

This material is neither intended to be distributed to Mainland China investors nor to provide securities investment consultancy services within the territory of Mainland China. This material or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.

# **Apple**

Moderate Estimates for iPhone SE with Higher Consumer Headwinds; Market Share to Drive Resilience; Maintain \$210 PT

We have recently taken a more cautious view on the consumer spending outlook, including moderating our growth forecasts for the smartphone market, which is already limiting the upside we had expected from the launch of the iPhone SE3 and will likely limit the magnitude of upside to iPhone 13 as well as App Store revenue in Services. Thus, we are trimming our earnings forecasts for Apple, led by a modest haircut to our revenue growth estimates for iPhone (primarily iPhone SE) and Services, although the overall reduction in estimates is fairly modest given the resilience of high-end smartphones, tablets and laptops to the broader slowdown in consumer spending. The reduction in estimates from what were above consensus (and bullish) expectations for iPhone revenue growth is now bringing us largely in line with consensus forecasts for FY22. However, we remain above consensus expectations for FY23 and FY24, led by our forecasts for better than expected growth in Products as well as margin and earnings trajectory on the back of robust growth in Services. Our positive view on the shares long term leads us to maintain our Overweight rating and Dec-22 price target of \$210.

- Lower iPhone unit outlook modestly, led by iPhone SE3. We are modestly lowering our street-high iPhone volume outlook for CY22 to 245 mn, relative to prior estimate for 250 mn, with our estimates for iPhone SE3 moving to 24 mn relative to 30 mn prior. Our estimates for iPhone 13 remain largely intact as we expect the combination of recent color variant launches as well as a higher than typical inventory level in the channel against the backdrop of existing supply chain constraints to provide offsets to lower customer spending.
- Services momentum slowing on tough comparables as well as slowing consumer spending on App Store. Gross app store revenue, new downloads, as well as gaming revenue worsened in relation to y/y growth trends in C1Q22, which while partly on account of tough comparables is also the first q/q sequential moderation in gross revenue since C4Q19. We expect the slower engagement on the App Store to limit Services revenue growth in the +15%-20% y/y range in FY22 and thus we lower our estimates on our expectations for more modest sequential growth in Service revenues through the fiscal year.
- Despite increasing headwinds on consumer spending, Apple should drive offsets through market share increases; maintain Dec-22 PT of \$210. Even as our concerns regarding consumer spending momentum have increased in recent months, leading to a downward revision in our unit outlook for the Smartphone market (see report <a href="here">here</a>), as well as the PC market (see report <a href="here">here</a>), we continue to see Apple well positioned to deliver resilient performance in Product revenue growth, led by share gains across the different categories of hardware products as both Enterprises and Consumers increasingly adopt higher-performance devices. The offsets and the expected resilience lead us to maintain our Dec-22 price target of \$210.

## Overweight

AAPL, AAPL US

Price (06 Apr 22): \$171.83

Price Target (Dec-22): \$210.00

#### Telecom & Networking Equipment/IT Hardware

Samik Chatteriee, CFA AC

(1-212) 622 0798

samik.x.chatterjee@jpmorgan.com

J.P. Morgan Securities LLC

#### Joseph Cardoso

(1-212) 622-9036

joseph.cardoso@jpmchase.com

J.P. Morgan Securities LLC

#### Angela Jin

(1-212) 622-0514

angela.jin@jpmchase.com

J.P. Morgan Securities LLC

#### Manmohanpreet Singh

(91-22) 6157-5197

manmohanpreet.singh@jpmchase.com

J.P. Morgan India Private Limited

Key Changes (FYE Sep)									
	Prev	Cur							
Adj. EPS - 22E (\$)	6.20	6.15							
Adj. EPS - 23E (\$)	6.85	6.80							
Revenue - 22E (\$ mn)	397,811	396,159							
Revenue - 23E (\$ mn)	427,290	425,527							

## Quarterly Forecasts (FYE Sep)

~			r,
Adj. EPS (\$)			
	2021A	2022E	2023E
Q1	1.68	2.10A	2.16
Q2	1.40	1.48	1.42
Q3	1.30	1.23	1.47
Q4	1.24	1.34	1.75
FY	5.61	6 15	6.80

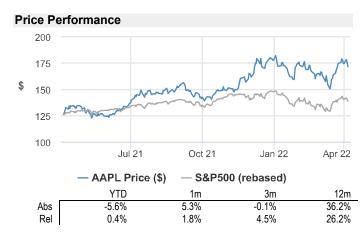
#### Style Exposure

Quant	Current	Hist %Rank (1=Top)								
Factors	%Rank	6M	1Y	<b>3Y</b>	5Y					
Value	67	58	65	60	66					
Growth	73	71	68	76	86					
Momentum	18	41	75	85	68					
Quality	1	1	1	3	4					
Low Vol	9	14	12	20	11					
ESGQ	12	86	94	96	85					

Sources for: Style Exposure - J.P. Morgan Quantitative and Derivatives Strategy; all other tables are company data and J.P. Morgan estimates.

#### See page 7 for analyst certification and important disclosures, including non-US analyst disclosures.

J.P. Morgan does and seeks to do business with companies covered in its research reports. As a result, 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 feater in making their investment decision.



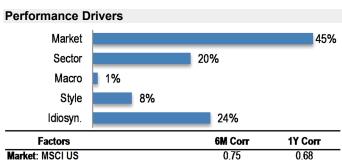
Company Data	
Shares O/S (mn)	16,519
52-week range (\$)	182.94-122.25
Market cap (\$ mn)	2,838,510.00
Exchange rate	1.00
Free float(%)	94.5%
3M - Avg daily vol (mn)	94.35
3M - Avg daily val (\$ mn)	15,788.5
Volatility (90 Day)	31
Index	S&P 500
BBG BUY HOLD SELL	38 9 1

Key Metrics (FYE Sep)				
\$ in millions	FY21A	FY22E	FY23E	FY24E
Financial Estimates				
Revenue	365,817	396,159	425,527	455,124
Adj. EBIT	108,949	119,697	128,269	138,032
Adj. EBITDA	120,233	134,769	146,899	157,944
Adj. net income	94,680	100,279	107,497	115,443
Adj. EPS	5.61	6.15	6.80	7.50
BBG EPS	5.58	6.16	6.56	6.90
Cashflow from operations	104,038	121,475	147,436	141,662
FCFF	92,953	111,867	136,798	130,284
Margins and Growth				
Revenue growth	33.3%	8.3%	7.4%	7.0%
EBIT margin	29.8%	30.2%	30.1%	30.3%
EBIT growth	64.4%	9.9%	7.2%	7.6%
EBITDA margin	32.9%	34.0%	34.5%	34.7%
EBITDA growth	55.5%	12.1%	9.0%	7.5%
Net margin	25.9%	25.3%	25.3%	25.4%
Adj. EPS growth	71.6%	9.7%	10.6%	10.3%
Ratios				
Adj. tax rate	13.3%	15.7%	15.8%	16.0%
Interest cover	-	-	-	-
Net debt/Equity	1.4	1.3	0.6	0.1
Net debt/EBITDA	0.7	0.6	0.3	0.1
ROE	147.4%	154.7%	148.1%	130.6%
Valuation				
FCFF yield	3.2%	4.0%	5.0%	4.9%
Dividend yield	-	-	-	-
EV/Revenue	7.5	6.9	6.4	6.0
EV/EBITDA	22.8	20.3	18.6	17.3
Adj. P/E	30.6	27.9	25.3	22.9

#### **Summary Investment Thesis and Valuation**

We rate AAPL shares Overweight given our favorable outlook on iPhone and Services revenues relative to investor expectations, catalysts to accelerate revenue growth, and upside risk to our base forecast for +10% earnings CAGR. We see upside on several aspects of the business as well as financials that remain underappreciated by investors, namely the transformation of the company to Services, growth in the installed base, technology leadership, and optionality around capital deployment – all of which together lead us to expect double-digit earnings growth and a modest re-rating for the shares.

Our December 2022 price target of \$210 is based on a P/E multiple of ~30x on our CY23 earnings estimate of \$6.98. Apple shares have traded closer to 30x P/E following the rerating on account of Services growth as well as expectations of better execution on the product cycle, which we expect to be a multiple investors are willing to return to attributing to the shares, with beats driven by more sustainable secular drivers in iPhone and Services with a larger installed base, higher share in 5G smartphones, and better Services monetization – all together turning out to be a strategic advantage for the company.



6M Corr	1Y Corr
0.75	0.68
0.57	0.61
0.99	0.99
-0.19	-0.28
-0.19	-0.26
-0.01	-0.22
0.45	0.47
0.58	0.43
0.44	0.33
	0.75 0.57 0.99 -0.19 -0.19 -0.01 0.45 0.58

## Investment Thesis, Valuation and Risks

### Apple Inc. (Overweight; Price Target: \$210.00)

#### **Investment Thesis**

We rate AAPL shares Overweight given our favorable outlook on iPhone and Services revenues relative to investor expectations, catalysts to accelerate revenue growth, and upside risk to our base forecast for +10% earnings CAGR. We see upside on several aspects of the business as well as financials that remain underappreciated by investors, namely the transformation of the company to Services, growth in the installed base, technology leadership, and optionality around capital deployment – all of which together lead us to expect double-digit earnings growth and a modest re-rating for the shares.

#### Valuation

Our December 2022 price target of \$210 is based on a P/E multiple of ~30x on our CY23 earnings estimate of \$6.98. Apple shares have traded closer to 30x P/E following the re-rating on account of Services growth as well as expectations of better execution on the product cycle, which we expect to be a multiple investors are willing to return to attributing to the shares, with beats driven by more sustainable secular drivers in iPhone and Services with a larger installed base, higher share in 5G smartphones, and better Services monetization – all together turning out to be a strategic advantage for the company.

## **AAPL P/E-Based Price Target Analysis**

\$ in Millions, except per share amounts

	MTM	
	Qtrs 1-4	CY23E
JPM Net Income	100,108	109,331
JPM EPS	\$6.21	\$6.98
P/E Multiple	28x	
JPM P/E Multiple		30x
Total Equity Value	2,838,510	3,290,869
Average Diluted Share Count	16,519.3	15,535.0
Implied Share Price	\$171.8	\$210.0
Current Value per Share	\$171.83	\$171.83
Upside vs. Current		22%
Memo:		
(-) Net Cash/(Debt)	79,798	105,633
Enterprise Value	2,758,712	3,185,236
JPM EBITDA	135,922	149,518
Implied EV/EBITDA	20.3x	21.3x

Source: J.P. Morgan estimates.

#### Risks to Rating and Price Target

Industry Downside Risks

Deceleration or contraction in the handset and smartphone market could be faster than expected. Economic conditions or shifting consumer demand could cause greater-than-expected deceleration or contraction in the handset and smartphone markets. This would negatively impact Apple's prospects for growth, and the shares may fail to achieve our price target as a result.

Increase in competitive pressures in international markets. Apple is increasingly participating in international markets, such as China and India, where local players, which are better situated, could leverage their position, and pull on levers such as pricing to make the market more competitive. In addition, tariffs enacted by local governments may further hurt Apple's ability to compete effectively in international markets.

Company-Specific Downside Risks

Investment in new business strategies and acquisitions could be fruitless. Apple has historically invested in new business strategies and acquisitions. As such, success on these investments has low visibility at this time and could lead to greater-than-expected liabilities and expense. Additionally, new investments could have a negative impact on current operations by distracting management.

Key man risk around departure of chief executive officer. While risks related to departure of management executives appear considerably lower relative to the past, we believe the execution on strategic priorities under CEO Tim Cook's leadership still present modest risk to the share price, although we see a strong group of executives to support business performance without disruptions.

J.P.Morgan North America Equity Research (1-212) 622 0798 samik.x.chatterjee@jpmorgan.com 07 April 2022

**Table 1: Apple Summary Table** 

Samik Chatterjee, CFA

\$ in Millions

Sep Fiscal Year End	2020	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q22E	3Q22E	4Q22E	2022E	1Q23E	2Q23E	3Q23E	4Q23E	2023E
iPhone Units	190	81	60	50	51	241	85	60	53	52	250	80	53	53	63	248
iPhone Revenue	137,781	65,597	47,938	39,570	38,868	191,973	71,628	48,649	37,508	40,074	197,860	66,555	41,699	41,699	50,902	200,854
iPad revenue	23,724	8,435	7,807	7,368	8,252	31,862	7,248	8,656	8,417	7,843	32,164	7,643	8,741	8,666	7,920	32,970
Mac revenue	28,622	8,675	9,102	8,235	9,178	35,190	10,852	9,944	9,338	10,766	40,900	10,966	10,295	9,668	11,146	42,075
Wearables Revenue	30,620	12,971	7,836	8,775	8,785	38,367	14,701	8,708	9,748	9,813	42,971	16,925	9,878	11,121	11,287	49,211
Services Revenue	53,768	15,761	16,901	17,486	18,277	68,425	19,516	20,075	20,769	21,904	82,264	24,113	24,411	25,256	26,637	100,417
Revenue	274,515	111,439	89,584	81,434	83,360	365,817	123,945	96,032	85,782	90,401	396,159	126,202	95,024	96,411	107,890	425,527
% chg y/y	5.5%	21.4%	53.6%	36.4%	28.8%	33.3%	11.2%	7.2%	5.3%	8.4%	8.3%	1.8%	-1.0%	12.4%	19.3%	7.4%
Product GM	31.5%	35.1%	36.1%	36.0%	34.3%	35.3%	38.4%	35.4%	33.1%	33.4%	35.5%	36.6%	33.0%	33.2%	34.2%	34.5%
Services GM	66.0%	68.4%	70.1%	69.8%	70.5%	69.7%	72.4%	72.5%	72.0%	72.0%	72.2%	73.5%	73.0%	72.5%	72.5%	72.9%
Gross Margin	38.2%	39.8%	42.5%	43.3%	42.2%	41.8%	43.8%	43.2%	42.5%	42.8%	43.1%	43.7%	43.3%	43.5%	43.6%	43.5%
Opex	38,668	10,794	10,576	11,129	11,388	43,887	12,755	12,580	12,696	13,108	51,139	14,014	14,211	14,266	14,506	56,996
Opex as % of sales	14.1%	9.7%	11.8%	13.7%	13.7%	12.0%	10.3%	13.1%	14.8%	14.5%	12.9%	11.1%	15.0%	14.8%	13.4%	13.4%
Operating Income (COI)	66,288	33,534	27,503	24,126	23,786	108,949	41,488	28,867	23,768	25,574	119,697	41,075	26,938	27,671	32,584	128,269
operating margin	24.1%	30.1%	30.7%	29.6%	28.5%	29.8%	33.5%	30.1%	27.7%	28.3%	30.2%	32.5%	28.3%	28.7%	30.2%	30.1%
Net Income	57,411	28,755	23,630	21,744	20,551	94,680	34,630	24,208	19,957	21,484	100,279	34,459	22,556	23,173	27,310	107,497
Diluted EPS	\$3.27	\$1.68	\$1.40	\$1.30	\$1.24	\$5.61	\$2.10	\$1.48	\$1.23	\$1.34	\$6.15	\$2.16	\$1.42	\$1.47	\$1.75	\$6.80
Diluted Shares (avg.)	17,574	17,114	16,929	16,782	16,635	16,886	16,519	16,312	16,195	16,079	16,309	15,966	15,855	15,746	15,640	15,811
Cash	193,603	195,571	205,913	193,644	190,516	190,516	202,596	209,473	205,696	199,232	199,232	200,842	224,393	235,478	240,698	240,698
Debt	112,436	112,043	121,645	121,791	124,719	124,719	122,798	122,798	122,798	122,798	122,798	122,798	122,798	122,798	122,798	122,798
Net Debt	(81,167)	(83,528)	(84,268)	(71,853)	(65,797)	(65,797)	(79,798)	(86,675)	(82,898)	(76,434)	(76,434)	(78,044)	(101,595)	(112,680)	(117,900)	(117,900)
Net Leverage	-1.0x	-1.0x	-0.8x	-0.6x	-0.5x	-0.5x	-0.6x	-0.7x	-0.6x	-0.6x	-0.6x	-0.6x	-0.8x	-0.8x	-0.8x	-0.8x
Operating Cash Flow	80,674	38,763	23,981	21,094	20,200	104,038	46,966	32,833	22,137	19,539	121,475	28,481	49,617	37,472	31,867	147,436
Capital Expenditures	(7,309)	(3,500)	(2,269)	(2,093)	(3,223)	(11,085)	(2,803)	(2,401)	(2,145)	(2,260)	(9,608)	(3,155)	(2,376)	(2,410)	(2,697)	(10,638)
Free Cash Flow	73,365	35,263	21,712	19,001	16,977	92,953	44,163	30,432	19,992	17,279	111,867	25,326	47,241	35,062	29,170	136,798
Dividends	(14,081)	(3,613)	(3,447)	(3,767)	(3,640)	(14,467)	(3,732)	(3,555)	(3,770)	(3,743)	(14,800)	(3,716)	(3,690)	(3,976)	(3,949)	(15,332)
Share repurchases	(72,358)	(24,775)	(18,548)	(22,900)	(19,748)	(85,971)	(20,478)	(20,000)	(20,000)	(20,000)	(80,478)	(20,000)	(20,000)	(20,000)	(20,000)	(80,000)

Source: Company Reports and J.P. Morgan estimates.

# **Apple: Summary of Financials**

Income Statement - Annual	FY20A	FY21A	FY22E	FY23E	FY24E	Income Statement - Quarterly	1Q22A	2Q22E	3Q22E	4Q22E
Revenue		365,817			455,124	Revenue	123,945A			
COGS		(212,981)				COGS	(69,702)A		<u> </u>	<del></del>
Gross profit	104,956	152,836	,	185,265	199,818	Gross profit	54,243A	,		
SG&A	(19,916)	(21,973)	(25,558)	(27,260)	(28,630)	SG&A	(6,449)A	(6,338)	(6,262)	(6,509)
Adj. EBITDA	77,344	120,233	134,769	146,899	157,944	Adj. EBITDA	44,185A	33,246	27,823	29,515
D&A	(11,056)	(11,284)	(15,072)	(18,630)	(19,913)	D&A	(2,697)A		(4,055)	(3,941)
Adj. EBIT	66,288	108,949	119,697	128,269	138,032	Adj. EBIT	41,488A	28,867	23,768	25,574
Net Interest		400.007	- 440 000	- 407.000		Net Interest	44.0444			
Adj. PBT	67,091	109,207	119,000	127,669	137,432	Adj. PBT	41,241A	,		
Tax	(9,680)	(14,527)	(18,721)	(20,172)	, , ,	Tax	(6,611)A	(4,509)	(3,661)	(3,941)
Minority Interest			-	- 407 407		Minority Interest	04.0004	-	40.057	
Adj. Net Income	57,411	94,680	100,279	107,497	115,443	Adj. Net Income	34,630A	,	19,957	-
Reported EPS	3.27	5.61	6.15	6.80	7.50	Reported EPS	2.10A	1.48	1.23	1.34
Adj. EPS	3.27	5.61	6.15	6.80	7.50	Adj. EPS	2.10A	1.48	1.23	1.34
DPS	•	•	-	-	-	DPS	-	-	-	•
Payout ratio	-	-	-	-	-	Payout ratio	40 = 40 4	-	-	-
Shares outstanding	17,574	16,886	16,309	15,811	15,391	Shares outstanding	16,519A	16,312		
Balance Sheet & Cash Flow Statement	FY20A	FY21A	FY22E	FY23E	FY24E	Ratio Analysis FY20		FY22E	FY23E	FY24E
Cash and cash equivalents	39,789	34,940	35,266	76,732	110,941	Gross margin 38.2		43.1%	43.5%	43.9%
Accounts receivable	16,120	26,278	34,151	35,963	38,013	EBITDA margin 28.2		34.0%	34.5%	34.7%
Inventories	4,061	6,580	15,516	18,240	18,969	EBIT margin 24.1		30.2%	30.1%	30.3%
Other current assets	83,743	67,038	79,946	79,946	79,946	Net profit margin 20.9	% 25.9%	25.3%	25.3%	25.4%
Current assets	143,713	134,836	164,879	210,882	247,869					
PP&E	36,766	39,440	33,675	25,683	17,148	ROE 73.7		154.7%	148.1%	
LT investments	100,887	127,877	137,172	137,172	137,172	ROA 17.3		27.2%	26.6%	26.4%
Other non current assets	42,522	48,849	50,109	50,109	50,109	ROCE 30.1		53.5%	55.3%	54.9%
Total assets	323,888	351,002	385,835	423,846	452,298	SG&A/Sales 7.3	% 6.0%	6.5%	6.4%	6.3%
						Net debt/equity 1	.1 1.4	1.3	0.6	0.1
Short term borrowings	13,769	15,613	16,169	16,169	16,169					
Payables	42,296	54,763	70,312	83,915	88,696	P/E (x) 52	.6 30.6	27.9	25.3	22.9
Other short term liabilities	49,327	55,105	71,157	83,399	87,703	P/BV (x) 46	.2 46.0	42.1	34.5	27.0
Current liabilities	105,392	125,481	157,637	183,483	192,568	EV/EBITDA (x) 35	.4 22.8	20.3	18.6	17.3
Long-term debt	98,667	109,106	106,629	106,629	106,629	Dividend Yield		-	-	-
Other long term liabilities	54,490	53,325	55,056	55,056	55,056					
Total liabilities	258,549	287,912	319,322	345,168	354,253	Sales/Assets (x) 0	.8 1.1	1.1	1.1	1.0
Shareholders' equity	65,339	63,090	66,513	78,678	98,045	Interest cover (x)		-	-	-
Minority interests		-	-	-	-	Operating leverage 66.9	% 193.5%	118.9%	96.6%	109.4%
Total liabilities & equity	323,888	351,002	385,835	423,846	452,298					
BVPS	3.72	3.74	4.08	4.98	6.37	Revenue y/y Growth 5.5	% 33.3%	8.3%	7.4%	7.0%
y/y Growth	(23.4%)	0.5%	9.2%	22.0%	28.0%	EBITDA y/y Growth 1.1		12.1%	9.0%	7.5%
Net debt/(cash)	72,647	89,779	87,532	46,066	11,857	Tax rate 14.4		15.7%	15.8%	16.0%
	,	,	,	,	,	Adj. Net Income y/y Growth 3.9		5.9%	7.2%	7.4%
Cash flow from operating activities	80,674	104,038	121,475	147,436	141,662	EPS y/y Growth 10.2		9.7%	10.6%	10.3%
o/w Depreciation & amortization	11,056	11,284	15,072	18,630	19,913	DPS y/y Growth		-		
o/w Changes in working capital	5,690	(4,911)	3,010	21,309	6,307	- 1.1				
Cash flow from investing activities					,					
o/w Capital expenditure		(11,085)		(10,638)						
as % of sales	2.7%	3.0%	2.4%	2.5%	2.5%					
Cash flow from financing activities	(86,694)		(99,166)	(95,332)	(96,076)					
o/w Dividends paid	(14,081)		(14,800)	(15,332)	(16,076)					
o/w Net debt issued/(repaid)	2,499	12,665	(1,000)	(15,552)	(10,070)					
	(10,309)	(3,731)	(602)	-	34,209					
Net change in cash				41,466						
Adj. Free cash flow to firm	73,365	92,953		136,798	130,284					
y/y Growth	24.6%	26.7%	20.3%	22.3%	(4.8%)					

Source: Company reports and J.P. Morgan estimates.

Note: \$ in millions (except per-share data). Fiscal year ends Sep. o/w - out of which

Analyst Certification: The Research Analyst(s) denoted by an "AC" on the cover of this report certifies (or, where multiple Research Analysts are primarily responsible for this report, the Research Analyst denoted by an "AC" on the cover or within the document individually certifies, with respect to each security or issuer that the Research Analyst covers in this research) that: (1) all of the views expressed in this report accurately reflect the Research Analyst's personal views about any and all of the subject securities or issuers; and (2) no part of any of the Research Analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the Research Analyst(s) in this report. For all Korea-based Research Analysts listed on the front cover, if applicable, they also certify, as per KOFIA requirements, that the Research Analyst's analysis was made in good faith and that the views reflect the Research Analyst's own opinion, without undue influence or intervention.

All authors named within this report are Research Analysts unless otherwise specified. In Europe, Sector Specialists (Sales and Trading) may be shown on this report as contacts but are not authors of the report or part of the Research Department.

#### **Important Disclosures**

- Market Maker: J.P. Morgan Securities LLC makes a market in the securities of Apple.
- Market Maker/Liquidity Provider: J.P. Morgan is a market maker and/or liquidity provider in the financial instruments of/related to Apple.
- Manager or Co-manager: J.P. Morgan acted as manager or co-manager in a public offering of securities or financial instruments (as such term is defined in Directive 2014/65/EU) of/for Apple within the past 12 months.
- Analyst Position: An analyst on the Equity or Credit coverage team, non-fundamental analyst who may produce trade recommendations, or a member of their respective household(s) has a financial interest in the debt or equity securities of Apple.
- Client: J.P. Morgan currently has, or had within the past 12 months, the following entity(ies) as clients: Apple.
- Client/Investment Banking: J.P. Morgan currently has, or had within the past 12 months, the following entity(ies) as investment banking clients: Apple.
- Client/Non-Investment Banking, Securities-Related: J.P. Morgan currently has, or had within the past 12 months, the following entity(ies) as clients, and the services provided were non-investment-banking, securities-related: Apple.
- Client/Non-Securities-Related: J.P. Morgan currently has, or had within the past 12 months, the following entity(ies) as clients, and the services provided were non-securities-related: Apple.
- Investment Banking Compensation Received: J.P. Morgan has received in the past 12 months compensation for investment banking services from Apple.
- **Potential Investment Banking Compensation:** J.P. Morgan expects to receive, or intends to seek, compensation for investment banking services in the next three months from Apple.
- Non-Investment Banking Compensation Received: J.P. Morgan has received compensation in the past 12 months for products or services other than investment banking from Apple.
- **Debt Position:** J.P. Morgan may hold a position in the debt securities of Apple, if any.

Company-Specific Disclosures: Important disclosures, including price charts and credit opinion history tables, are available for compendium reports and all J.P. Morgan—covered companies, and certain non-covered companies, by visiting <a href="https://www.jpmm.com/research/disclosures">https://www.jpmm.com/research/disclosures</a>, calling 1-800-477-0406, or e-mailing <a href="mailing-research.disclosure.inquiries@jpmorgan.com">research.disclosure.inquiries@jpmorgan.com</a> with your request.



The chart(s) show J.P. Morgan's continuing coverage of the stocks; the current analysts may or may not have covered it over the entire period.

J.P. Morgan ratings or designations: OW = Overweight, N= Neutral, UW = Underweight, NR = Not Rated

#### Explanation of Equity Research Ratings, Designations and Analyst(s) Coverage Universe:

J.P. Morgan uses the following rating system: Overweight [Over the next six to twelve months, we expect this stock will outperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Neutral [Over the next six to twelve months, we expect this stock will perform in line with the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Underweight [Over the next six to twelve months, we expect this stock will underperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Not Rated (NR): J.P. Morgan has removed the rating and, if applicable, the price target, for this stock because of either a lack of a sufficient fundamental basis or for legal, regulatory or policy reasons. The previous rating and, if applicable, the price target, no longer should be relied upon. An NR designation is not a recommendation or a rating. In our Asia (ex-Australia and ex-India) and U.K. small- and mid-cap equity research, each stock's expected total return is compared to the expected total return of a benchmark country market index, not to those analysts' coverage universe. If it does not appear in the Important Disclosures section of this report, the certifying analyst's coverage universe can be found on J.P. Morgan's research website, <a href="https://www.jpmorganmarkets.com">https://www.jpmorganmarkets.com</a>.

Coverage Universe: Chatterjee, Samik: Amphenol (APH), Apple (AAPL), Arista (ANET), Avaya (AVYA), CDW (CDW), Cambium Networks (CMBM), Ciena (CIEN), Cisco (CSCO), CommScope (COMM), Corning (GLW), Dell Technologies (DELL), F5 Inc (FFIV), Fabrinet (FN), HP Inc (HPQ), Hewlett Packard Enterprise (HPE), II-VI (IIVI), Infinera (INFN), Juniper Networks (JNPR), Keysight Technologies (KEYS), Lumentum (LITE), National Instruments (NATI), NetApp, Inc. (NTAP), Qualcomm (QCOM), Sensata (ST), TE Connectivity (TEL), Viavi Solutions (VIAV), Wolfspeed Inc (WOLF), Xerox Holdings Corp (XRX)

#### J.P. Morgan Equity Research Ratings Distribution, as of April 02, 2022

	Overweight	Neutral	Underweight
	(buy)	(hold)	(sell)
J.P. Morgan Global Equity Research Coverage*	51%	37%	12%
IB clients**	52%	47%	36%
JPMS Equity Research Coverage*	51%	37%	12%
IB clients**	75%	68%	51%

<sup>\*</sup>Please note that the percentages might not add to 100% because of rounding.

For purposes only of FINRA ratings distribution rules, our Overweight rating falls into a buy rating category; our Neutral rating falls into a hold rating category; and our Underweight rating falls into a sell rating category. Please note that stocks with an NR designation are not included in the table above. This information is current as of the end of the most recent calendar quarter.

Equity Valuation and Risks: For valuation methodology and risks associated with covered companies or price targets for covered companies, please see the most recent company-specific research report at <a href="http://www.jpmorganmarkets.com">http://www.jpmorganmarkets.com</a>, contact the primary analyst or your J.P. Morgan representative, or email <a href="research.disclosure.inquiries@jpmorgan.com">research.disclosure.inquiries@jpmorgan.com</a>. For material information about the proprietary models used, please see the Summary of Financials in company-specific research reports and the Company Tearsheets, which are available to download on the company pages of our client website, <a href="http://www.jpmorganmarkets.com">http://www.jpmorganmarkets.com</a>. This report also sets out within it the material underlying assumptions used.

A history of J.P. Morgan investment recommendations disseminated during the preceding 12 months can be accessed on the Research & Commentary page of <a href="http://www.jpmorganmarkets.com">http://www.jpmorganmarkets.com</a> where you can also search by analyst name, sector or financial instrument.

**Analysts' Compensation:** The research analysts responsible for the preparation of this report receive compensation based upon various factors, including the quality and accuracy of research, client feedback, competitive factors, and overall firm revenues.

**Registration of non-US Analysts:** Unless otherwise noted, the non-US analysts listed on the front of this report are employees of non-US affiliates of J.P. Morgan Securities LLC, may not be registered as research analysts under FINRA rules, may not be associated persons of J.P. Morgan Securities LLC, and may not be subject to FINRA Rule 2241 or 2242 restrictions on communications with covered companies, public appearances, and trading securities held by a research analyst account.

#### **Other Disclosures**

J.P. Morgan is a marketing name for investment banking businesses of JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide.

**UK MIFID FICC research unbundling exemption:** UK clients should refer to <u>UK MIFID Research Unbundling exemption</u> for details of JPMorgan's implementation of the FICC research exemption and guidance on relevant FICC research categorisation.

All research material made available to clients are simultaneously available on our client website, J.P. Morgan Markets, unless specifically permitted by relevant laws. Not all research content is redistributed, e-mailed or made available to third-party aggregators. For all research material available on a particular stock, please contact your sales representative.

Any long form nomenclature for references to China; Hong Kong; Taiwan; and Macau within this research material are Mainland China; Hong Kong SAR (China); Taiwan (China); and Macau SAR (China).

J.P. Morgan Research may, from time to time, write on issuers or securities targeted by economic or financial sanctions imposed or administered by the governmental authorities of the U.S., EU, UK or other relevant jurisdictions (Sanctioned Securities). Nothing in this report is intended to be read or construed as encouraging, facilitating, promoting or otherwise approving investment or dealing in such Sanctioned Securities. Clients should be aware of their own legal and compliance obligations when making investment decisions.

Options and Futures related research: If the information contained herein regards options- or futures-related research, such information is available only to persons who have received the proper options or futures risk disclosure documents. Please contact your J.P. Morgan Representative or visit <a href="https://www.theocc.com/components/docs/riskstoc.pdf">https://www.theocc.com/components/docs/riskstoc.pdf</a> for a copy of the Option Clearing Corporation's Characteristics and Risks of Standardized Options or

http://www.finra.org/sites/default/files/Security\_Futures\_Risk\_Disclosure\_Statement\_2018.pdf for a copy of the Security Futures Risk Disclosure Statement.

<sup>\*\*</sup>Percentage of subject companies within each of the "buy," "hold" and "sell" categories for which J.P. Morgan has provided investment banking services within the previous 12 months.

Changes to Interbank Offered Rates (IBORs) and other benchmark rates: Certain interest rate benchmarks are, or may in the future become, subject to ongoing international, national and other regulatory guidance, reform and proposals for reform. For more information, please consult: <a href="https://www.jpmorgan.com/global/disclosures/interbank">https://www.jpmorgan.com/global/disclosures/interbank</a> offered rates

**Private Bank Clients:** Where you are receiving research as a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is provided to you by J.P. Morgan Private Bank and not by any other division of J.P. Morgan, including, but not limited to, the J.P. Morgan Corporate and Investment Bank and its Global Research division.

Legal entity responsible for the production and distribution of research: The legal entity identified below the name of the Reg AC Research Analyst who authored this material is the legal entity responsible for the production of this research. Where multiple Reg AC Research Analysts authored this material with different legal entities identified below their names, these legal entities are jointly responsible for the production of this research. Research Analysts from various J.P. Morgan affiliates may have contributed to the production of this material but may not be licensed to carry out regulated activities in your jurisdiction (and do not hold themselves out as being able to do so). Unless otherwise stated below, this material has been distributed by the legal entity responsible for production. If you have any queries, please contact the relevant Research Analyst in your jurisdiction or the entity in your jurisdiction that has distributed this research material.

#### Legal Entities Disclosures and Country-/Region-Specific Disclosures:

Argentina: JPMorgan Chase Bank N.A Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA"-Central Bank of Argentina) and Comisión Nacional de Valores ("CNV"- Argentinian Securities Commission" - ALYC y AN Integral N°51). Australia: J.P. Morgan Securities Australia Limited ("JPMSAL") (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by the Australian Securities and Investments Commission and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. This material is issued and distributed in Australia by or on behalf of JPMSAL only to "wholesale clients" (as defined in section 761G of the Corporations Act 2001). A list of all financial products covered can be found by visiting https://www.jpmm.com/research/disclosures. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all Global Industry Classification Standard (GICS) sectors, as well as across a range of market capitalisation sizes. If applicable, in the course of conducting public side due diligence on the subject company(ies), the Research Analyst team may at times perform such diligence through corporate engagements such as site visits, discussions with company representatives, management presentations, etc. Research issued by JPMSAL has been prepared in accordance with J.P. Morgan Australia's Research Independence Policy which can be found at the following link: J.P. Morgan Australia - Research Independence Policy. Brazil: Banco J.P. Morgan S.A. is regulated by the Comissao de Valores Mobiliarios (CVM) and by the Central Bank of Brazil. Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com. Canada: J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Investment Industry Regulatory Organization of Canada and the Ontario Securities Commission and is the participating member on Canadian exchanges. This material is distributed in Canada by or on behalf of J.P.Morgan Securities Canada Inc. Chile: Inversiones J.P. Morgan Limitada is an unregulated entity incorporated in Chile. China: J.P. Morgan Securities (China) Company Limited has been approved by CSRC to conduct the securities investment consultancy business. Dubai International Financial Centre (DIFC): JPMorgan Chase Bank, N.A., Dubai Branch is regulated by the Dubai Financial Services Authority (DFSA) and its registered address is Dubai International Financial Centre - The Gate, West Wing, Level 3 and 9 PO Box 506551, Dubai, UAE. This material has been distributed by JP Morgan Chase Bank, N.A., Dubai Branch to persons regarded as professional clients or market counterparties as defined under the DFSA rules. European Economic Area (EEA): Unless specified to the contrary, research is distributed in the EEA by J.P. Morgan SE ("JPM SE"), which is subject to prudential supervision by the European Central Bank ("ECB") in cooperation with BaFin and Deutsche Bundesbank in Germany. JPM SE is a company headquartered in Frankfurt with registered address at TaunusTurm, Taunustor 1, Frankfurt am Main, 60310, Germany. The material has been distributed in the EEA to persons regarded as professional investors (or equivalent) pursuant to Art. 4 para. 1 no. 10 and Annex II of MiFID II and its respective implementation in their home jurisdictions ("EEA professional investors"). This material must not be acted on or relied on by persons who are not EEA professional investors. Any investment or investment activity to which this material relates is only available to EEA relevant persons and will be engaged in only with EEA relevant persons. Hong Kong: J.P. Morgan Securities (Asia Pacific) Limited (CE number AAJ321) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission in Hong Kong, and J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by the Securities and Futures Commission in Hong Kong. JP Morgan Chase Bank, N.A., Hong Kong (CE Number AAL996) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission, is organized under the laws of the United States with limited liability. India: J.P. Morgan India Private Limited (Corporate Identity Number -U67120MH1992FTC068724), having its registered office at J.P. Morgan Tower, Off. C.S.T. Road, Kalina, Santacruz - East, Mumbai – 400098, is registered with the Securities and Exchange Board of India (SEBI) as a 'Research Analyst' having registration number INH000001873. J.P. Morgan India Private Limited is also registered with SEBI as a member of the National Stock Exchange of India Limited and the Bombay Stock Exchange Limited (SEBI Registration Number - INZ000239730) and as a Merchant Banker (SEBI Registration Number - MB/INM000002970). Telephone: 91-22-6157 3000, Facsimile: 91-22-6157 3990 and Website: http://www.jpmipl.com. JPMorgan Chase Bank, N.A. - Mumbai Branch is licensed by the Reserve Bank of India (RBI) (Licence No. 53/ Licence No. BY.4/94; SEBI - IN/CUS/014/ CDSL: IN-DP-CDSL-444-2008/ IN-DP-NSDL-285-2008/ INBI00000984/ INE231311239) as a Scheduled Commercial Bank in India, which is its primary license allowing it to carry on Banking business in India and other activities, which a Bank branch in India are permitted to undertake. For non-local research material, this material is not distributed in India by J.P. Morgan India Private Limited. Indonesia: PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange

and is regulated by the OJK a.k.a. BAPEPAM LK. Korea: J.P. Morgan Securities (Far East) Limited, Seoul Branch, is a member of the Korea Exchange (KRX). JPMorgan Chase Bank, N.A., Seoul Branch, is licensed as a branch office of foreign bank (JPMorgan Chase Bank, N.A.) in Korea. Both entities are regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). For non-macro research material, the material is distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch. Japan: JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. Malaysia: This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X), which is a Participating Organization of Bursa Malaysia Berhad and holds a Capital Markets Services License issued by the Securities Commission in Malaysia. Mexico: J.P. Morgan Casa de Bolsa, S.A. de C.V. and J.P. Morgan Grupo Financiero are members of the Mexican Stock Exchange and are authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. New Zealand: This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Advisers Act 2008). JPMSAL is registered as a Financial Service Provider under the Financial Service providers (Registration and Dispute Resolution) Act of 2008. Pakistan: J. P. Morgan Pakistan Broking (Pvt.) Ltd is a member of the Karachi Stock Exchange and regulated by the Securities and Exchange Commission of Pakistan. Philippines: J.P. Morgan Securities Philippines Inc. is a Trading Participant of the Philippine Stock Exchange and a member of the Securities Clearing Corporation of the Philippines and the Securities Investor Protection Fund. It is regulated by the Securities and Exchange Commission. Russia: CB J.P. Morgan Bank International LLC is regulated by the Central Bank of Russia. Singapore: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 093/09/2021 and Co. Reg. No.: 199405335R], which is a member of the Singapore Exchange Securities Trading Limited, and/or JPMorgan Chase Bank, N.A., Singapore branch (JPMCB Singapore), both of which are regulated by the Monetary Authority of Singapore. This material is issued and distributed in Singapore only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289 (SFA). This material is not intended to be issued or distributed to any retail investors or any other investors that do not fall into the classes of "accredited investors," "expert investors" or "institutional investors," as defined under Section 4A of the SFA. Recipients of this material in Singapore are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the material. As at the date of this material, JPMSS is a designated market maker for certain structured warrants listed on the Singapore Exchange where the underlying securities may be the securities discussed in this material. Arising from its role as a designated market maker for such structured warrants, JPMSS may conduct hedging activities in respect of such underlying securities and hold or have an interest in such underlying securities as a result. The updated list of structured warrants for which JPMSS acts as designated market maker may be found on the website of the Singapore Exchange Limited: http://www.sgx.com. South Africa: J.P. Morgan Equities South Africa Proprietary Limited and JPMorgan Chase Bank, N.A., Johannesburg Branch are members of the Johannesburg Securities Exchange and are regulated by the Financial Services Board. Taiwan: J.P. Morgan Securities (Taiwan) Limited is a participant of the Taiwan Stock Exchange (company-type) and regulated by the Taiwan Securities and Futures Bureau. Material relating to equity securities is issued and distributed in Taiwan by J.P. Morgan Securities (Taiwan) Limited, subject to the license scope and the applicable laws and the regulations in Taiwan. According to Paragraph 2, Article 7-1 of Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers (as amended or supplemented) and/or other applicable laws or regulations, please note that the recipient of this material is not permitted to engage in any activities in connection with the material that may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. Thailand: This material is issued and distributed in Thailand by JPMorgan Securities (Thailand) Ltd., which is a member of the Stock Exchange of Thailand and is regulated by the Ministry of Finance and the Securities and Exchange Commission, and its registered address is 3rd Floor, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500. UK: Unless specified to the contrary, research is distributed in the UK by J.P. Morgan Securities plc ("JPMS plc") which is a member of the London Stock Exchange and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. JPMS plc is registered in England & Wales No. 2711006, Registered Office 25 Bank Street, London, E14 5JP. This material is directed in the UK only to: (a) persons having professional experience in matters relating to investments falling within article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) (Order) 2005 ("the FPO"); (b) persons outlined in article 49 of the FPO (high net worth companies, unincorporated associations or partnerships, the trustees of high value trusts, etc.); or (c) any persons to whom this communication may otherwise lawfully be made; all such persons being referred to as "UK relevant persons". This material must not be acted on or relied on by persons who are not UK relevant persons. Any investment or investment activity to which this material relates is only available to UK relevant persons and will be engaged in only with UK relevant persons. Research issued by JPMS plc has been prepared in accordance with JPMS plc's policy for prevention and avoidance of conflicts of interest related to the production of Research which can be found at the following link: J.P. Morgan EMEA - Research Independence Policy. U.S.: J.P. Morgan Securities LLC ("JPMS") is a member of the NYSE, FINRA, SIPC, and the NFA. JPMorgan Chase Bank, N.A. is a member of the FDIC. Material published by non-U.S. affiliates is distributed in the U.S. by JPMS who accepts responsibility for its

General: Additional information is available upon request. The information in this material has been obtained from sources believed to be reliable. While all reasonable care has been taken to ensure that the facts stated in this material are accurate and that the forecasts, opinions and expectations contained herein are fair and reasonable, JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) make no representations or warranties whatsoever to the completeness or accuracy of the material provided, except with respect to any disclosures relative to J.P. Morgan and the Research Analyst's involvement with the issuer that is the subject of the material. Accordingly, no reliance should be placed on the accuracy, fairness or completeness of the information contained in this material. Any data discrepancies in this material could be the result of different calculations and/or adjustments. J.P. Morgan accepts no

J.P.Morgan

liability whatsoever for any loss arising from any use of this material or its contents, and neither J.P. Morgan nor any of its respective directors, officers or employees, shall be in any way responsible for the contents hereof, apart from the liabilities and responsibilities that may be imposed on them by the relevant regulatory authority in the jurisdiction in question, or the regulatory regime thereunder. Opinions, forecasts or projections contained in this material represent J.P. Morgan's current opinions or judgment as of the date of the material only and are therefore subject to change without notice. Periodic updates may be provided on companies/industries based on company-specific developments or announcements, market conditions or any other publicly available information. There can be no assurance that future results or events will be consistent with any such opinions, forecasts or projections, which represent only one possible outcome. Furthermore, such opinions, forecasts or projections are subject to certain risks, uncertainties and assumptions that have not been verified, and future actual results or events could differ materially. The value of, or income from, any investments referred to in this material may fluctuate and/or be affected by changes in exchange rates. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Past performance is not indicative of future results. Accordingly, investors may receive back less than originally invested. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. The recipients of this material must make their own independent decisions regarding any securities or financial instruments mentioned herein and should seek advice from such independent financial, legal, tax or other adviser as they deem necessary. J.P. Morgan may trade as a principal on the basis of the Research Analysts' views and research, and it may also engage in transactions for its own account or for its clients' accounts in a manner inconsistent with the views taken in this material, and J.P. Morgan is under no obligation to ensure that such other communication is brought to the attention of any recipient of this material. Others within J.P. Morgan, including Strategists, Sales staff and other Research Analysts, may take views that are inconsistent with those taken in this material. Employees of J.P. Morgan not involved in the preparation of this material may have investments in the securities (or derivatives of such securities) mentioned in this material and may trade them in ways different from those discussed in this material. This material is not an advertisement for or marketing of any issuer, its products or services, or its securities in any jurisdiction.

"Other Disclosures" last revised April 02, 2022.

Copyright 2022 JPMorgan Chase & Co. All rights reserved. This material or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.