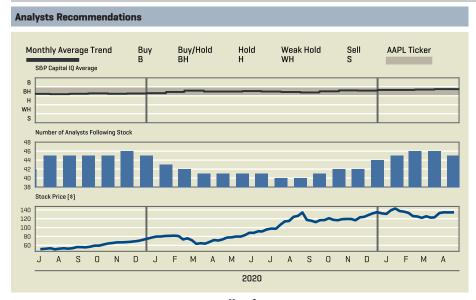
January 27, 2021

05:32 PM ET... CFRA Maintains Buy Opinion on Shares of Apple Inc. (AAPL 142.06****):

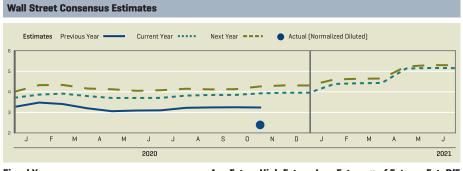
AAPL posts Dec-Q EPS of \$1.68 vs. \$1.25, beating the \$1.41 consensus. Sales grew 21%, well ahead of our expectations across all segments. Revenue from iPhones grew 17% even with the delayed launch of its devices versus prior years, benefiting from its shift to 56. Sales for iPads rose 41% while Macs increased 21%, as the learn and work from home themes continued to generate significant demand. Sales from Services grew 24%, on AAPL's growing installed base and greater consumer usage within its ecosystem (paid subscriptions rose by a "double digit" percentage pace). Wearables increased 30%, benefiting from the launch of the Apple Watch Series 6 and greater adoption for AirPods. We view China growth of 33% and gross margin expansion (39.8% from 38.4% a year ago) as notable positives, with both hardware and services margins widening. While AAPL did not provide Mar-Q

Note: Research notes reflect CFRA's published opinions and analysis on the stock at the time the note was published. The note reflects the views of the equity analyst as of the date and time indicated in the note, and may not reflect CFRA's current view on the company.





	No. of			
	Recommendations	% of Total	1 Mo.Prior	3 Mos.Prior
Buy	24	53	24	21
Buy/Hold	8	18	8	9
Hold	8	18	8	8
Weak hold	0	0	0	2
Sell	2	4	2	1
No Opinion	3	7	3	5
Total	45	100	45	46



Fiscal Year	Avg Est.	High Est.	Low Est.	# of Est.	Est. P/E
2022	5.29	6.13	4.69	40	23.78
2021	5.15	5.52	4.50	39	24.43
2022 vs. 2021	▲ 3%	▲ 11%	4 %	▲ 3%	▼ -3%
Q3'22	1.07	1.16	0.96	20	117.39
Q3'21	1.00	1.16	0.82	31	126.15
Q3'22 vs. Q3'21	▲ 7%	N/A%	▲ 17%	▼ -35%	▼ -7%

 $\label{lem:continuous} \mbox{Forecasts are not reliable indicator of future performance}.$

Note: A company's earnings outlook plays a major part in any investment decision. S&P Global Market Intelligence organizes the earnings estimates of over 2,300 Wall Street analysts, and provides their consensus of earnings over the next two years, as well as how those earnings estimates have changed over time. Note that the information provided in relation to consensus estimates is not intended to predict actual results and should not be taken as a reliable indicator of future performance.

Note: For all tables, graphs and charts in this report that do not cite any reference or source, the source is S&P Global Market Intelligence.

Wall Street Consensus Opinion

Buy/Hold

Wall Street Consensus vs. Performance

For fiscal year 2021, analysts estimate that AAPL will earn USD 5.15. For fiscal year 2022, analysts estimate that AAPL's earnings per share will grow by 2.73% to USD 5.29.



Glossary

STARS

Since January 1, 1987, CFRA Equity and Fund Research Services, and its predecessor S&P Capital IQ Equity Research has ranked a universe of U.S. common stocks, ADRs (American Depositary Receipts), and ADSs (American Depositary Shares) based on a given equity's potential for future performance. Similarly, we have ranked Asian and European equities since June 30, 2002. Under proprietary STARS (Stock Appreciation Ranking System), equity analysts rank equities according to their individual forecast of an equity's future total return potential versus the expected total return of a relevant benchmark [e.g., a regional index (MSCI AC Asia Pacific Index, MSCI AC Europe Index or S&P 500® Index)], based on a 12-month time horizon. STARS was designed to meet the needs of investors looking to put their investment decisions in perspective. Data used to assist in determining the STARS ranking may be the result of the analyst's own models as well as internal proprietary models resulting from dynamic data inputs.

S&P Global Market Intelligence's Quality Ranking

[also known as **S&P Capital IQ Earnings & Dividend Rankings**] - Growth and S&P Capital IQ Earnings & Dividend Rankings stability of earnings and dividends are deemed key elements in establishing S&P Global Market Intelligence's earnings and dividend rankings for common stocks, which are designed to capsulize the nature of this record in a single symbol. It should be noted, however, that the process also takes into consideration certain adjustments and modifications deemed desirable in establishing such rankings. The final score for each stock is measured against a scoring matrix determined by analysis of the scores of a large and representative sample of stocks. The range of scores in the array of this sample has been aligned with the following ladder of rankings:

A+ Highest B Below Average
A High B- Lower
A Above C Lowest

3+ Average D In Reorganization

NC Not Ranked

EPS Estimates

CFRA's earnings per share (EPS) estimates reflect analyst projections of future EPS from continuing operations, and generally exclude various items that are viewed as special, non-recurring, or extraordinary. Also, EPS estimates reflect either forecasts of equity analysts; or, the consensus (average) EPS estimate, which are independently compiled by S&P Global Market Intelligence, a data provider to CFRA. Among the items typically excluded from EPS estimates are asset sale gains; impairment, restructuring or merger-related charges; legal and insurance settlements; in process research and development expenses; gains or losses on the extinguishment of debt; the cumulative effect of accounting changes; and earnings related to operations that have been classified by the company as discontinued. The inclusion of some items, such as stock option expense and recurring types of other charges, may vary, and depend on such factors as industry practice, analyst judgment, and the extent to which some types of data is disclosed by companies.

12-Month Target Price

The equity analyst's projection of the market price a given security will command 12 months hence, based on a combination of intrinsic, relative, and private market valuation metrics, including Fair Value.

CFRA Equity Research

CFRA Equity Research is produced and distributed by Accounting Research & Analytics, LLC d/b/a CFRA ["CFRA US"; together with its affiliates and subsidiaries, "CFRA"]. Certain research is produced and distributed by CFRA MY Sdn Bhd [Company No. 683377-A] [formerly known as Standard & Poor's Malaysia Sdn Bhd] ["CFRA Malaysia"]. Certain research is distributed by CFRA UK Limited ["CFRA UK"]. CFRA UK and CFRA Malaysia are wholly-owned subsidiaries of CFRA US.

Abbreviations Used in Equity Research Reports

CAGR - Compound Annual Growth Rate

CAPEX - Capital Expenditures

CY - Calendar Year

DCF - Discounted Cash Flow

DDM - Dividend Discount Model

EBIT - Earnings Before Interest and Taxes

EBITDA - Earnings Before Interest, Taxes, Depreciation & Amortization

EPS - Earnings Per Share

EV - Enterprise Value

FCF - Free Cash Flow

FFO - Funds From Operations

FY - Fiscal Year

P/E - Price/Earnings

P/NAV - Price to Net Asset Value

PEG Ratio - P/E-to-Growth Ratio

PV - Present Value

R&D - Research & Development

ROCE - Return on Capital Employed

ROE Return on Equity

ROI - Return on Investment

ROIC - Return on Invested Capital

ROA - Return on Assets

SG&A - Selling, General & Administrative Expenses

SOTP - Sum-of-The-Parts

WACC - Weighted Average Cost of Capital

Dividends on American Depository Receipts (ADRs) and American Depository Shares (ADSs) are net of taxes (paid in the country of origin).

Qualitative Risk Assessment

Reflects an equity analyst's view of a given company's operational risk, or the risk of a firm's ability to continue as an ongoing concern. The Qualitative Risk Assessment is a relative ranking to the U.S. STARS universe, and should be reflective of risk factors related to a company's operations, as opposed to risk and volatility measures associated with share prices. For an ETF this reflects on a capitalization-weighted basis, the average qualitative risk assessment assigned to holdings of the fund.

STARS Ranking system and definition:

**** 5-STARS (Strong Buy):

Total return is expected to outperform the total return of a relevant benchmark, by a notable margin over the coming 12 months, with shares rising in price on an absolute basis.

$\star\star\star\star\star$ 4-STARS (Buy):

Total return is expected to outperform the total return of a relevant benchmark over the coming 12 months.

**** 1-STARS (Hold):

Total return is expected to closely approximate the total return of a relevant benchmark over the coming 12 months.

**** 2-STARS (Sell):

Total return is expected to underperform the total return of a relevant benchmark over the coming 12 months.

* * * * * 1-STAR (Strong Sell):

Total return is expected to underperform the total return of a relevant benchmark by a notable margin over the coming 12 months, with shares falling in price on an absolute basis.

Relevant benchmarks:

In North America, the relevant benchmark is the S&P 500 Index, in Europe and in Asia, the relevant benchmarks are the MSCI AC Europe Index and the MSCI AC Asia Pacific Index, respectively.



Disclosures

S&P GLOBAL $^{\text{TM}}$ is used under license. The owner of this trademark is S&P Global Inc. or its affiliate, which are not affiliated with CFRA Research or the author of this content. Stocks are ranked in accordance with the following ranking methodologies:

STARS Stock Reports:

Qualitative STARS recommendations are determined and assigned by equity analysts. For reports containing STARS recommendations refer to the Glossary section of the report for detailed methodology and the definition of STARS rankings.

Quantitative Stock Reports:

Quantitative recommendations are determined by ranking a universe of common stocks based on 5 measures or model categories: Valuation, Quality, Growth, Street Sentiment, and Price Momentum. In the U.S., a sixth sub-category for Financial Health will also be displayed. Percentile scores are used to compare each company to all other companies in the same universe for each model category. The five [six] model category scores are then weighted and rolled up into a single percentile ranking for that company. For reports containing quantitative recommendations refer to the Glossary section of the report for detailed methodology and the definition of Quantitative rankings.

STARS Stock Reports and Quantitative Stock Reports:

The methodologies used in STARS Stock Reports and Quantitative Stock Reports [collectively, the "Research Reports"] reflect different criteria, assumptions and analytical methods and may have differing recommendations. The methodologies and data used to generate the different types of Research Reports are believed by the author and distributor reasonable and appropriate. Generally, CFRA does not generate reports with different ranking methodologies for the same issuer. However, in the event that different methodologies or data are used on the analysis of an issuer, the methodologies may lead to different views or recommendations on the issuer, which may at times result in contradicting assessments of an issuer. CFRA reserves the right to alter, replace or vary models, methodologies or assumptions from time to time and without notice to clients.

STARS Stock Reports:

Global STARS Distribution as of June 28, 2019

Ranking	North America	Europe	Europe Asia	
Buy	34.4%	29.0%	41.1%	33.5%
Hold	56.1%	54.8%	46.4%	54.6%
Sell	10.5%	16.2%	12.5%	11.9%
Total	100.0%	100.0%	100.0%	100.0%

Analyst Certification:

STARS Stock Reports are prepared by the equity research analysts of CFRA and its affiliates and subsidiaries. Quantitative Stock Reports are prepared by CFRA. All of the views expressed in STARS Stock Reports accurately reflect the research analyst's personal views regarding any and all of the subject securities or issuers; all of the views expressed in the Quantitative Stock Reports accurately reflect the output of CFRA's algorithms and programs. Analysts generally update STARS Stock Reports at least four times each year. Quantitative Stock Reports are generally updated weekly. No part of analyst, CFRA, CFRA affiliate, or CFRA subsidiary compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed in any Stock Report.

About CFRA Equity Research's Distributors:

This Research Report is published and originally distributed by Accounting Research & Analytics, LLC d/b/a CFRA ("CFRA US"), with the following exceptions: In the UK/EU/EEA, it is published and originally distributed by CFRA UK Limited ("CFRA UK"), which is regulated by the Financial Conduct Authority (No. 775151), and in Malaysia by CFRA MY Sdn Bhd (Company No. 683377-A) [formerly known as Standard & Poor's Malaysia Sdn Bhd] ["CFRA Malaysia"], which is regulated by Securities Commission Malaysia, (No. CMSL/A0181/2007) under license from CFRA US. These parties and their subsidiaries maintain no responsibility for reports redistributed by third parties such as brokers or financial advisors.

General Disclosure

Notice to all jurisdictions:

Where Research Reports are made available in a language other than English and in the case of inconsistencies between the English and translated versions of a Research Report, , the English version will control and supersede any ambiguities associated with any part or Neither CFRA norsection of a Research Report that has been issued in a foreign language. its affiliates guarantee the accuracy of the translation.

Neither CFRA nor its affiliates guarantee the accuracy of the translation. The content of this report and the opinions expressed herein are those of CFRA based upon publicly-available information that CFRA believes to be reliable and the opinions are subject to change without notice. This analysis has not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body. While CFRA exercised due care in compiling this analysis, CFRA AND ALL RELATED ENTITIES SPECIFICALLY DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, to the full extent permitted by law, regarding the accuracy, completeness, or usefulness of this information and assumes no liability with respect to the consequences of relying on this information for investment or other purposes.

No content (including ratings, credit-related analyses and data, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse engineered, reproduced or distributed in any form by any means, or stored in a

database or retrieval system, without the prior written permission of CFRA. The Content shall not be used for any unlawful or unauthorized purposes. CFRA and any third-party providers, as well as their directors, officers, shareholders, employees or agents do not guarantee the accuracy, completeness, timeliness or availability of the Content.

Past performance is not necessarily indicative of future results.

This document may contain forward-looking statements or forecasts; such forecasts are not a reliable indicator of future performance.

This report is not intended to, and does not, constitute an offer or solicitation to buy and sell securities or engage in any investment activity. This report is for informational purposes only. Recommendations in this report are not made with respect to any particular investor or type of investor. Securities, financial instruments or strategies mentioned herein may not be suitable for all investors and this material is not intended for any specific investor and does not take into account an investor's particular investment objectives, financial situations or needs. Before acting on any recommendation in this material, you should consider whether it is suitable for your particular circumstances and, if necessary, seek professional advice. CFRA may license certain intellectual property or provide services to, or otherwise have a business relationship with, certain issuers of securities that are the subject of CFRA research reports, including exchange-traded investments whose investment objective is to substantially replicate the returns of a proprietary index of CFRA. In cases where CFRA is paid fees that are tied to the amount of assets invested in a fund or the volume of trading activity in a fund, investment in the fund may result in CFRA receiving compensation in addition to the subscription fees or other compensation for services rendered by CFRA, however, no part of CFRA's compensation for services is tied to any recommendation or rating. Additional information on a subject company may be available upon request.

CFRA's financial data provider is S&P Global Market Intelligence. THIS DOCUMENT CONTAINS COPYRIGHTED AND TRADE SECRET MATERIAL DISTRIBUTED UNDER LICENSE FROM S&P GLOBAL MARKET INTELLIGENCE. FOR RECIPIENT'S INTERNAL USE ONLY.

The Global Industry Classification Standard [GICS®] was developed by and/or is the exclusive property of MSCI, Inc. and S&P Global Market Intelligence. GICS is a service mark of MSCI and S&P Global Market Intelligence and has been licensed for use by CFRA.

Other Disclaimers and Notices

Certain information in this report is provided by S&P Global, Inc. and/or its affiliates and subsidiaries (collectively "S&P Global"). Such information is subject to the following disclaimers and notices: "Copyright @ 2018, S&P Global Market Intelligence (and its affiliates as applicable). All rights reserved. Nothing contained herein is investment advice and a reference to a particular investment or security, a credit rating or any observation concerning a security or investment provided by S&P Global is not a recommendation to buy, sell or hold such investment or security or make any other investment decisions. This may contain information obtained from third parties, including ratings from credit ratings agencies. Reproduction and distribution of S&P Global's information and third party content in any form is prohibited except with the prior written permission of S&P Global or the related third party, as applicable. Neither S&P Global nor its third party providers guarantee the accuracy, completeness, timeliness or availability of any information, including ratings, and are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such information or content. S&P GLOBAL AND ITS THIRD PARTY CONTENT PROVIDERS GIVE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE AND ALL S&P INFORMATION IS PROVIDED ON AN AS-IS BASIS. S&P GLOBAL AND ITS THIRD PARTY CONTENT PROVIDERS SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, EXEMPLARY, COMPENSATORY, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES, COSTS, EXPENSES, LEGAL FEES, OR LOSSES (INCLUDING LOST INCOME OR PROFITS AND OPPORTUNITY COSTS OR LOSSES CAUSED BY NEGLIGENCE] IN CONNECTION WITH ANY USE OF THEIR INFORMATION OR CONTENT, INCLUDING RATINGS. Credit ratings are statements of opinions and are not statements of fact or recommendations to purchase, hold or sell securities. They do not address the suitability of securities or the suitability of securities for investment purposes, and should not be relied

Certain information in this report may be provided by Securities Evaluations, Inc. ["SE"], a wholly owned subsidiary of Intercontinental Exchange. SE is a registered investment adviserwith the United States Securities and Exchange Commission (SEC). SE's advisory services include evaluated pricing and model valuation of fixed income securities, derivative valuations and Odd-Lot Pricing that consists of bid- and ask-side evaluated prices for U.S. Municipal and U.S. Corporate Securities (together called valuation services). Such information is subject to the following disclaimers and notices: "No content (including credit-related analyses and data, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse engineered, reproduced or distributed in any form by any means, or stored in a database or retrieval system, without the prior written permission of SE. The Content shall not be used for any unlawful or unauthorized purposes. SE and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively SE Parties) do not guarantee the accuracy, completeness, timeliness or availability of the Content. SE Parties are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, for the results obtained from the use of the Content, or for the security or maintenance of any data input by the user. The Content is provided on an "as is" basis. SE PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION.



In no event shall SE Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs or losses caused by negligence) in connection with any use of the Content even if advised of the possibility of such damages. Credit-related and other analyses and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact or recommendations to purchase, hold, or sell any securities or to make any investment decisions. SE assumes no obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. SE's opinions and analyses do not address the suitability of any security. SE does not act as a fiduciary or an investment advisor. While SE has obtained information from sources it believes to be reliable, SE does not perform an audit and undertakes no duty of due diligence or independent verification of any information it receives. Valuations services are opinions and not statements of fact or recommendations to purchase, hold or sell any security or instrument, or to make any investment decisions. The information provided as part of valuations services should not be intended as an offer, promotion or solicitation for the purchase or sale of any security or other financial instrument nor should it be considered investment advice. Valuations services do not address the suitability of any security or instrument, and securities, financial instruments or strategies mentioned by SE may not be suitable for all investors. SE does not provide legal, accounting or tax advice, and clients and potential clients of valuation services should consult with an attorney and/or a tax or accounting professional regarding any specific legal, tax or accounting provision(s) applicable to their particular situations and in the countries and jurisdictions where they do business. SE has redistribution relationships that reflect evaluated pricing, derivative valuation and/or equity pricing services of other unaffiliated firms with which SE has contracted to distribute to its client base. Pricing and data provided by these third-party firms are the responsibilities of those firms, and not SE, and are produced under those firms' methodologies, policies and procedures. Valuations services provided by SE and products containing valuations services may not be available in all countries or jurisdictions. Copyright © 2018 by Intercontinental Exchange Inc. All rights reserved.'

Any portions of the fund information contained in this report supplied by Lipper, A Thomson Reuters Company, are subject to the following: "Copyright © 2018 Thomson Reuters. All rights reserved. Lipper shall not be liable for any errors or delays in the content, or for any actions taken in reliance thereon."

For residents of the European Union/European Economic Area:

Research reports are originally distributed by CFRA UK Limited (company number 08456139 registered in England & Wales with its registered office address at 1P0 Box 698, Titchfield House, 69-85 Tabernacle Street, London, EC2A 4RR, United Kingdom). CFRA UK Limited is regulated by the UK Financial Conduct Authority (No. 775151).

For residents of Malaysia:

Research reports are originally produced and distributed by CFRA MY Sdn Bhd [Company No. 683377-A] [formerly known as Standard & Poor's Malaysia Sdn. Bhd] ["CFRA Malaysia"], a wholly-owned subsidiary of CFRA US. CFRA Malaysia is regulated by Securities Commission Malaysia [License No. CMSL/A0181/2007].

For residents of all other countries:

Research reports are originally distributed Accounting Research & Analytics, LLC d/b/a CFRA.

For Recipients in Canada:

This report is not prepared subject to Canadian disclosure requirements and may not be suitable for Canadian investors.

Copyright © 2021 CFRA. All rights reserved. CFRA and STARS are registered trademarks of CFRA.