



Global Investment Research

The Goldman Sachs Group, Inc.

US Equity Strategy

The Sell-off

January 25, 2022

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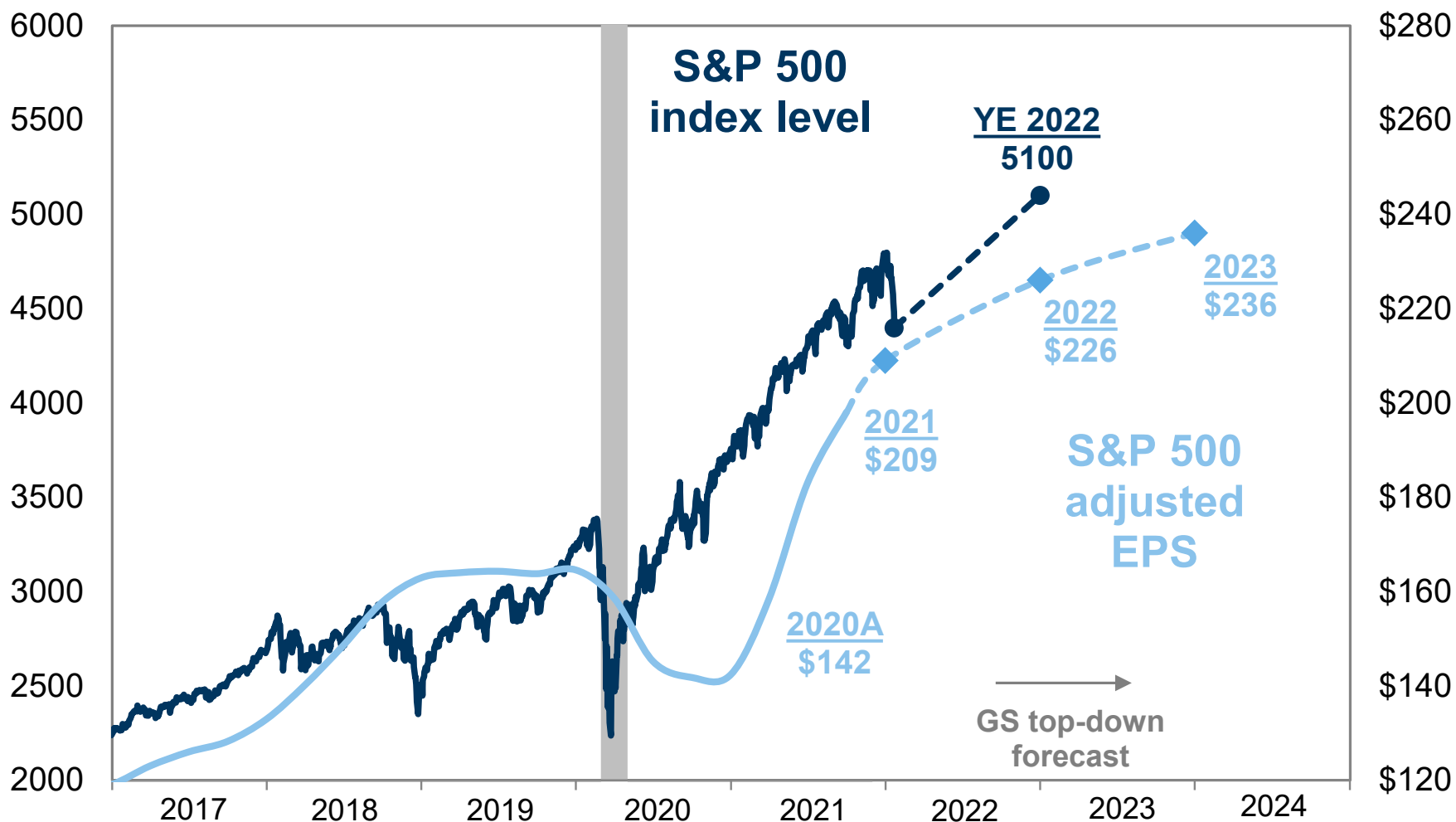
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Path of the US equity market in 2022

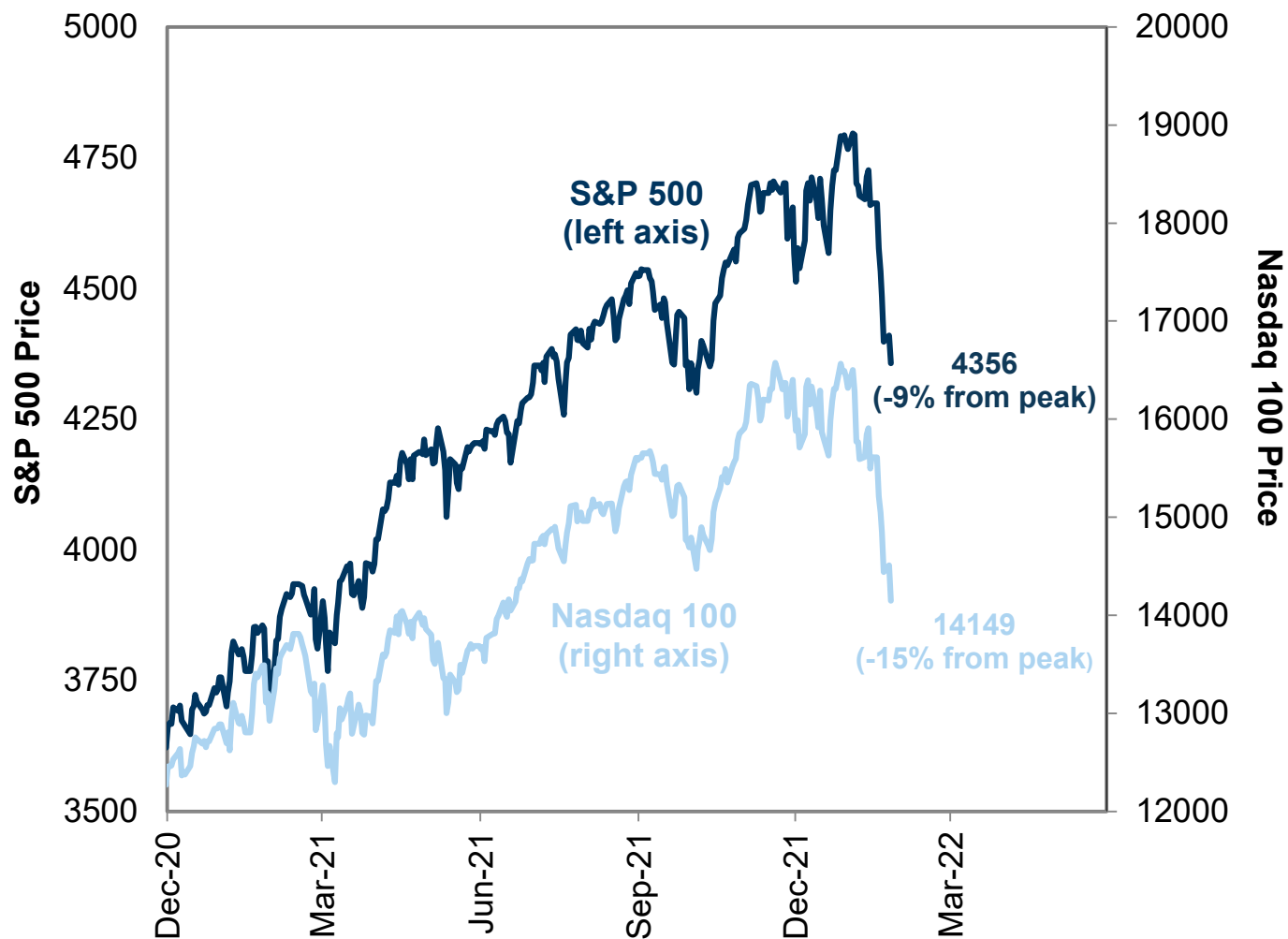
S&P 500 EPS will rise by 8% and the index will climb 9% to end 2022 at 5100



Sell-off and correction

From Peak: S&P 500 down 9%, Nasdaq down 15%

Investor concerns about slowing growth, a hawkish Fed, higher Treasury yields



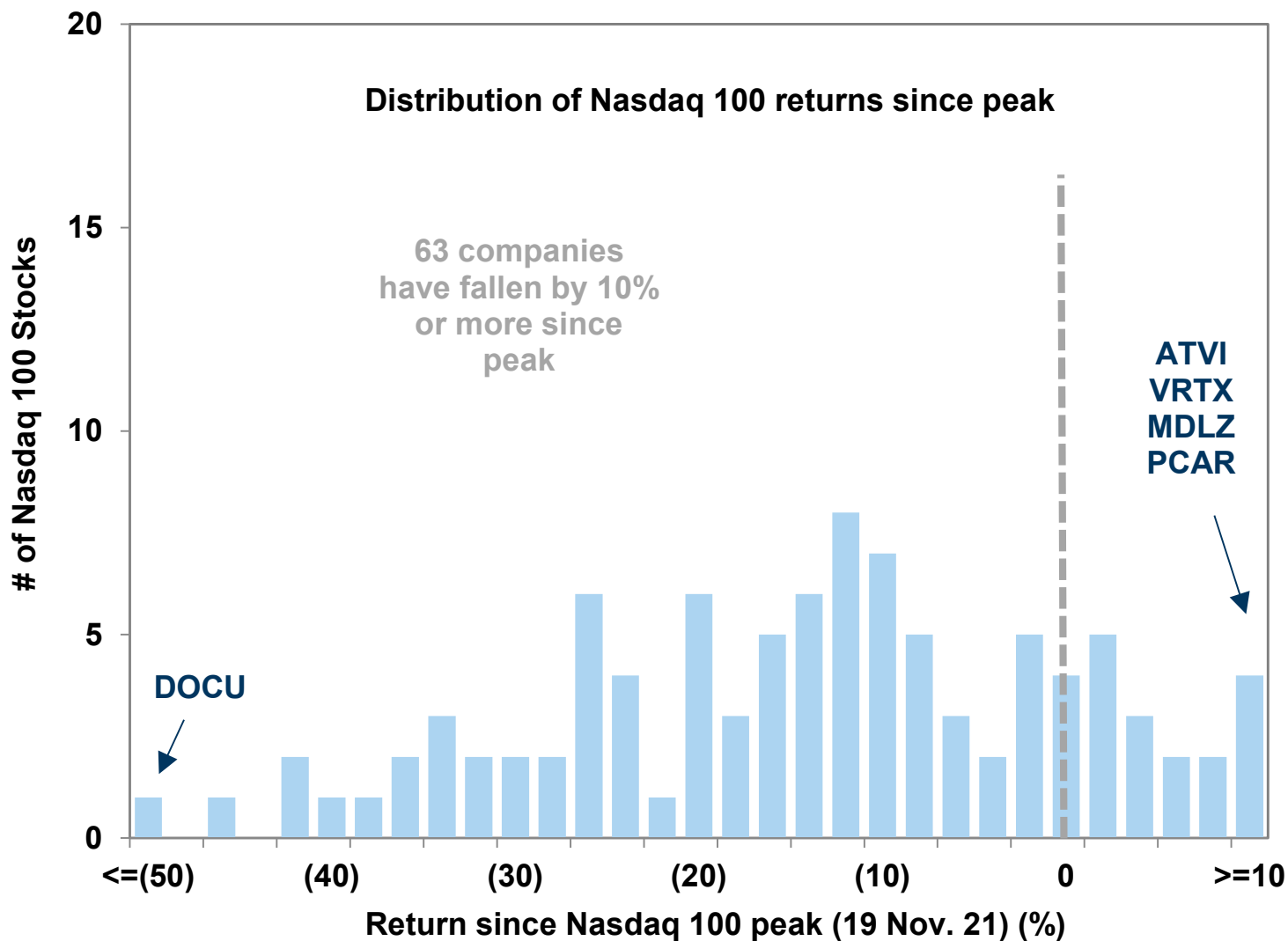
Sector performance since the January 3rd peak

Energy outperformed; Information Technology accounted for nearly half of drop

S&P 500 Return Attribution			
Sector	Weight on Jan. 3, 2022	Return since peak	Basis points of S&P 500 return
Energy	3 %	14 %	39 bp
Utilities	2	(5)	(13)
Consumer Staples	6	(3)	(18)
Materials	3	(7)	(17)
Real Estate	3	(8)	(23)
Industrials	8	(4)	(31)
Financials	11	(3)	(30)
Health Care	13	(8)	(108)
Comm. Services	10	(11)	(114)
Cons. Discretionary	13	(15)	(193)
Info Tech	29	(14)	(411)
S&P 500	100 %	(9)%	(918)bp

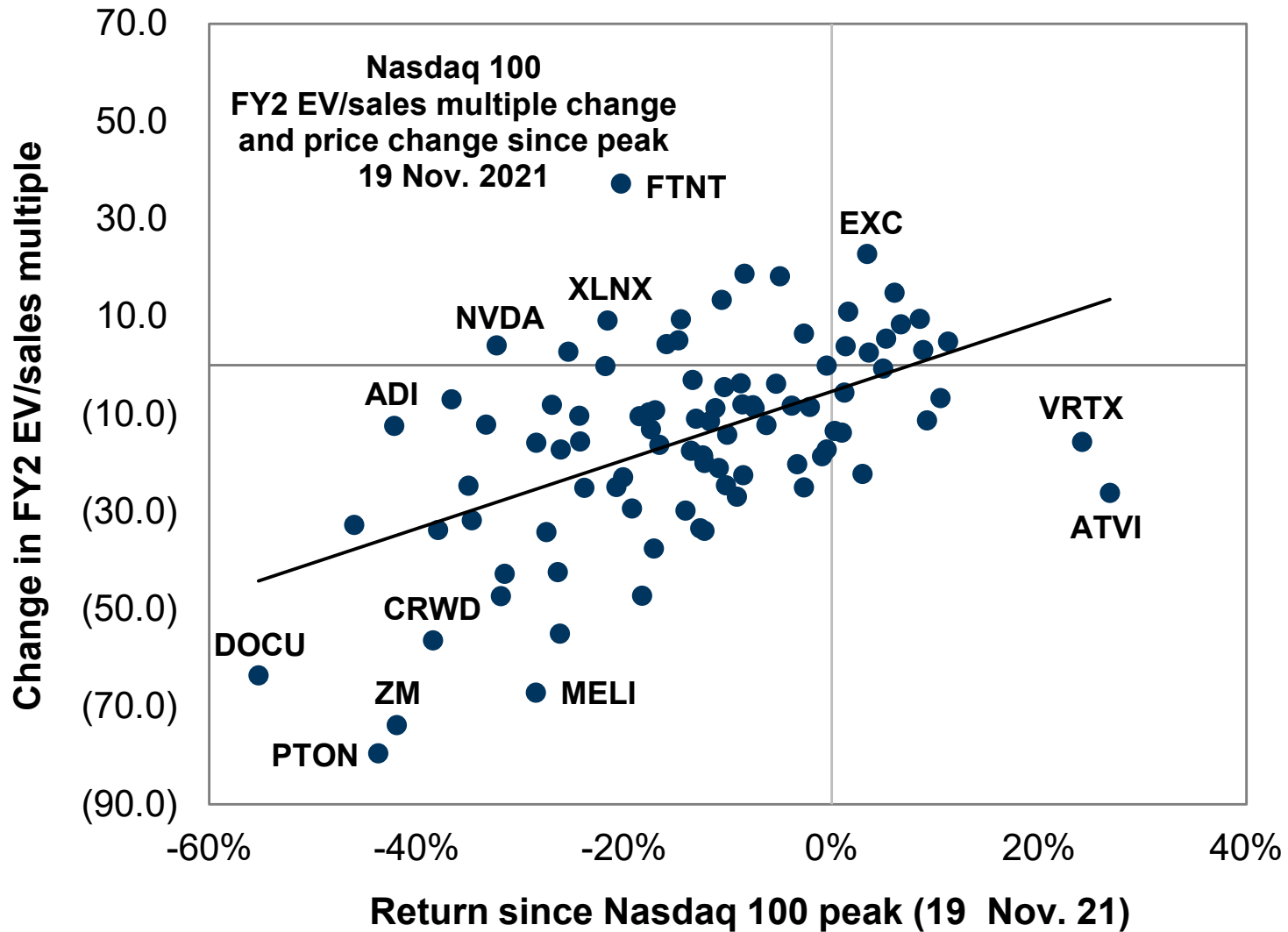
Half of Nasdaq stocks down by 10%+ since peak

Distribution of Nasdaq 100 constituent returns since peak (19 Nov 2021)



Lower valuations explain negative returns since peak

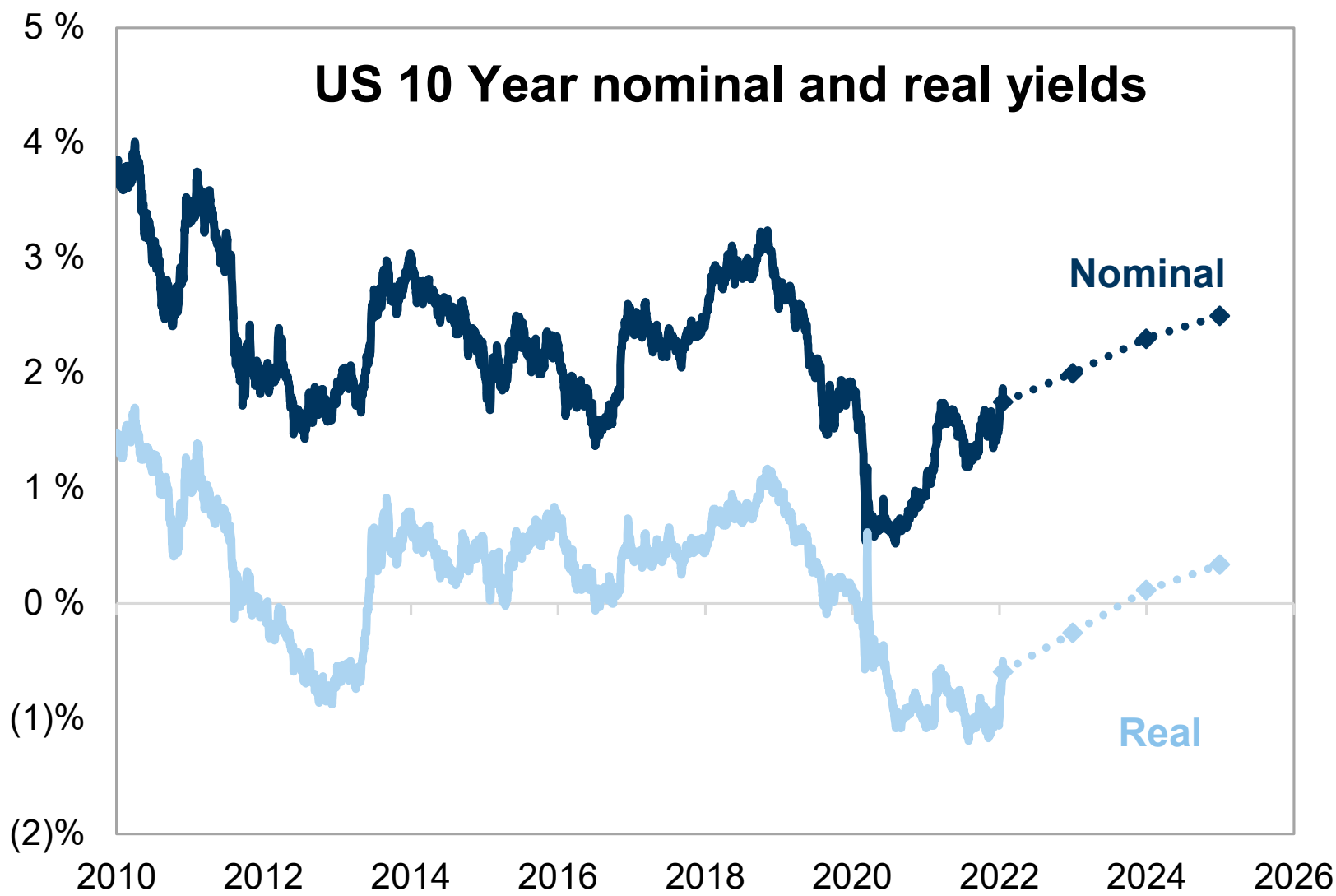
Collapse in EV/sales multiple was key to dramatic drop in some share prices



Rates and equities

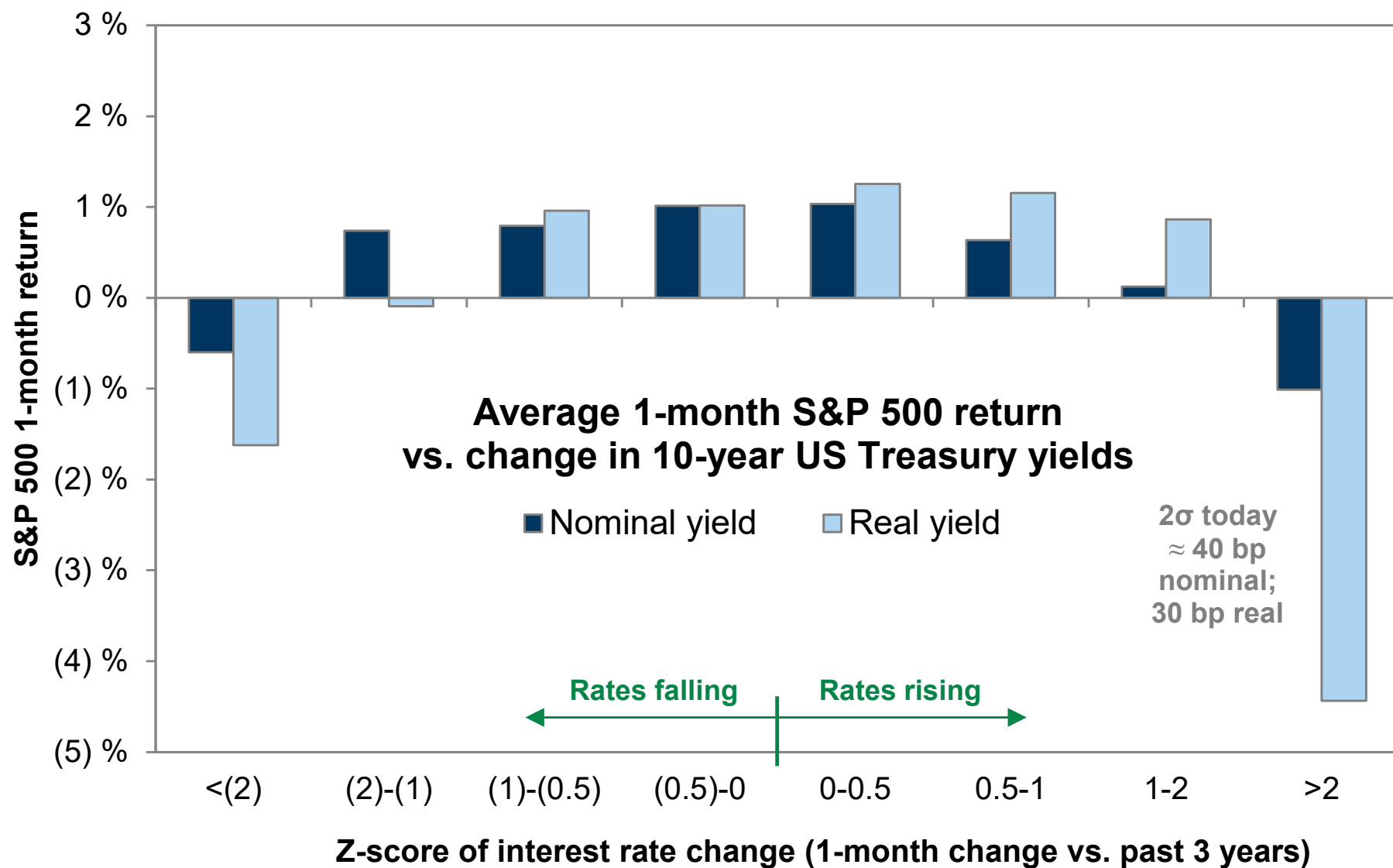
US Treasury yields: Nominal and real

2.0% nominal yield by year-end 2022 and real yield positive by 2024



The speed of interest rate changes matters for stocks

Sharp, real rate driven increases in rates correspond with negative equity returns



Higher real rates and lower S&P 500 valuation

S&P 500 P/E multiple has declined alongside recent rise in real interest rates



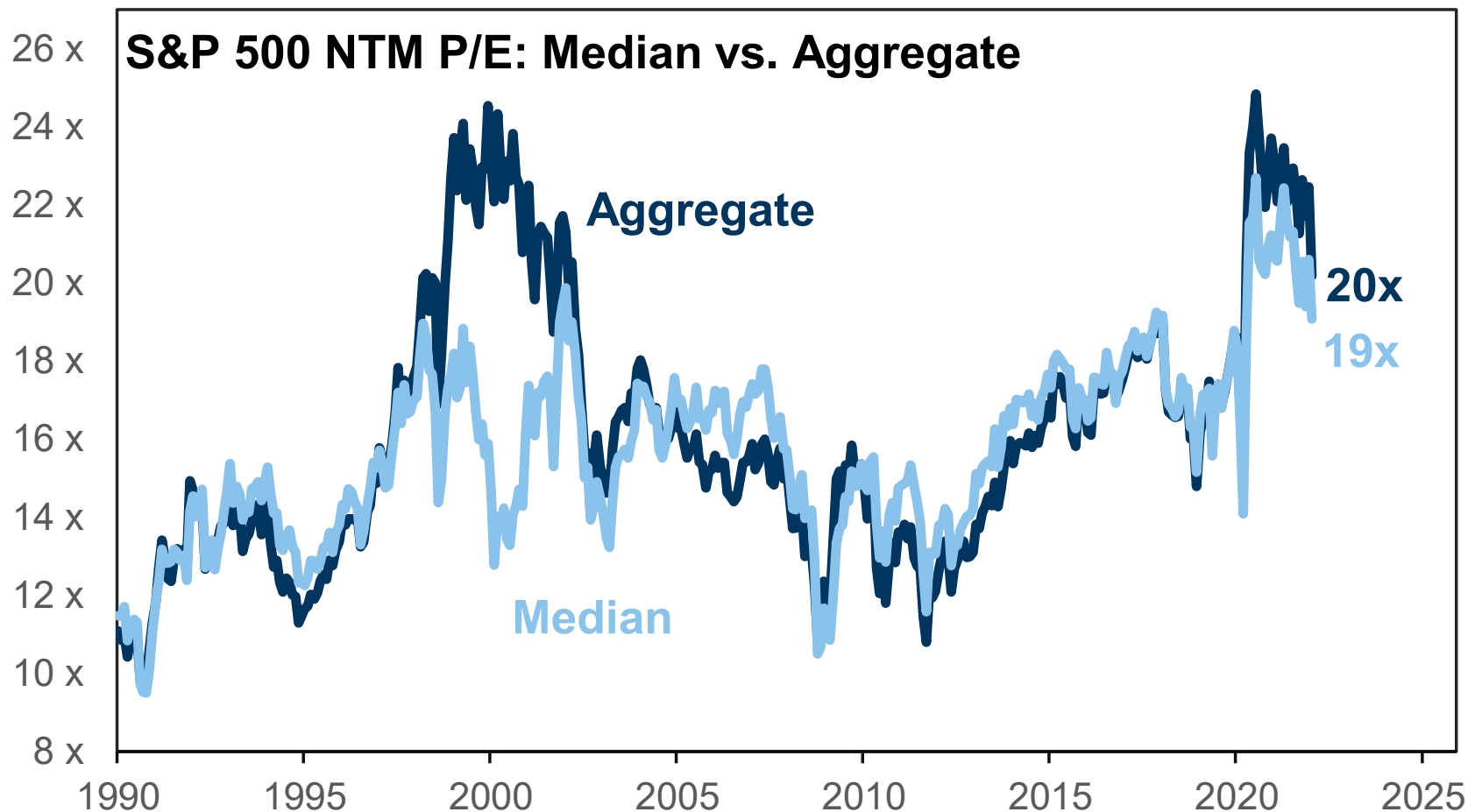
Absolute and relative valuations for equities differ

Median absolute valuation metric at 89th percentile while relative at 32nd

Valuation metric	Aggregate index		Median stock	
	Current	Historical %ile	Current	Historical %ile
US market cap / GDP	262 %	98 %	NA	NA %
EV / sales	3.2 x	98	3.9 x	99
EV / EBITDA	15.2 x	97	14.5 x	97
Cyclically adjusted P/E (CAPE)	34.9 x	96	NA	NA
Price / book	4.6 x	94	4.2 x	100
Cash flow yield (CFO)	5.8 %	91	5.7 %	98
Forward P/E	20.2 x	89	19.1 x	95
Free cash flow yield	3.8 %	58	3.9 %	72
Median absolute metric		95 %		98 %
Yield gap vs. real 10-year UST	570 bp	49	583 bp	27
Yield gap vs. 10-year UST	336 bp	32	349 bp	23
Yield gap vs. IG	248 bp	30	260 bp	28
Median relative metric		32 %		25 %

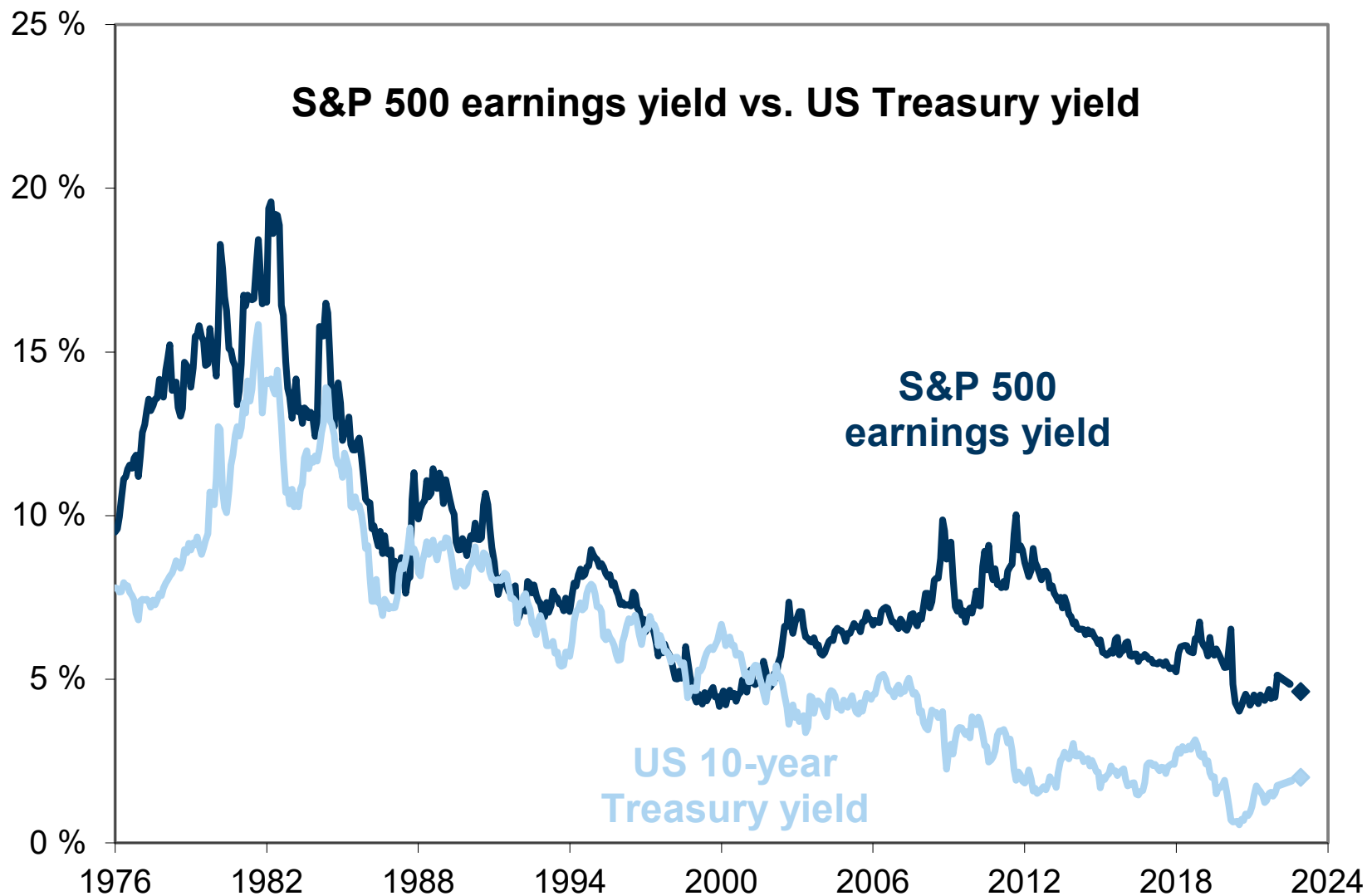
Absolute equity valuation is stretched vs. history

S&P 500 aggregate index trades at NTM P/E of 20x vs. 19x for the median stock



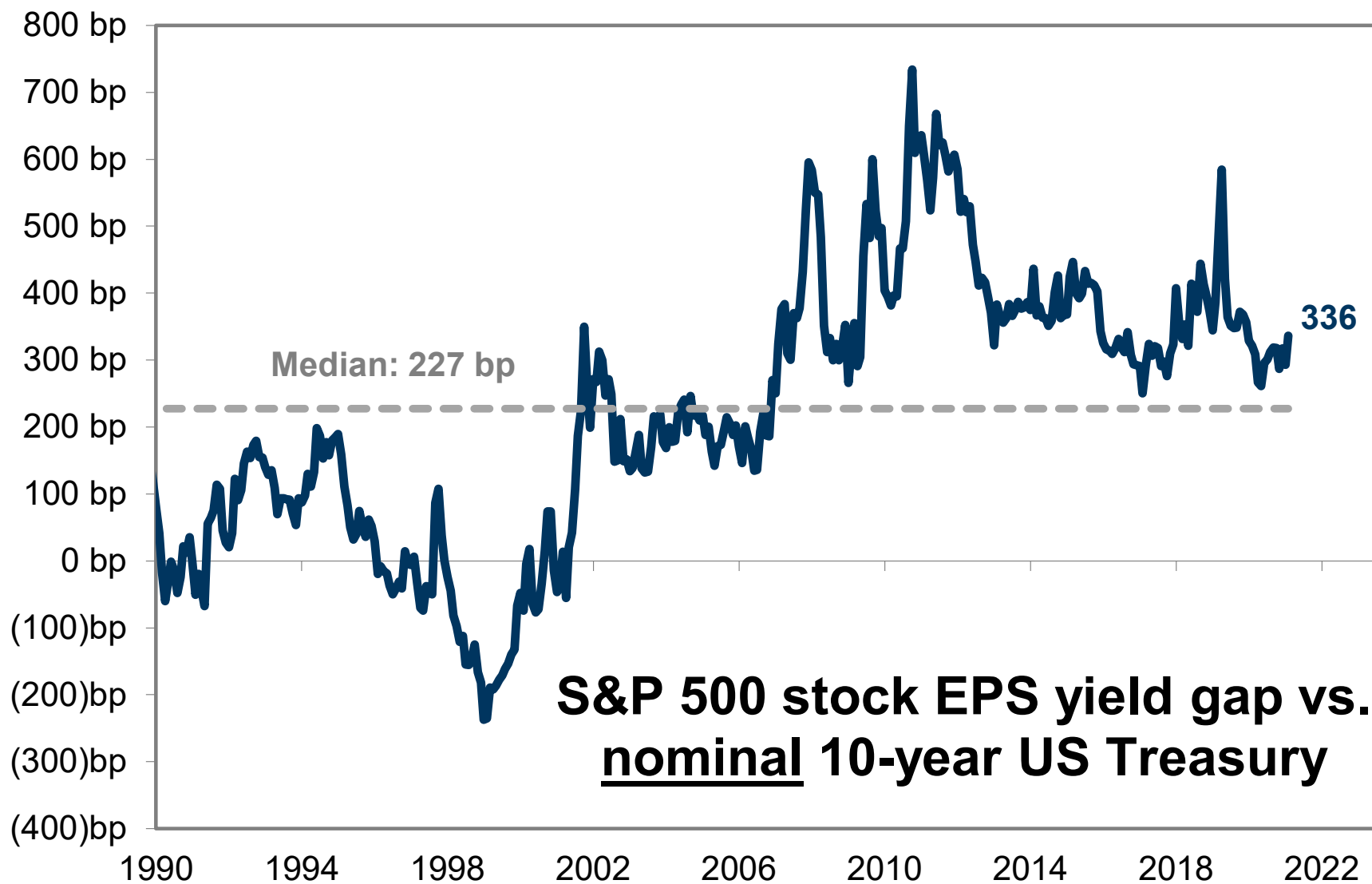
Equity valuation relative to rates is below-average

S&P 500 earnings yield gap vs. Treasury yield ranks at 32nd percentile vs. history



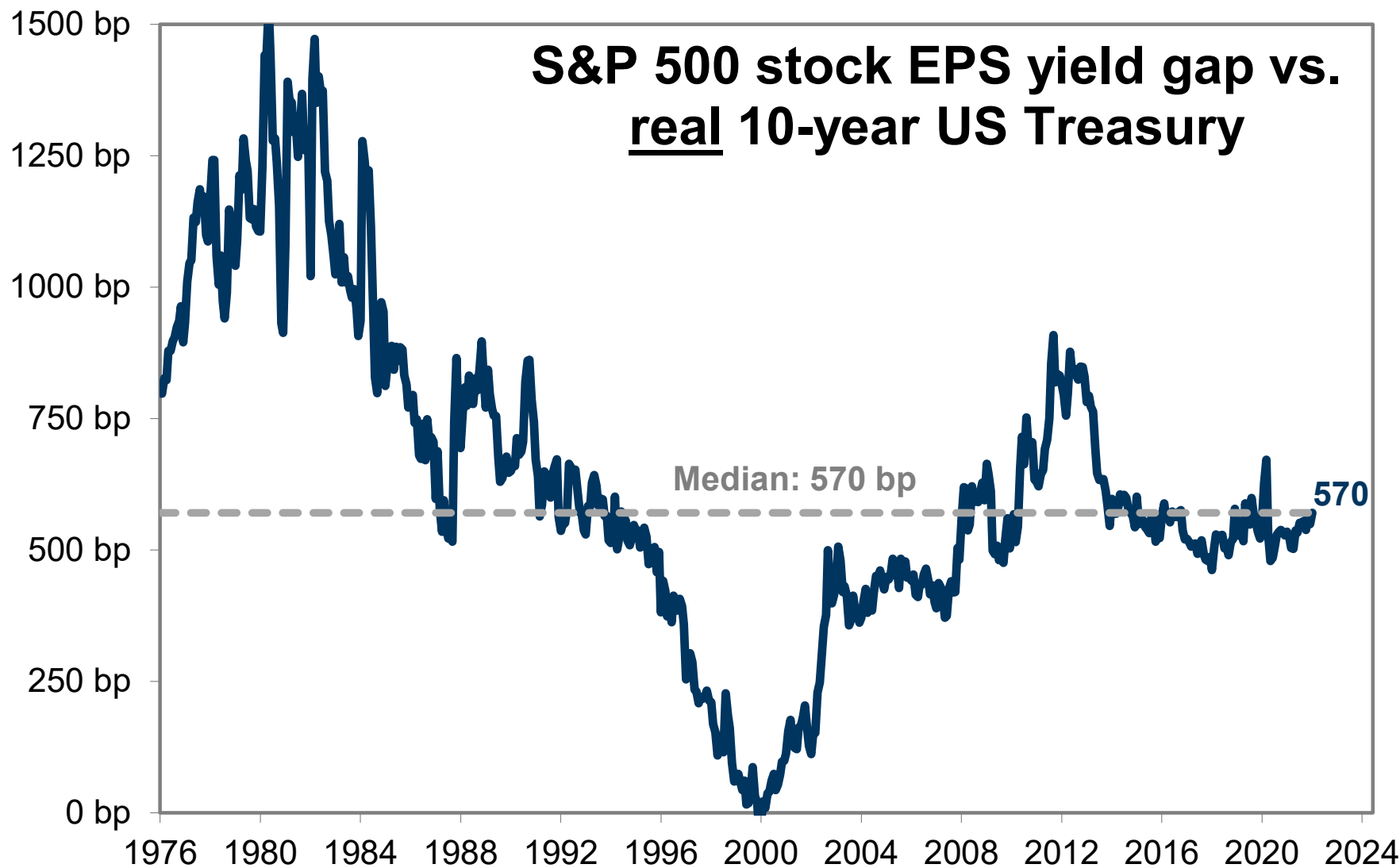
Yield gap: EPS yield less nominal 10-year Treasury

Difference of 336 bp ranks in the 32nd percentile vs. history



Yield gap: EPS yield less real 10-year Treasury

Difference of 570 bp ranks in the 49th percentile vs. history



P/E and index sensitivity to real rates and yield gap

Valuation matrix based on real Treasury yield and S&P 500 earnings yield gap

2022E EPS = \$224			Real 10Y US Treasury				
			(1.6)%	(1.1)%	(0.6)%	(0.1)%	0.4 %
Yield gap vs. real 10Y	Yield gap	%-ile					
	470 bp	76%	32 x	28 x	24 x	22 x	20 x
	520 bp	66%	28	24	22	20	18
	570 bp	50%	24	22	20	18	16
	620 bp	42%	22	20	18	16	15
	670 bp	36%	20	18	16	15	14

2022E EPS = \$224			Real 10Y US Treasury				
			(1.6)%	(1.1)%	(0.6)%	(0.1)%	0.4 %
Yield gap vs. real 10Y	Yield gap	%-ile					
	470 bp	76%	7200	6200	5450	4860	4380
	520 bp	66%	6200	5450	4860	4380	3990
	570 bp	50%	5450	4860	4380	3990	3670
	620 bp	42%	4860	4380	3990	3670	3390
	670 bp	36%	4380	3990	3670	3390	3150

Implied S&P 500 index level if EPS falls 4% in 2022

Valuation matrix based on level of real Treasury yield and earnings yield gap

If consensus 2022 EPS growth falls to -4% (\$200) from current expectation of +8% (\$224),

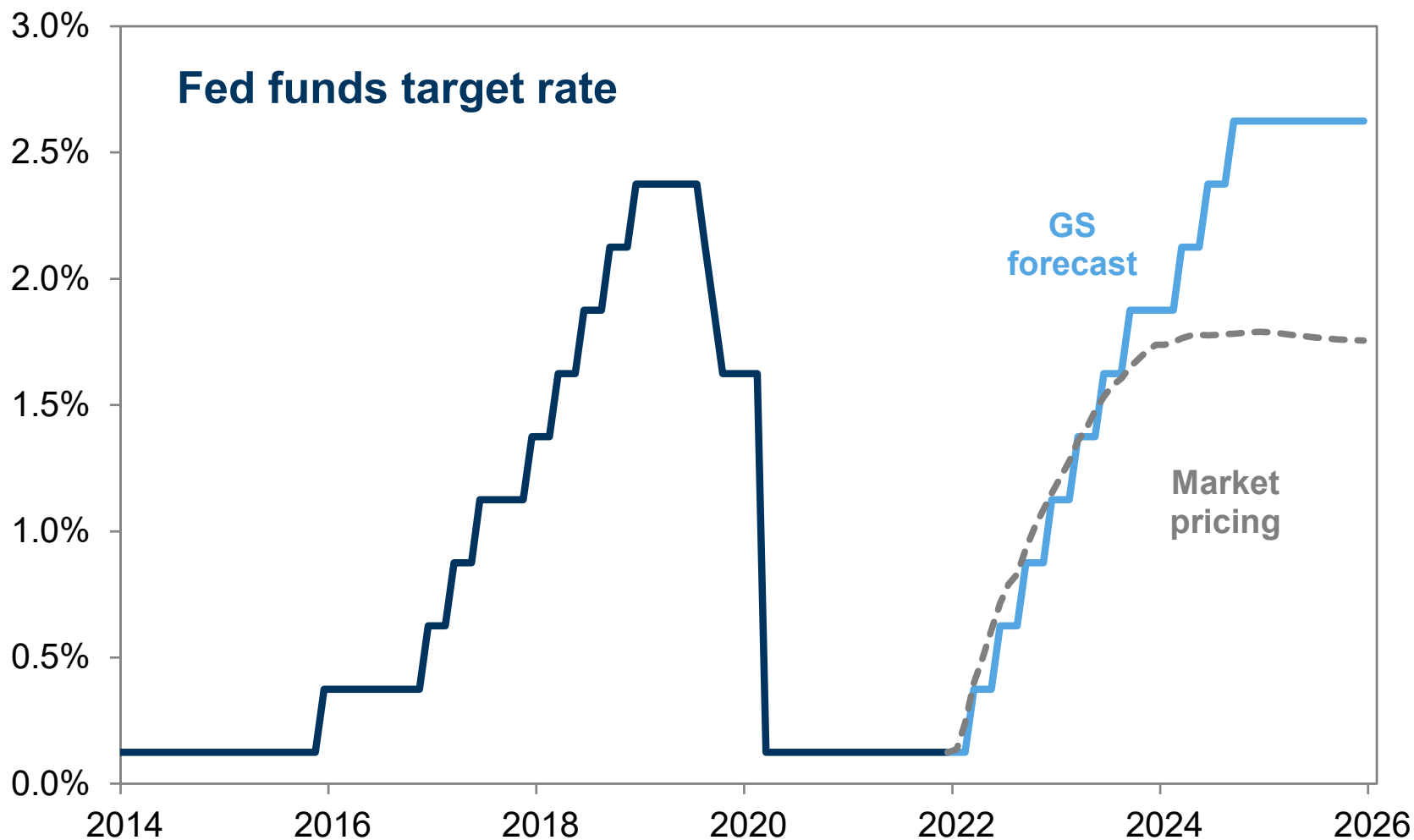
**the current real yield and yield gap
would imply a S&P 500 index level of roughly 3900**

2022E EPS = \$200			Real 10Y US Treasury				
			(1.6)%	(1.1)%	(0.6)%	(0.1)%	0.4 %
Yield gap vs. real 10Y	Yield gap	%-ile					
	470 bp	76%	6430	5540	4870	4340	3910
	520 bp	66%	5540	4870	4340	3910	3570
	570 bp	50%	4870	4340	3910	3570	3270
	620 bp	42%	4340	3910	3570	3270	3030
	670 bp	36%	3910	3570	3270	3030	2810

Tightening financial conditions

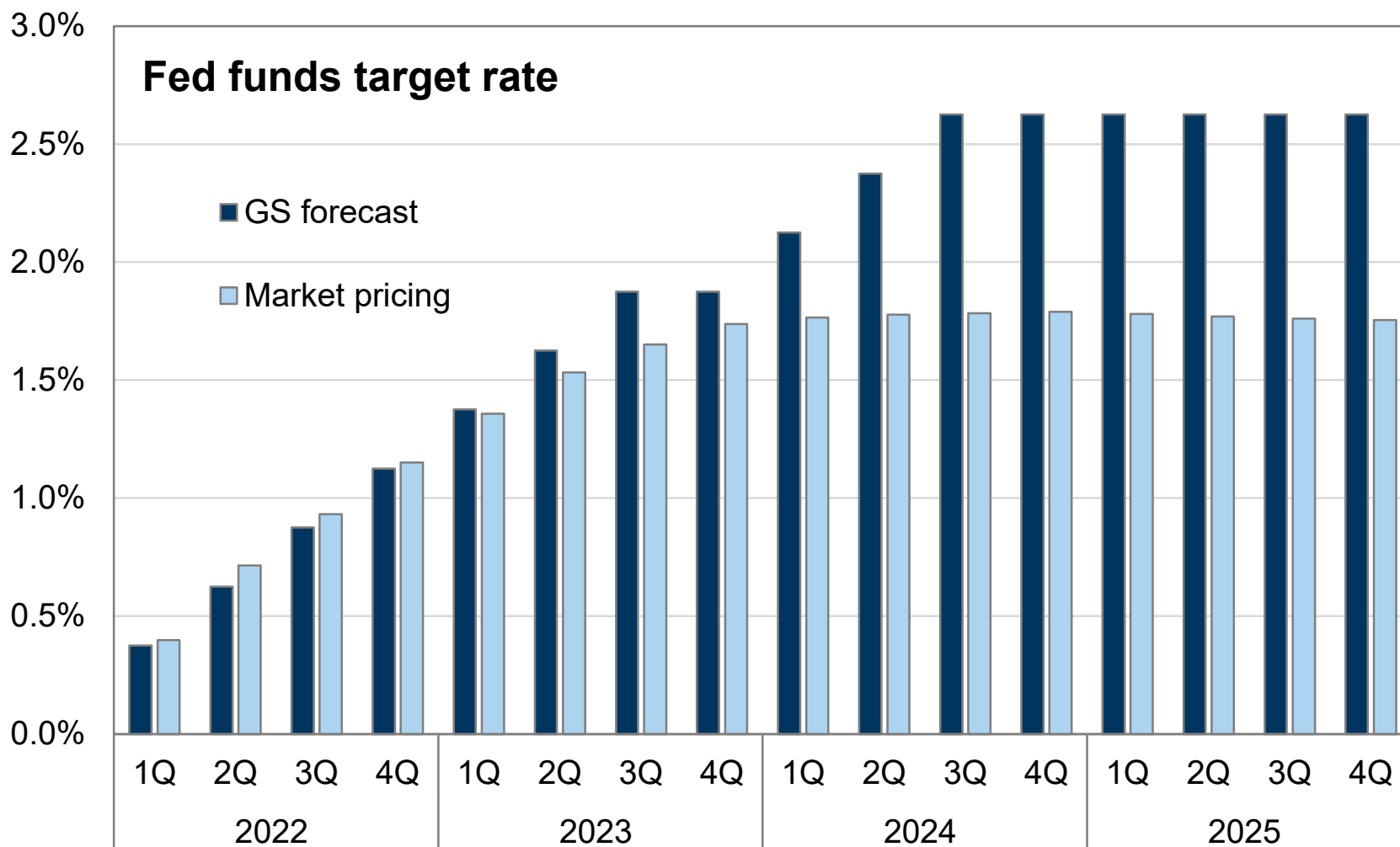
Fed funds rate: first hike expected in March 2022

Market pricing in line with GS forecast of 4 rate hikes in 2022



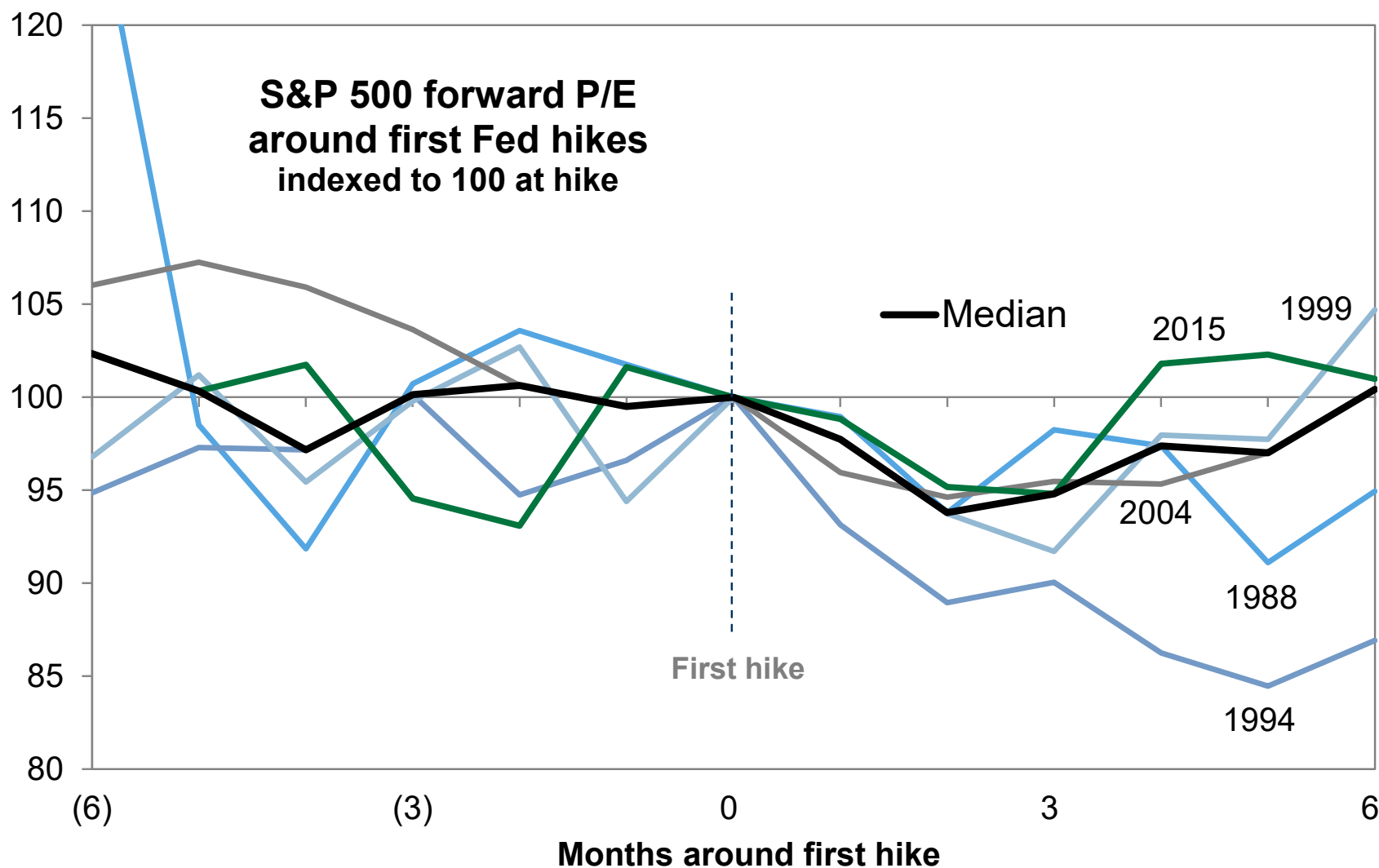
Fed funds rate: first hike expected in March 2022

GS Econ forecasts 4 hikes in 2022 and 3 in 2023, similar to futures market



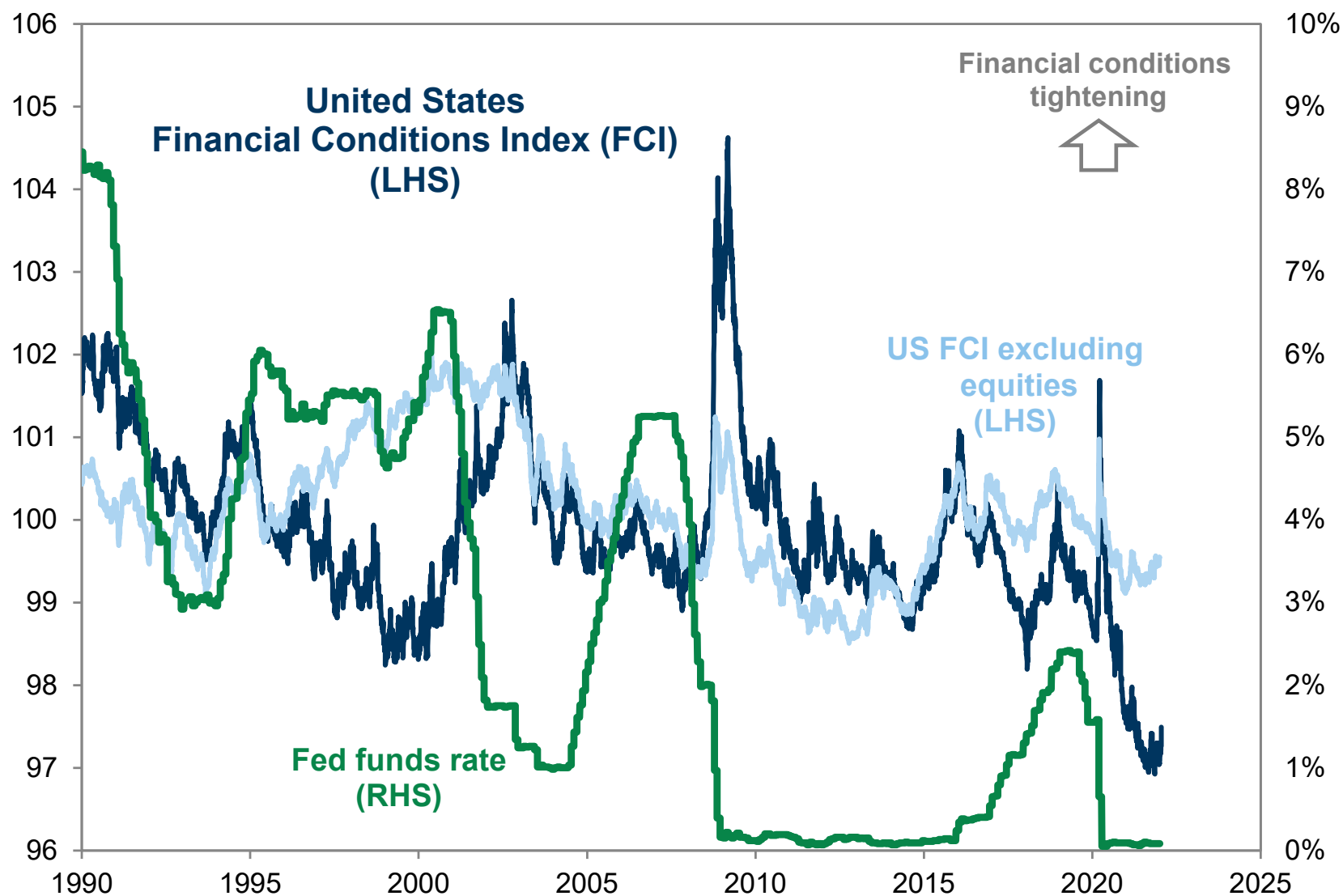
S&P 500 P/E valuation around Fed hiking cycles

P/E is typically flat during 6 months before and after the start of tightening



Rising P/E multiple helped ease financial conditions

US Financial Conditions Index (FCI) currently near the easiest level on record



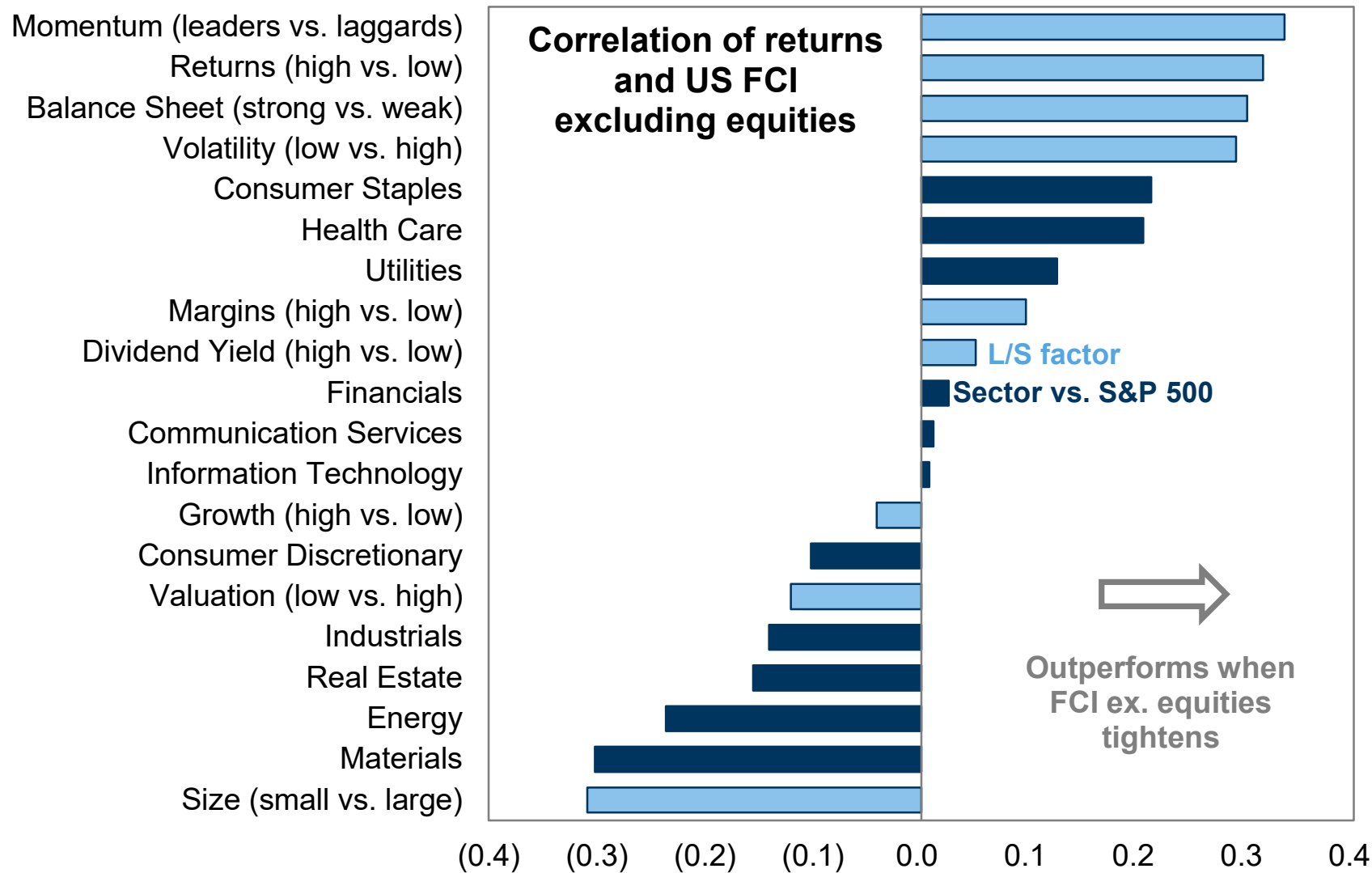
FCI sensitivity to its various component variables

20% decline in cyclically-adjusted P/E multiple would tighten FCI by 100 bp

GS US FCI components			
Variable	Description	Component Weight	Ceteris paribus change in variable required to tighten US FCI by 100 bp
Nominal Treasury bond yields	10-Year Treasury yield	45.1 %	2.2 pp increase
Corporate credit spreads	iBoxx Domestic Non-Financials BBB 15Y+ spread over 10Y UST	39.6	2.5 pp widening
Trade-weighted exchange rate	GS broad trade-weighted index	6.0	16.7% appreciation
Equity valuations	S&P 500, scaled by 10-year moving average of earnings	4.9	20.4% decline
Nominal fed funds rate	Midpoint of target fed funds	4.4	22.7 pp increase

Sectors and factors outperforming when FCI tightens

Defensive sectors and “quality” factors outperform



Financial Conditions Index & balance sheet baskets

Strong vs. weak balance sheet basket returns more volatile since pandemic



Russell 3000 stocks with “quality” metrics

Strong balance sheets, high margins, market cap, above-average FCF yield

Ticker	Company	Sector	Market cap (\$ bn)	Return		2022		2022 valuation			Altman Z-score	Net debt to EBITDA
				2021	YTD	Sales growth	Net margin	EV/Sales	P/E	FCF yield		
MRNA	Moderna	Health Care	\$70.6	143 %	(31)%	141 %	57 %	3.0 x	6 x	17 %	7.9	(1.5)x
CTRA	Coterra Energy	Energy	17.0	23	10	205	42	1.4	6	16	5.8	0.2
REGN	Regeneron Pharmaceuticals	Health Care	65.3	31	(2)	14	44	5.2	13	13	9.7	(1.5)
LPX	Louisiana-Pacific	Materials	6.0	113	(13)	42	19	1.7	7	9	9.6	(0.1)
SWKS	Skyworks Solutions	Information Technology	24.1	3	(6)	31	34	4.3	12	8	10.5	(0.2)
UTHR	United Therapeutics Corp	Health Care	9.2	42	(5)	20	40	4.3	13	7	7.0	(1.1)
RGLD	Royal Gold	Materials	6.9	0	0	14	43	9.8	25	7	15.6	(1.6)
MKSI	MKS Instruments	Information Technology	9.2	16	(5)	20	20	2.9	13	7	5.8	(0.7)
QCOM	Qualcomm	Information Technology	193.2	22	(6)	24	30	4.8	15	6	6.1	(0.2)
SEIC	SEI Investments	Financials	8.4	7	(2)	8	28	3.8	15	6	16.6	NM
VRTX	Vertex Pharmaceuticals	Health Care	58.7	(7)	5	7	44	6.5	17	6	13.6	(2.7)
MU	Micron Technology	Information Technology	100.8	24	(3)	7	31	2.7	9	6	6.4	(0.3)
EA	Electronic Arts	Communication Services	38.7	(8)	4	21	27	5.0	19	5	6.5	(0.8)
GNTX	Gentex	Consumer Discretionary	8.0	4	(3)	(5)	22	3.7	17	5	21.9	(0.6)
SCCO	Southern Copper	Materials	52.9	(1)	11	21	28	5.5	18	5	5.7	0.7
AMAT	Applied Materials	Information Technology	127.1	84	(9)	27	28	4.8	17	5	10.2	0.0
INCY	Incyte	Health Care	16.5	(16)	2	0	22	4.2	21	5	11.5	(2.5)
LRCX	Lam Research	Information Technology	90.5	54	(11)	25	27	4.9	17	5	9.5	(0.1)
TPL	TX Pac Land	Energy	8.2	73	(15)	50	67	12.8	20	5	57.7	(1.1)
NBIX	Neurocrine Biosciences	Health Care	6.9	(11)	(14)	(8)	21	4.9	26	5	7.4	(2.5)
GRMN	Garmin	Consumer Discretionary	25.2	16	(4)	14	23	4.1	20	5	12.0	(1.8)
DLB	Dolby Laboratories	Information Technology	5.8	(1)	(7)	4	21	5.7	30	5	9.2	(2.4)
TER	Teradyne	Information Technology	24.2	37	(9)	17	28	6.5	22	4	13.2	(0.8)
GOOGL	Alphabet	Communication Services	1,674.9	65	(7)	19	26	5.7	23	4	12.8	(1.3)
Median			\$24.2	19 %	(5)%	19 %	28 %	4.8 x	17 x	6 %	9.6	(0.8)x
Russell 3000 median			2.1	16	(9)	9	8	2.7	16	4	3.2	0.8

Five ratios used in the Altman Z-score measure of balance sheet strength: Working capital/assets, retained earnings/assets, operating income/assets, leverage ratio, and sales/assets.

Russell 3000 stocks with high free cash flow burn

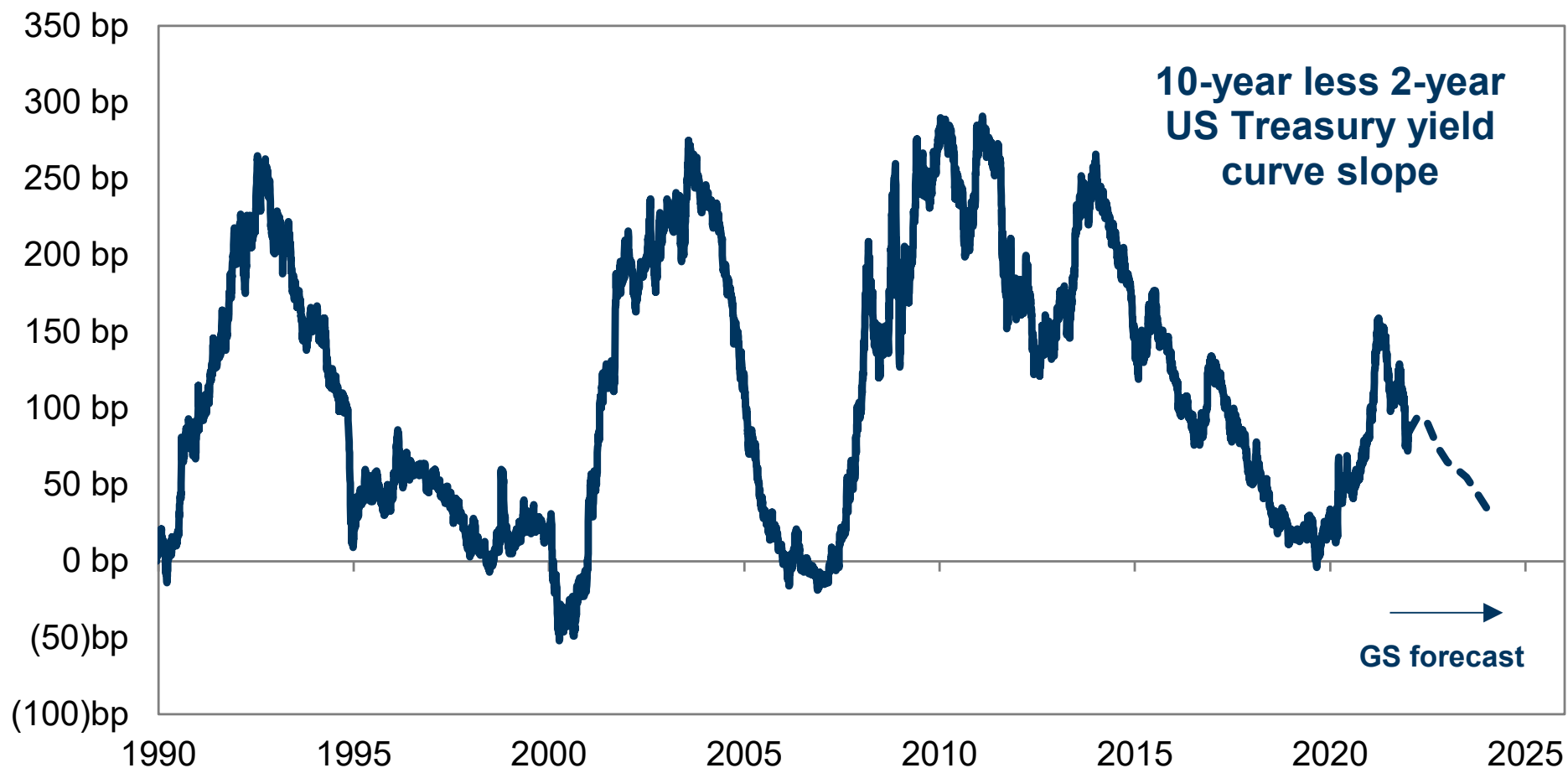
Stocks with high rate of FCF burn relative to cash on balance sheet

Ticker	Company	Sector	Market cap (\$ mn)	Short interest	Return		2022		2022 valuation		Altman Z-score	Cash on B/S (\$ mn)	Consensus FCF (\$ mn)		Implied 2022 YE cash (\$ mn)
					2021	YTD	Sales growth	Net margin	EV / Sales	FCF yield			4Q21	2022	
RIVN	Rivian Automotive	Consumer Discretionary	\$61,939	3 %	3 %	(37)%	NM	(153)%	NM	(11)%	NM	\$5,156	(\$2,458)	(\$6,934)	(\$4,236)
RUN	SunRun	Industrials	5,736	17	(51)	(16)	15	(4)	6.9	(27)	0.4	941	(451)	(1,733)	(1,243)
GEVO	Gevo	Energy	761	18	1	(18)	272	NM	76.4	(130)	6.5	351	(54)	(1,003)	(706)
PCT	PureCycle Technologies	Materials	896	10	(41)	(28)	NM	NM	97.8	(63)	NM	221	(54)	(563)	(396)
PRAA	PRA Group	Financials	2,133	9	27	(5)	(5)	13	4.7	(15)	NM	61	(109)	(325)	(374)
VSAT	ViaSat	Information Technology	3,308	8	36	4	17	1	1.8	(12)	1.3	218	(168)	(410)	(360)
GFS	GlobalFoundries	Information Technology	30,301	0	40	(18)	17	11	NM	(4)	NM	1,019	(117)	(1,133)	(231)
RIOT	Riot Blockchain	Information Technology	2,039	18	31	(22)	120	24	2.6	(15)	12.8	174	(23)	(340)	(189)
FRPT	Freshpet	Consumer Staples	3,880	6	(33)	(7)	31	(1)	6.2	(6)	49.2	171	(91)	(261)	(181)
CVNA	Carvana	Consumer Discretionary	13,448	13	(3)	(32)	32	(1)	1.1	(2)	5.1	716	(198)	(694)	(176)
NKLA	Nikola	Industrials	3,511	14	(35)	(19)	NM	(420)	16.4	(13)	13.2	587	(287)	(465)	(165)
NFE	New Fortress Energy	Energy	4,729	2	(54)	(6)	146	16	4.1	(9)	1.1	297	34	(427)	(96)
CDE	Coeur Mining	Materials	1,398	2	(51)	5	5	7	1.9	(8)	-0.7	85	(68)	(106)	(89)
DNMR	Danimer Scientific	Materials	542	17	(64)	(42)	117	(49)	2.2	(31)	NM	194	(96)	(172)	(74)
ASPN	Aspen Aerogels	Energy	1,140	2	198	(33)	22	(23)	5.5	(13)	13.5	96	(17)	(149)	(71)
SHEN	Shenandoah Telecom	Communication Services	1,160	1	(3)	(12)	7	5	2.5	(12)	1.3	533	(455)	(136)	(59)
GSAT	Globalstar	Communication Services	1,766	2	243	(11)	0	(89)	17.0	(3)	-0.6	11	(4)	(55)	(47)
AXSM	Axsome Therapeutics	Health Care	1,075	9	(54)	(29)	NM	(432)	24.8	(10)	4.4	115	(35)	(110)	(30)
SWCH	Switch Inc	Information Technology	3,660	4	77	(12)	14	6	9.7	(0)	1.4	39	(37)	(24)	(23)
Median			\$2,133	8 %	(3)%	(18)%	17 %	(1)%	5.5 x	(12)%	2.9	\$218	(\$91)	(\$340)	(\$176)
Russell 3000 median			2,087	3	16	(9)	9	8	2.7	4	3.2	254	38	153	

Five ratios used in the Altman Z-score measure of balance sheet strength: Working capital/assets, retained earnings/assets, operating income/assets, leverage ratio, and sales/assets.

Bear flattening of Treasury yield curve through 2023

2s-10s yield curve slope will narrow from 85 bp to 35 bp by year-end 2023



Defensive sectors outperform in bear flattener

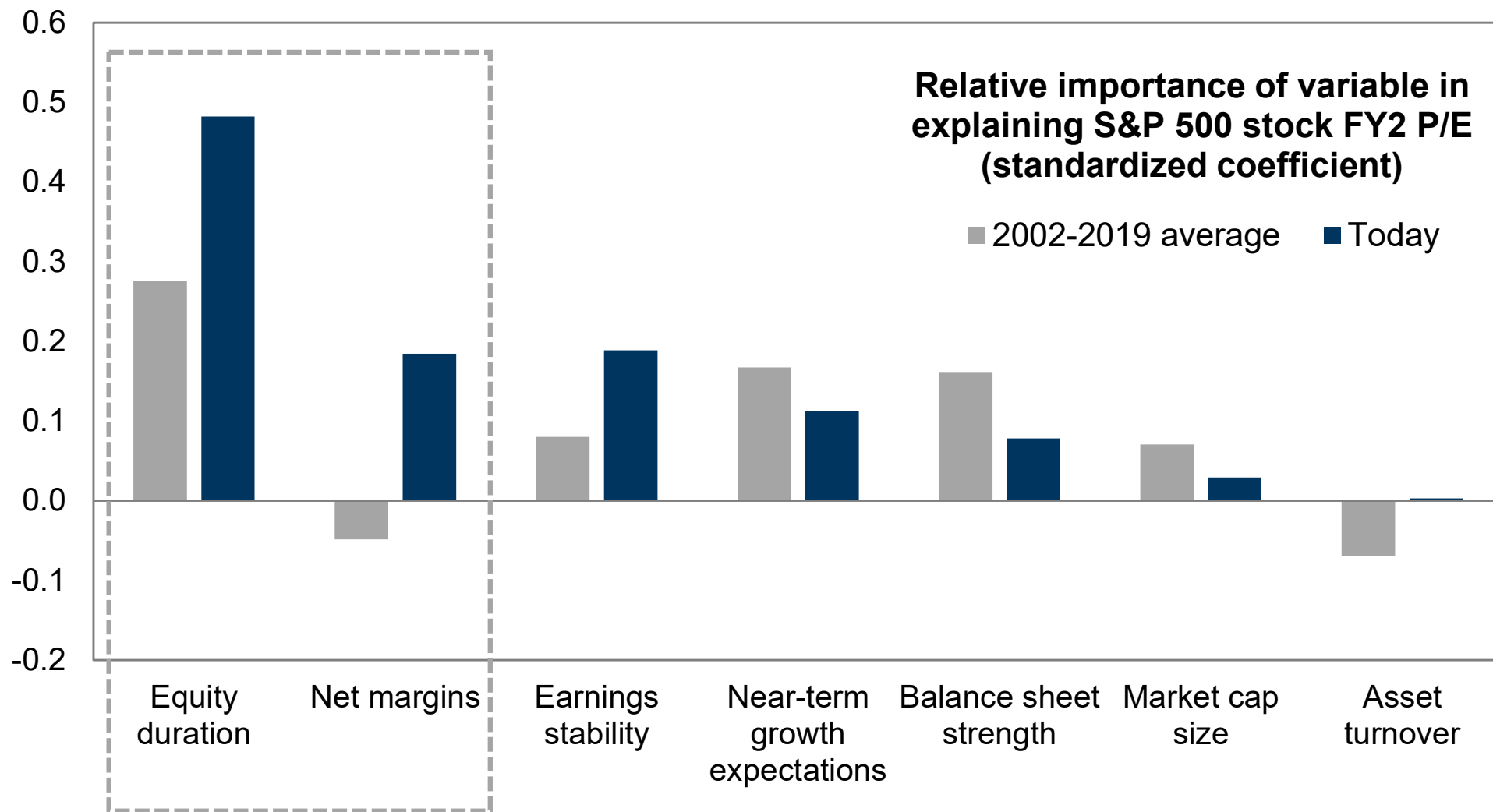
S&P 500 index and sector returns during various yield curve environments

Sectors vs. S&P 500	Median monthly return since 2010			
	Bull steepen	Bear steepen	Bull flatten	Bear flatten
Energy	(0.2)pp	0.0 pp	(1.9)pp	(1.0)pp
Materials	0.0	(0.1)	(0.9)	(0.3)
Industrials	0.0	0.4	(0.4)	(0.1)
Utilities	(0.8)	(1.9)	2.1	(0.0)
Communication Services	(0.4)	0.9	0.8	0.0
Information Technology	1.5	0.2	(0.1)	0.0
Financials	(0.3)	1.8	(1.5)	0.0
Health Care	0.1	(1.0)	0.6	0.1
Consumer Staples	(1.0)	(1.5)	1.2	0.2
Consumer Discretionary	0.3	0.1	0.7	0.5
S&P 500	3.0 %	2.5 %	0.9 %	0.9 %

Re-pricing of growth

What investors pay for today vs. history

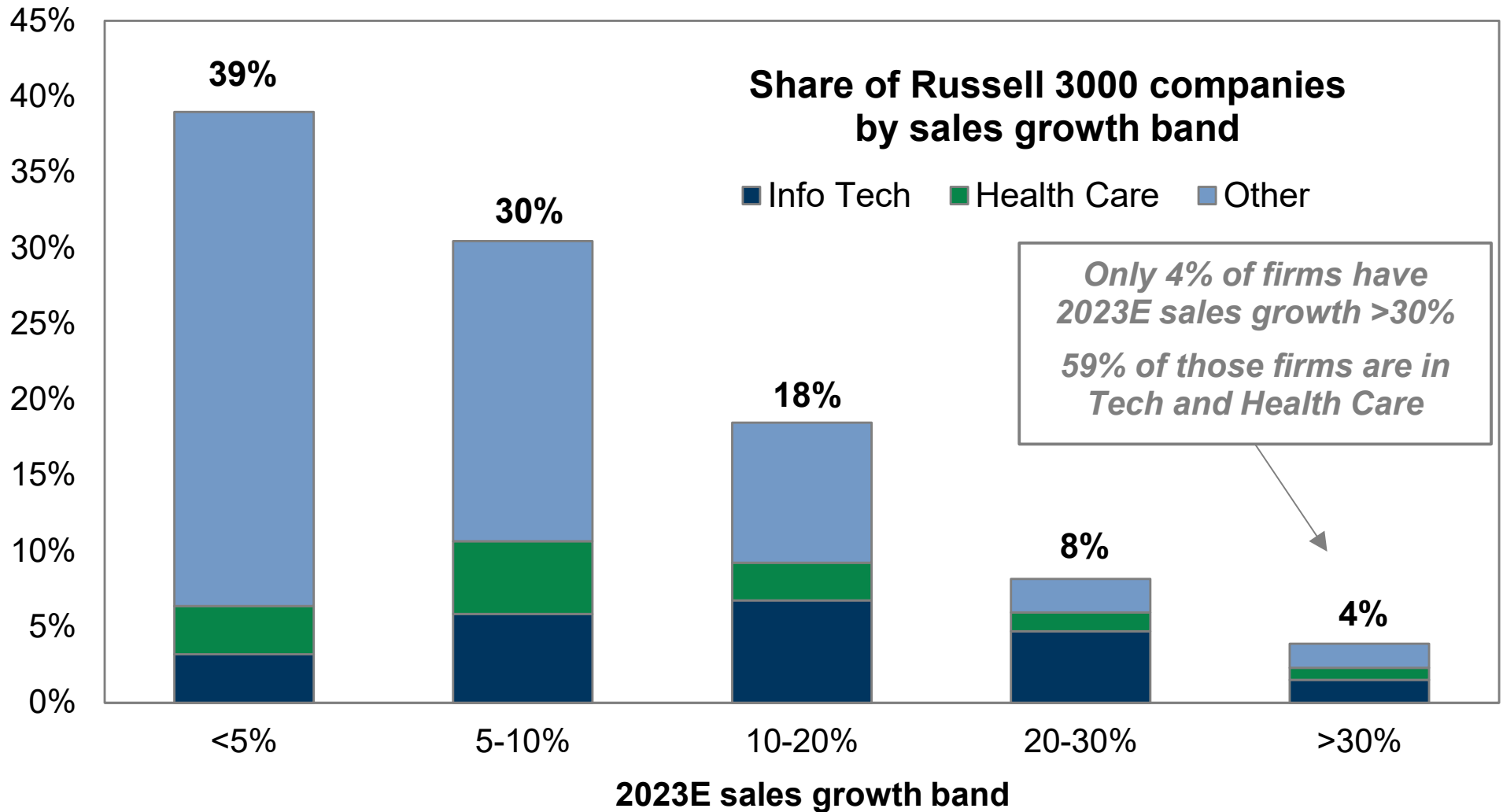
Long-term growth results in 2x the valuation boost as net profit margins today



Equity duration reflects the weighted average distribution of a company's future cash flows. Regressions based on quarterly observations of S&P 500 companies. See Valuation at the Lower Bound.

Distribution of Russell 3000 company sales growth

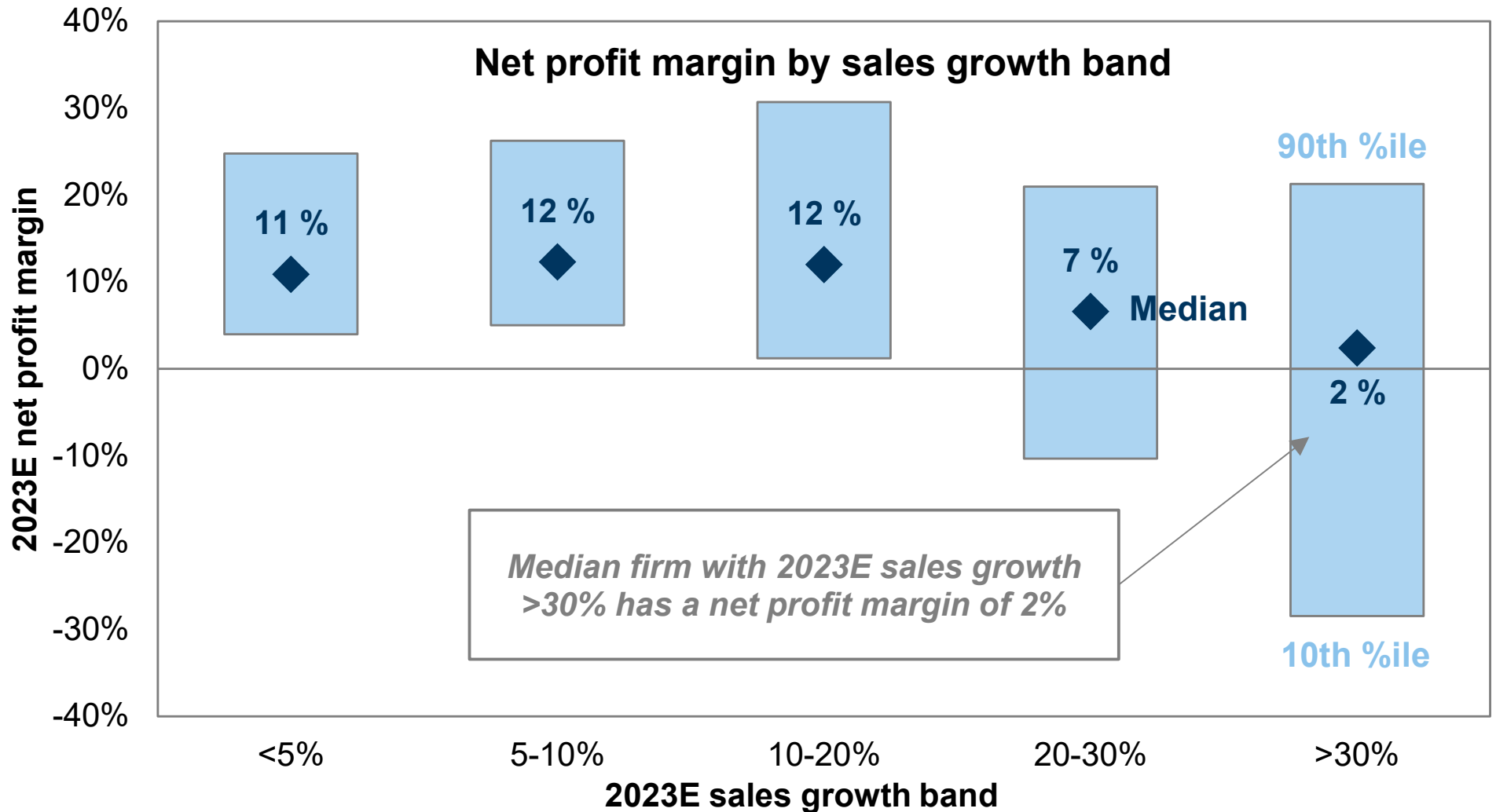
Just 4% of companies are expected to grow 2023 sales by more than 30%



Russell 3000 stocks over \$2 billion in market cap, excluding Financials and Biotechnology.

Growth-margin trade-off for Russell 3000 stocks

Many perceived “hyper-growth” companies have low profit margins



Russell 3000 stocks over \$2 billion in market cap, excluding Financials and Biotechnology.

How investors value sales growth vs. margins

Investors ascribe little importance to margins in the valuation of high-growth firms

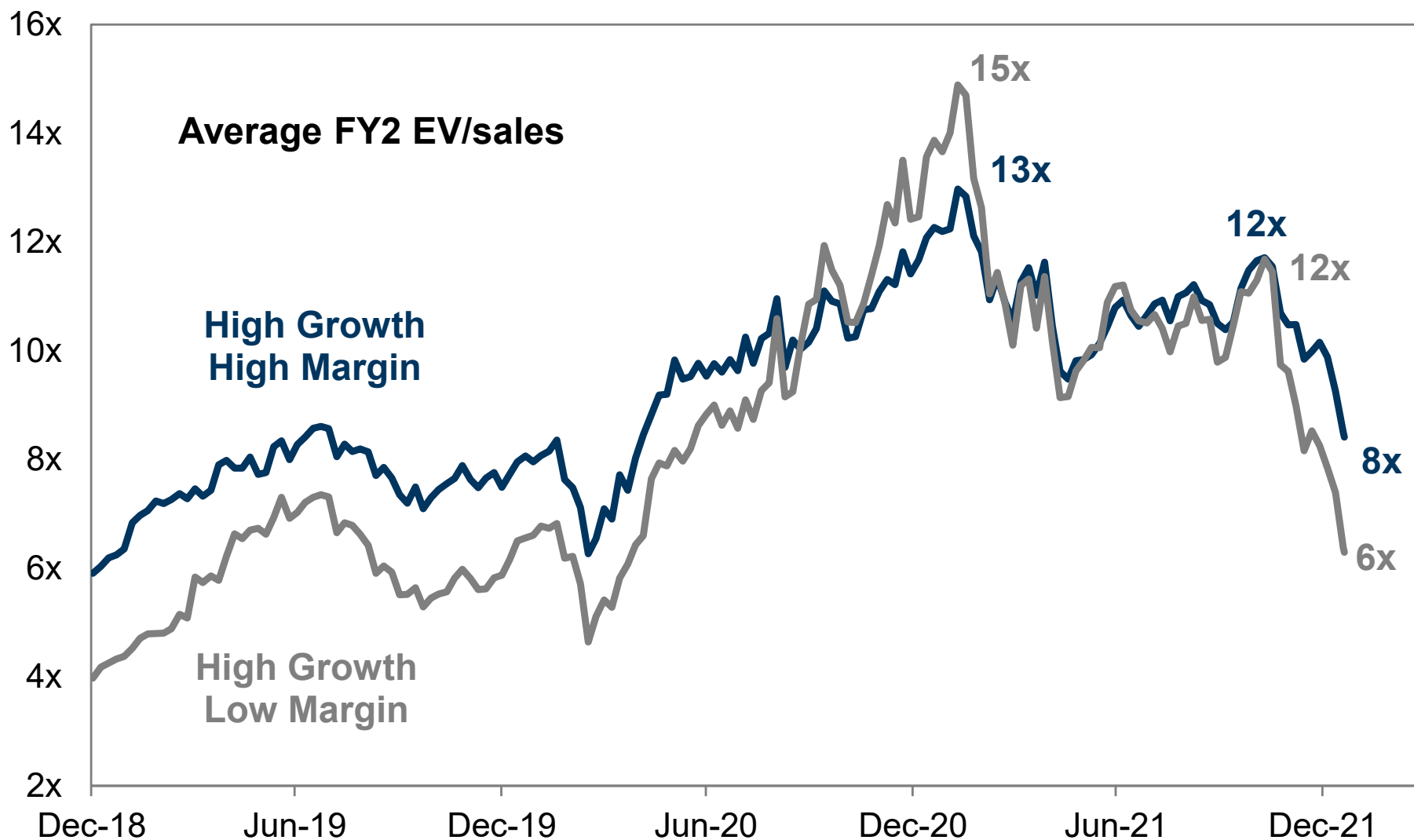
Average FY2 EV/sales

		Sales growth (2023E)				High less low
		<5%	5-10%	10-20%	>20%	
Margin (2023E)	<5%	0.7 x	1.4 x	4.2 x	6.3 x	5.6x
	5-10%	1.4	2.0	3.0	5.2	3.7x
	10-20%	3.2	3.3	4.5	8.1	4.9x
	>20%	4.4	6.4	8.4	7.2	2.8x
High less low		3.7x	5.0x	4.2x	0.9x	

Russell 3000 stocks over \$2 billion in market cap, excluding Financials and Biotechnology.

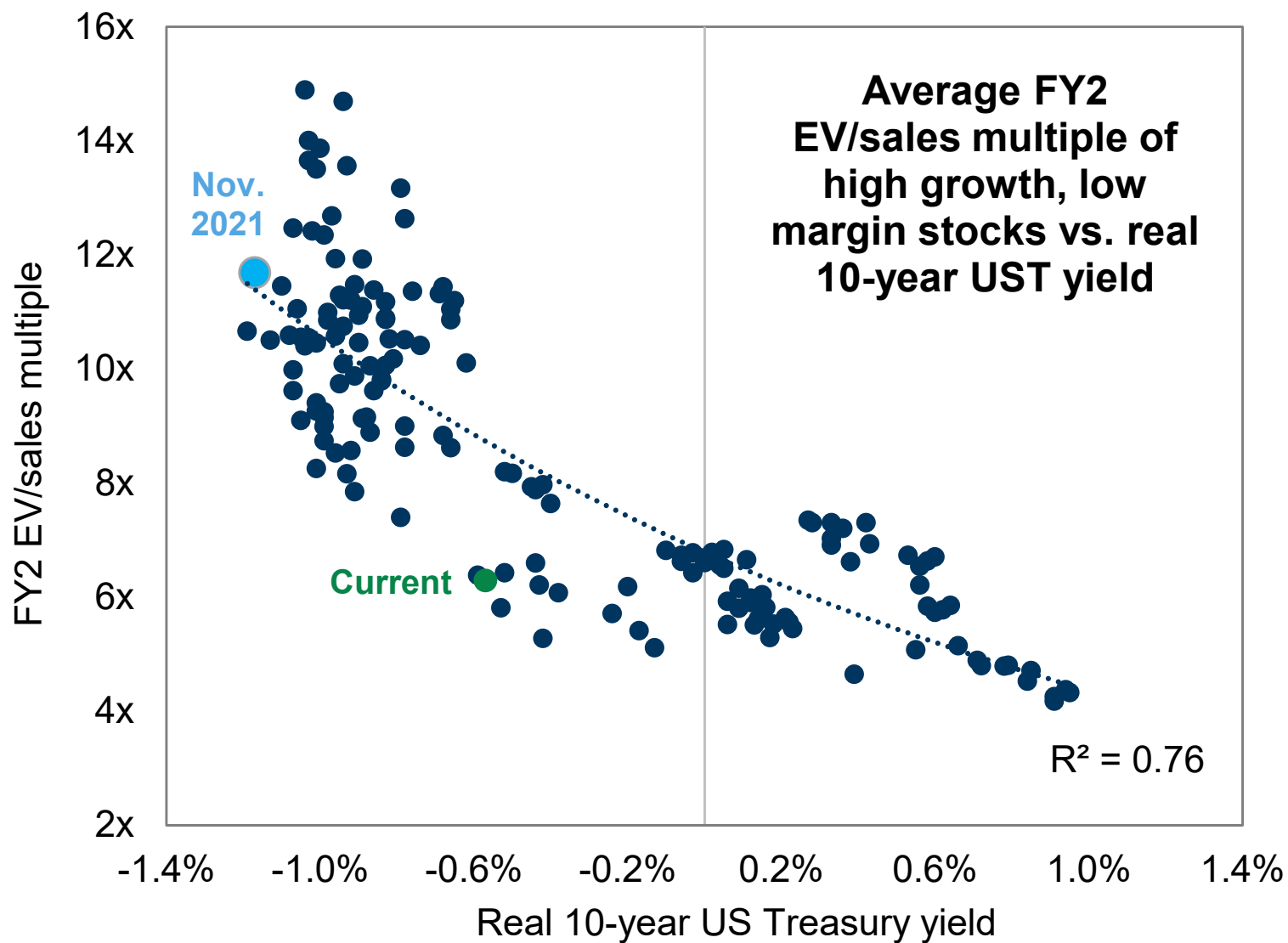
Valuation of high- and low-margin growth stocks

Low-margin growth stocks de-rated more than high-margin growth stocks



Valuation of high growth, low margin stocks vs. rates

Jump in real Treasury yield corresponded with dramatic valuation contraction



Performance of high- vs. low-margin growth stocks

High growth and *high margin* stocks outperforming high growth and *low margin*



Stocks with fast revenue growth & HIGH profitability

Russell 3000 companies with high revenue growth and high margins

Company	Ticker	Industry group	Market cap (bn)	YTD return	Consensus 2021 - 2023 sales CAGR	Consensus 2023 profit margin	EV/ FY2 sales
Mastercard	MA	Software & Services	\$339	(3)%	18 %	47 %	13 x
MP Materials	MP	Materials	8	35	48	48	10
United Therapeutics Corp	UTHR	Pharma Biotech & Life Sciences	9	26	13	42	4
Aspen Technology	AZPN	Software & Services	10	14	13	41	11
Universal Display	OLED	Semiconductors	7	(32)	20	38	8
NVIDIA	NVDA	Semiconductors	704	116	19	38	20
Marvell Technology	MRVL	Semiconductors	73	83	26	35	10
Lattice Semiconductor	LSCC	Semiconductors	10	64	15	34	16
Autodesk	ADSK	Software & Services	59	(12)	16	32	11
Monolithic Power Systems	MPWR	Semiconductors	22	32	19	31	13
Veeva Systems	VEEV	Health Care Equipment & Services	41	(2)	18	31	16
Meta Platforms	FB	Media & Entertainment	930	22	18	29	6
Neurocrine Biosciences	NBIX	Pharma Biotech & Life Sciences	8	(14)	21	27	5
Zoom Video Communications	ZM	Software & Services	55	(45)	19	27	9
Vicor	VICR	Capital Goods	5	30	27	27	9
Incyte	INCY	Pharma Biotech & Life Sciences	15	(22)	16	27	3
Booking Hldg	BKNG	Consumer Services	88	(3)	30	27	5
Palantir Tchnlg	PLTR	Software & Services	36	(22)	30	26	13
Paycom Software	PAYC	Software & Services	25	(8)	24	26	13
Alphabet	GOOGL	Media & Entertainment	1,936	66	16	25	6
Air Lease	AL	Capital Goods	5	(2)	20	24	7
Match Group	MTCH	Media & Entertainment	36	(17)	19	24	10
Repligen Corp	RGEN	Pharma Biotech & Life Sciences	14	35	19	23	15
Ambarella	AMBA	Semiconductors	7	115	23	22	14
Dynatrace Inc	DT	Software & Services	17	39	25	22	13
Exelixis	EXEL	Pharma Biotech & Life Sciences	5	(15)	18	21	2
PayPal Holdings	PYPL	Software & Services	219	(20)	20	21	6
Align Technology	ALGN	Health Care Equipment & Services	50	18	21	21	9
ABIOMED	ABMD	Health Care Equipment & Services	14	(4)	17	21	10
ServiceNow	NOW	Software & Services	131	19	25	21	14
Etsy	ETSY	Retailing	28	24	20	21	10
CoStar Group	CSGP	Commercial & Professional Services	31	(16)	15	21	11
SiTime	SITM	Semiconductors	5	139	25	21	15
Fortinet Inc	FTNT	Software & Services	54	123	18	20	12
Crocs	CROX	Consumer Durables & Apparel	9	150	18	20	3
Pinterest	PINS	Media & Entertainment	24	(45)	27	20	5
Screen median			\$24	16 %	19 %	26 %	10 x
Median Russell 3000 stock with market cap over \$5 billion			15	24	7	14	4

Stocks with fast revenue growth & LOW profitability

Russell 3000 companies with high revenue growth and low margins

Company	Ticker	Industry group	Market cap (bn)	2021 return	Return since 10/31	2021 Net inc. (mn)	Consensus 2023 sales growth	Consensus 2023		FY2 EV/ sales
								Profit margin	Net inc. (mn)	
Snowflake, Inc.	SNOW	Software & Services	\$85	20 %	(22)%	(\$688)	56 %	(24)%	(\$735)	25 x
DraftKings Inc	DKNG	Consumer Services	8	(41)	(57)	(1533)	34	(28)	(716)	3
Guardant Health, Inc.	GH	Health Care Equipment & Services	7	(22)	(39)	(433)	33	(60)	(378)	11
Lyft, Inc.	LYFT	Transportation	13	(13)	(19)	(926)	23	(7)	(368)	2
Wix.com Ltd.	WIX	Software & Services	7	(37)	(30)	(148)	22	(18)	(338)	4
Smartsheet, Inc.	SMAR	Software & Services	7	12	(14)	(167)	33	(25)	(235)	7
Bill.com Holdings, Inc.	BILL	Software & Services	17	83	(43)	(186)	36	(27)	(232)	15
Teladoc Health, Inc.	TDOC	Health Care Equipment & Services	12	(54)	(50)	(508)	24	(6)	(194)	4
Asana, Inc.	ASAN	Software & Services	10	152	(60)	(165)	33	(24)	(161)	14
Splunk Inc.	SPLK	Software & Services	19	(32)	(26)	(322)	22	(3)	(100)	6
Plug Power Inc.	PLUG	Capital Goods	12	(17)	(46)	(322)	52	(2)	(31)	5
Inspire Medical Systems, Inc.	INSP	Health Care Equipment & Services	6	22	(22)	(52)	27	(7)	(26)	14
IAC/InteractiveCorp.	IAC	Media & Entertainment	11	4	(16)	534	25	(0)	(24)	2
Wolfspeed Inc	WOLF	Semiconductors	11	6	(23)	(297)	43	(1)	(16)	8
Anaplan, Inc.	PLAN	Software & Services	7	(36)	(31)	(49)	26	(0)	(4)	7
Elastic NV	ESTC	Software & Services	8	(16)	(49)	(35)	26	(0)	(4)	6
MongoDB, Inc.	MDB	Software & Services	26	47	(26)	(48)	31	0	1	16
Avalara Inc	AVLR	Software & Services	9	(22)	(41)	(15)	23	1	5	8
10x Genomics Inc	TXG	Pharma Biotech & Life Sciences	11	5	(41)	(51)	33	2	19	11
Okta, Inc.	OKTA	Software & Services	30	(12)	(23)	(69)	34	1	27	11
Cloudflare Inc	NET	Software & Services	30	73	(52)	(17)	33	2	29	23
Rapid7 Inc.	RPD	Software & Services	5	31	(27)	(4)	21	4	33	7
DoorDash, Inc.	DASH	Retailing	40	4	(40)	(403)	24	0	35	5
Unity Software, Inc.	U	Software & Services	32	(7)	(27)	(74)	29	2	44	16
Twilio, Inc.	TWLO	Software & Services	35	(22)	(32)	(49)	29	1	65	6
Carvana Co.	CVNA	Retailing	14	(3)	(48)	(241)	29	1	158	1
Uber Technologies, Inc.	UBER	Transportation	70	(18)	(17)	(1859)	25	2	790	2
HollyFrontier Corporation	HFC	Energy	5	28	(0)	251	34	3	848	0
Screen median			\$12	(5)%	(31)%	(\$157)	29 %	(0)%	(\$10)	7 x
Median Russell 3000 stock with market cap over \$2 billion			8	22		347	6	11	483	3

Earnings and margins

Aggregate EPS growth of 21%, median growth of 9%

Consensus expects 16% sales growth and 104 bp margin expansion to 11.6%

4QE 2021 Consensus Bottom-up

Sector	EPS	Sales	Margin		Median stock EPS growth
	Growth	Growth	Level	Change	
Materials	56 %	24 %	13.2 %	267 bp	14 %
Industrials	48	14	8.5	196	12
Health Care	17	11	10.2	54	7
Info Tech	15	10	24.9	117	17
Real Estate	13	NM	NM	NM	(1)
Comm Services	9	16	15.4	(97)	0
Utilities	5	NM	NM	NM	2
Consumer Discretionary	4	12	5.6	(44)	12
Financials	3	NM	NM	NM	11
Consumer Staples	3	9	7.0	(41)	1
Energy	NM	65	9.9	1025	89
S&P 500	21 %				9 %
<i>ex. Financials and Utilities</i>	27	16 %	11.6 %	104 bp	11
<i>ex. Energy</i>	13	12	11.7	44	9

Positive sales and EPS revisions in past few months

6 of 11 S&P 500 sectors had positive EPS revisions in past 1 and 3 months

	2022 Revisions			
	EPS REVISIONS		SALES REVISIONS	
	1 month	3 month	1 month	3 month
Energy	4.4 %	16.8 %	1.3 %	8.3 %
Real Estate	1.1	3.9	NM	NM
Materials	0.9	3.8	0.2	3.1
Health Care	0.9	5.3	0.3	2.6
S&P 500	0.3	1.9	0.3	1.9
Consumer Discretionary	0.2	(1.2)	0.4	0.9
Communication Services	0.1	(2.5)	0.1	0.3
S&P 500 ex. Energy	0.0	1.2	0.2	1.3
Consumer Staples	(0.0)	(0.0)	0.1	1.4
Financials	(0.2)	1.5	NM	NM
Information Technology	(0.2)	1.8	0.0	0.9
Utilities	(0.7)	(1.1)	NM	NM
Industrials	(1.3)	(2.5)	(0.0)	0.1

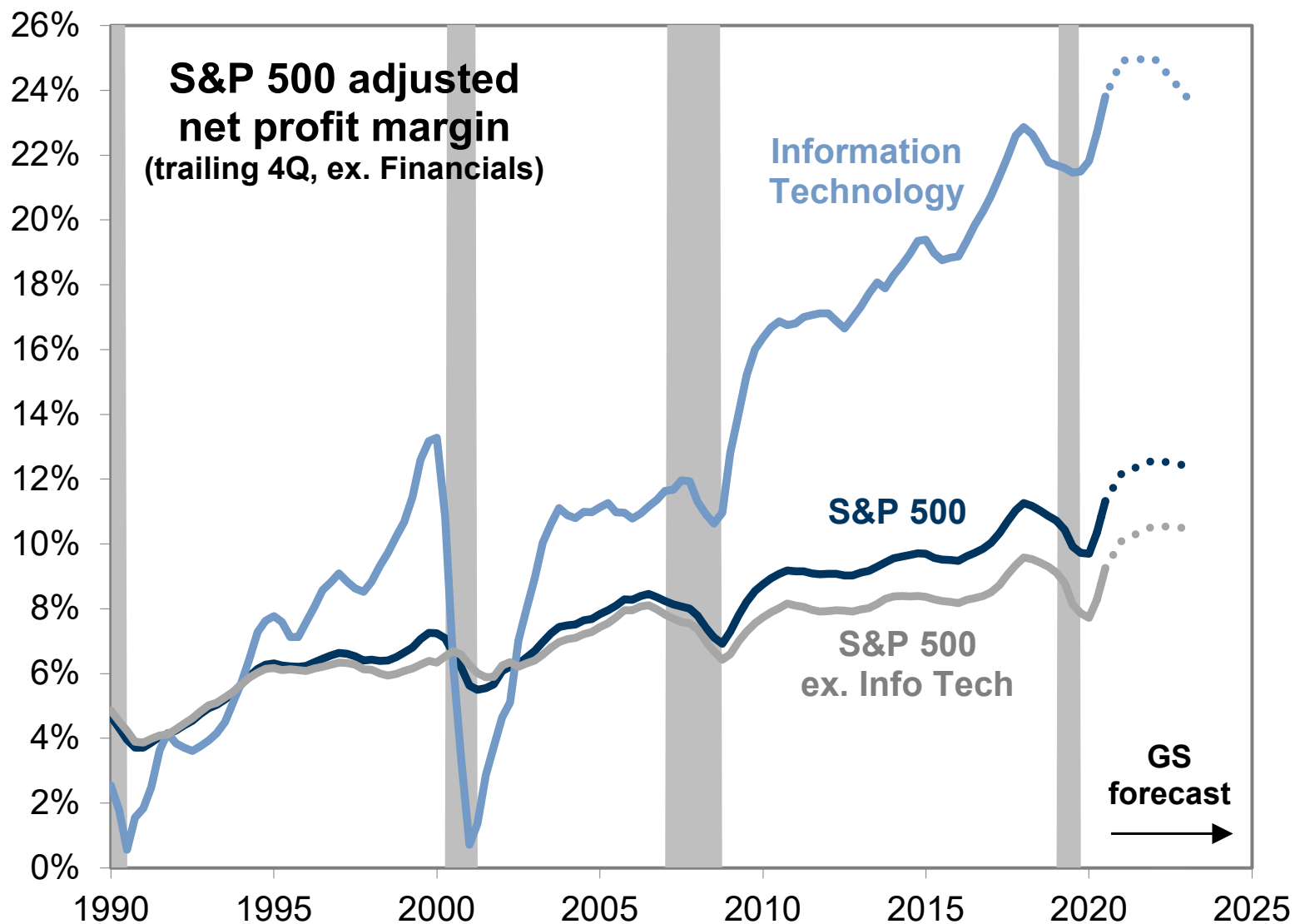
Goldman Sachs top-down vs. consensus bottom-up

2022 EPS estimates of \$226 / \$224 both imply annual growth of +8%

	2022 adjusted EPS estimates			
	GS Top-Down		Cons. Bottom-Up	
	Cont.	Growth	Cont.	Growth
Industrials	\$17	32 %	\$18	34 %
Consumer Discretionary	20	28	19	27
Information Technology	50	10	49	7
Real Estate	5	9	5	10
Comm Services	24	7	23	5
Materials	7	7	7	5
Health Care	37	6	37	8
Consumer Staples	13	6	13	6
Utilities	6	0	6	3
Financials	35	(10)	34	(11)
S&P 500 ex-Energy	215	7	211	7
Energy	12	29	12	35
S&P 500	\$226	8 %	\$224	8 %

S&P 500 net margins will reach record high in 2022

Technology sector margins of 25% are 2x the 12.6% margins for broader market



Sector margins: Index will reach new high in 2022

Technology margins of 25.0% will be roughly twice the 12.6% level of the index

Sector	Goldman Sachs			Change	
	2021E	2022E	2023E	2022E	2023E
Info Tech	24.9 %	25.0 %	23.8 %	6 bp	(120)bp
Comm Services	17.7	17.4	17.2	(33)	(20)
Materials	13.5	13.8	13.7	35	(13)
Health Care	11.3	11.2	11.0	(13)	(19)
Industrials	8.4	10.0	10.5	164	45
Cons. Disc.	7.5	8.3	8.2	82	(10)
Cons. Staples	7.5	7.6	7.5	9	(11)
S&P 500 ex-Energy	12.6	13.0	12.8	32	(16)
Energy	7.6	8.9	8.6	137	(38)
S&P 500 net margin	12.2 %	12.6 %	12.4 %	41 bp	(18)bp
Consensus bottom-up	12.1 %	12.4 %	13.0 %		

Russell 1000 stocks with HIGH pricing power

Russell 1000 stocks with high and stable gross margins during the last 5 years

Company	Ticker	Market cap (bn)	Total return YTD	Fwd P/E	Cons. 2022 gross margin	Gross margin 5-year history	
						Coeff. of variation	Average level
COMMUNICATION SERVICES							
Cable One, Inc.	CABO	\$10	(5)%	33 x	NA	3 %	47 %
CONSUMER DISCRETIONARY							
Tapestry, Inc.	TPR	\$12	2 %	12 x	71 %	2 %	68 %
PVH Corp.	PVH	8	3	11	58	2	54
Skechers U.S.A., Inc.	SKX	7	7	17	49	2	47
Under Armour, Inc.	UAA	10	(2)	28	50	3	47
Carter's, Inc.	CRI	4	(1)	14	47	3	44
NIKE, Inc.	NKE	255	(3)	39	47	2	44
Advance Auto Parts, Inc.	AAP	15	1	19	46	1	44
Tempur Sealy International Inc	TPX	9	0	13	44	3	43
Ollie's Bargain Outlet Holdings Inc	OLLI	3	(4)	24	38	1	39
Burlington Stores, Inc.	BURL	18	(8)	32	42	2	39
LKQ Corporation	LKQ	17	(1)	15	40	1	37
Tractor Supply Company	TSCO	26	(3)	27	35	2	32
CONSUMER STAPLES							
Philip Morris International Inc.	PM	\$152	3 %	16 x	69 %	2 %	65 %
Colgate-Palmolive Company	CL	71	(1)	26	60	1	60
Procter & Gamble Company	PG	394	(0)	27	50	2	51
ENERGY							
Kinder Morgan Inc Class P	KMI	\$39	7 %	17 x	NA	7 %	29 %
Schlumberger NV	SLB	48	14	20	25	10	13
HEALTH CARE							
Edwards Lifesciences Corporation	EW	\$77	(5)%	50 x	78 %	1 %	75 %
Align Technology, Inc.	ALGN	45	(14)	45	74	3	74
Johnson & Johnson	JNJ	452	0	17	69	2	67
Zoetis, Inc.	ZTS	103	(11)	44	71	2	66
Mettler-Toledo International Inc.	MTD	37	(6)	45	59	1	56
Bio-Rad Laboratories, Inc.	BIO	20	(10)	55	57	2	55
INDUSTRIALS							
CoStar Group, Inc.	CSGP	\$29	(7)%	58 x	81 %	2 %	76 %
Roper Technologies, Inc.	ROP	50	(4)	32	65	2	63
Nordson Corporation	NDSN	14	(6)	27	56	1	55
IHS Markit Ltd.	INFO	51	(4)	37	64	2	49
3M Company	MMM	103	0	18	47	1	49
Rollins, Inc.	ROL	17	(2)	46	52	1	47
Cintas Corporation	CTAS	42	(9)	36	47	2	45
Illinois Tool Works Inc.	ITW	77	(0)	28	41	2	41
Dover Corporation	DOV	26	(0)	23	38	1	37
Crane Co.	CR	6	3	15	38	1	36
Toro Company	TTC	10	(1)	25	33	2	36
Fortune Brands Home & Security, Inc.	FBHS	14	(2)	17	36	1	35
Donaldson Company, Inc.	DCI	7	0	21	34	1	34
ITT, Inc.	ITT	9	(0)	23	33	1	32
Trane Technologies plc	TT	46	(3)	29	32	1	31
INFORMATION TECHNOLOGY							
Aspen Technology, Inc.	AZPN	\$10	(2)%	30 x	92 %	1 %	90 %
Dolby Laboratories, Inc.	DLB	9	(3)	33	90	1	88
Cadence Design Systems, Inc.	CDNS	48	(7)	51	91	1	87
Adobe Inc.	ADBE	245	(9)	37	89	1	85
VeriSign, Inc.	VRSN	27	(5)	39	86	1	84
Synopsys, Inc.	SNPS	53	(6)	42	82	1	76
Oracle Corporation	ORCL	231	(1)	17	80	1	76
Cognex Corporation	CGNX	13	(6)	48	73	2	75
Workday, Inc.	WDAY	63	(8)	75	77	2	70
Monolithic Power Systems, Inc.	MPWR	21	(6)	57	56	1	55
MATERIALS							
PPG Industries, Inc.	PPG	\$41	(1)%	23 x	38 %	4 %	40 %
Corteva Inc	CTVA	35	1	19	41	3	36
Valvoline, Inc.	VVV	7	(2)	17	33	5	36
Scotts Miracle-Gro Company	SMG	9	(1)	19	30	5	33
Avery Dennison Corporation	AVY	18	(1)	23	27	2	27
Vulcan Materials Company	VMC	28	1	36	25	4	26
Eagle Materials Inc.	EXP	7	(2)	16	28	4	25
List median		\$26	(2)%	27 x	50 %	2 %	47 %
Russell 1000 ex. Fins, RE, and Utils median		16	(1)	21	44	5	37

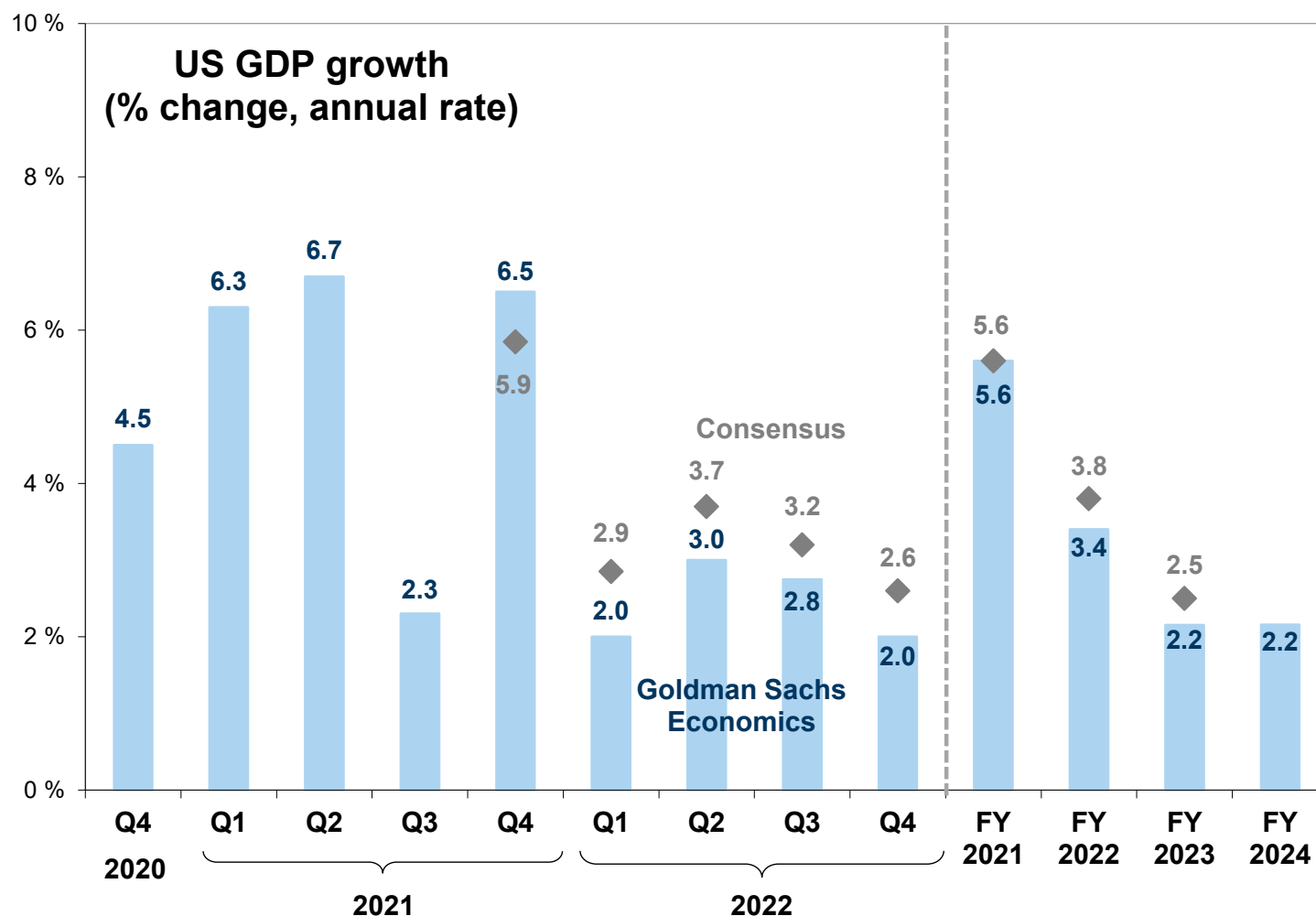
Russell 1000 stocks with LOW pricing power

Russell 1000 stocks with low and variable gross margins during the last 5 years

Company	Ticker	Market cap (bn)	Total return YTD	Fwd P/E	Cons. 2022 gross margin	Gross margin 5-year history	
						Coeff. of variation	Average level
COMMUNICATION SERVICES							
Live Nation Entertainment, Inc.	LYV	\$26	(0)%	136 x	NA	86 %	17 %
Madison Square Garden Sports Corp.	MSGS	4	(2)	279	NA	10	32
Walt Disney Company	DIS	285	1	37	NA	22	34
CONSUMER DISCRETIONARY							
Bright Horizons Family Solutions, Inc.	BFAM	\$7	(1)%	40 x	26 %	15 %	21 %
Wynn Resorts, Limited	WYNN	10	(0)	NM	NA	74	21
Six Flags Entertainment	SIX	4	1	22	95	93	31
Las Vegas Sands Corp.	LVS	29	1	146	NA	45	33
Marriott Vacations Worldwide	VAC	7	0	18	NA	16	34
Domino's Pizza, Inc.	DPZ	19	(7)	36	32	10	36
CONSUMER STAPLES							
Hormel Foods Corporation	HRL	\$27	1 %	25 x	19 %	8 %	20 %
Walgreens Boots Alliance Inc	WBA	45	1	11	22	7	23
Ingredion Incorporated	INGR	7	2	14	20	15	26
HEALTH CARE							
Sarepta Therapeutics, Inc.	SRPT	\$8	(3)%	NM	83 %	349 %	NM
Alnylam Pharmaceuticals, Inc	ALNY	18	(11)	NM	80	81	NM
Neurocrine Biosciences, Inc.	NBIX	8	(3)	34	98	292	NM
Nektar Therapeutics	NKTR	2	(6)	NM	NA	105	NM
Viatri, Inc.	VTRS	18	7	4	59	6	40
ICU Medical, Inc.	ICUI	5	(3)	32	40	13	40
Premier Inc.	PINC	5	(2)	15	63	13	55
INDUSTRIALS							
J.B. Hunt Transport Services, Inc.	JBHT	\$21	(1)%	25 x	NA	8 %	11 %
Lockheed Martin	LMT	99	1	13	14	7	13
Sunrun Inc.	RUN	7	(8)	NM	18	35	18
General Dynamics	GD	59	2	17	NA	7	18
Huntington Ingalls Industries, Inc.	HII	8	2	14	NA	11	20
Kirby	KEX	4	7	35	NA	11	19
Raytheon Technologies	RTX	135	5	19	19	19	23
General Electric Company	GE	110	6	30	28	8	25
Hexcel	HXL	5	5	54	19	22	25
INFORMATION TECHNOLOGY							
Avnet, Inc.	AVT	\$4	1 %	8 x	12 %	45 %	11 %
DXC Technology Co.	DXC	9	5	9	22	19	15
Euronet Worldwide, Inc.	EEFT	6	3	19	38	17	21
Wolfspeed Inc	WOLF	13	1	NM	34	60	29
Block Inc	SQ	67	(10)	94	25	16	34
Ceridian HCM Holding, Inc.	CDAY	14	(14)	290	43	6	41
FLEETCOR Technologies, Inc.	FLT	19	7	16	80	12	45
Alliance Data Systems	ADS	3	4	6	51	14	46
Switch, Inc.	SWCH	4	(7)	141	56	9	46
WEX Inc.	WEX	7	8	15	60	13	49
CDK Global, Inc.	CDK	5	1	15	48	8	49
Marvell Technology, Inc.	MRVL	72	(2)	41	65	7	56
Guidewire Software, Inc.	GWRE	9	(6)	NM	51	8	56
MATERIALS							
CF Industries Holdings, Inc.	CF	\$15	(2)%	6 x	34 %	27 %	20 %
List median		\$9	1 %	22 x	38 %	15 %	27 %
Russell 1000 ex. Fins, RE, and Utils median		16	(1)	21	44	5	37

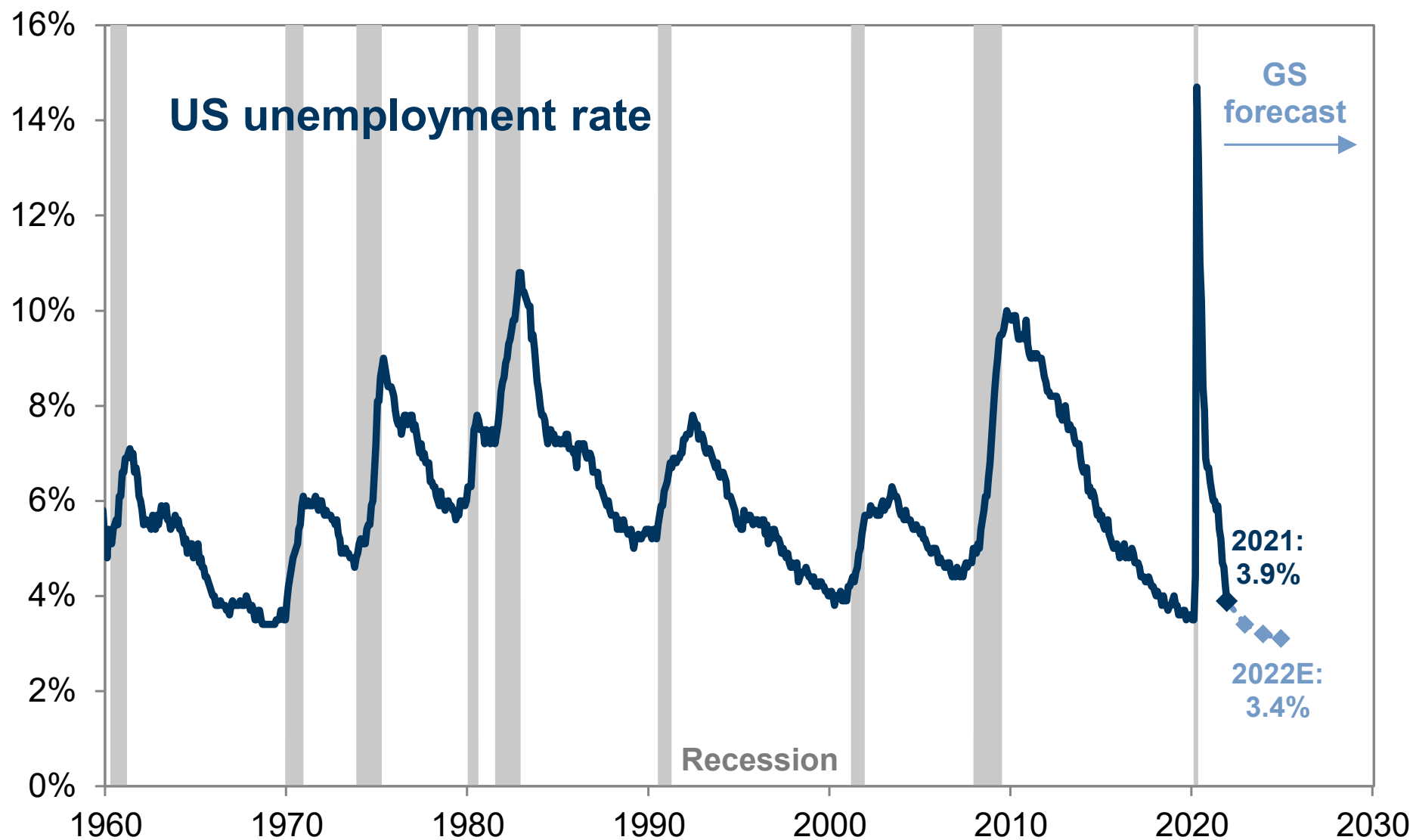
US GDP growth: Goldman Sachs vs. consensus

GDP growth rate will decelerate from 6.5% in 4Q 2021 to 2.0% in 1Q 2022



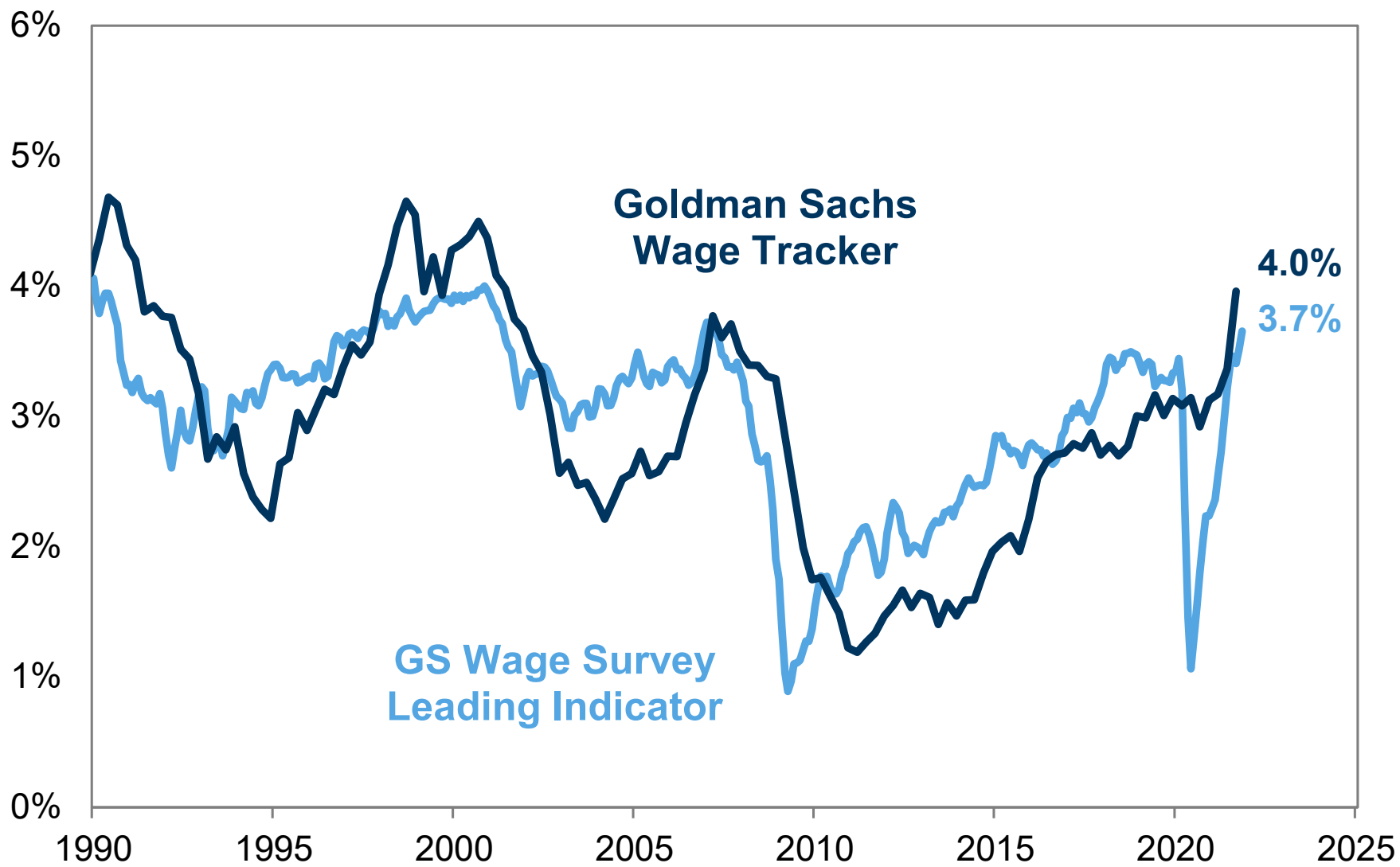
US unemployment rate forecast to decline rapidly

3.4% jobless rate at year-end 2022 would represent an all-time record low



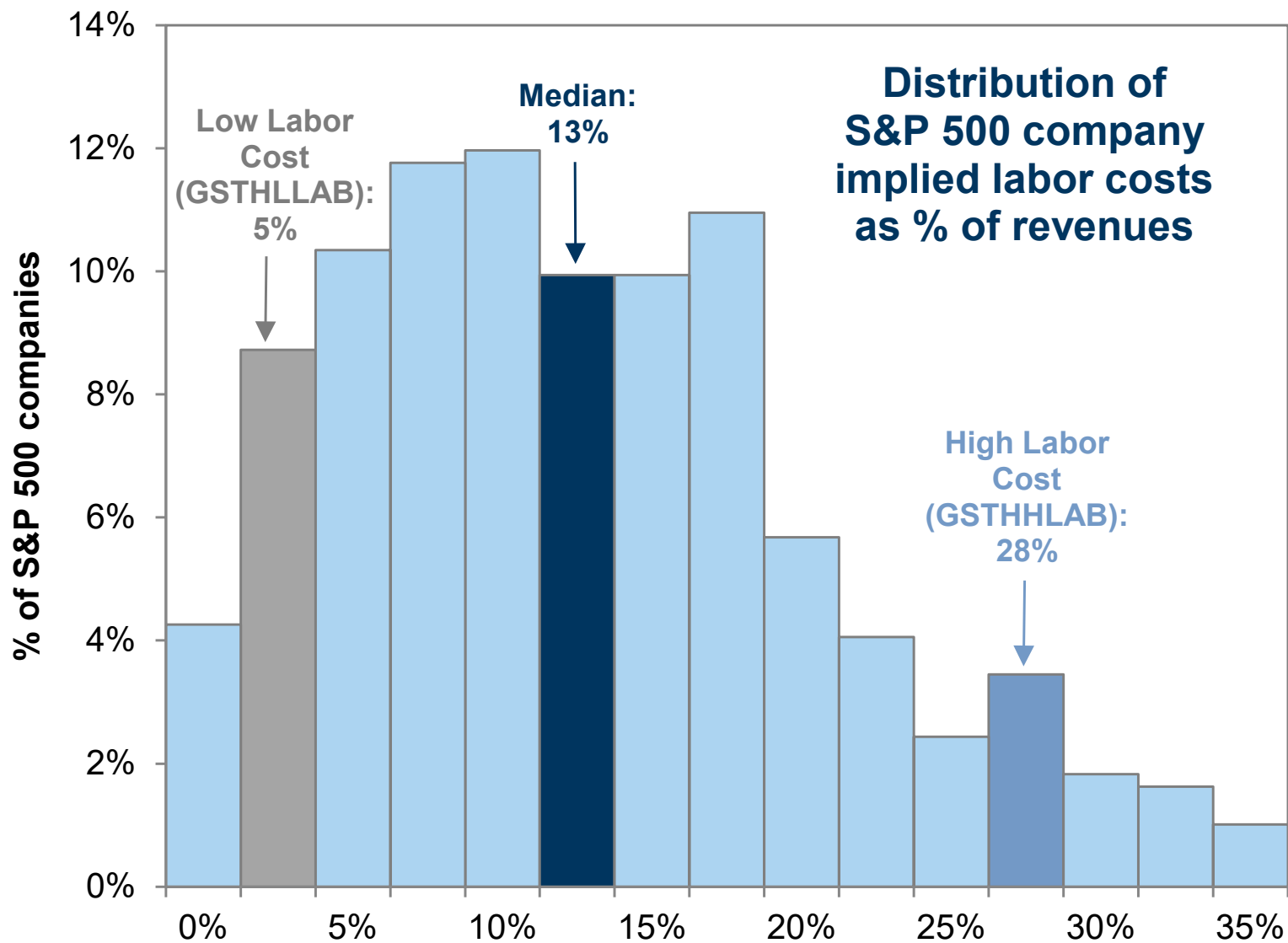
Wage growth acceleration is likely to continue

GS Wage Tracker and GS Wage Survey Leading Indicator both around 4%



S&P 500 labor costs as a percent of revenue

Labor costs for the median stock equal 13% of revenues



High labor cost stocks have underperformed

High labor cost stocks lagged during 2018-2019 and in recent months



Low Labor Costs as a percent of revenues

Stocks in our Low Labor Cost basket (GSTHLLAB)

Company	Ticker	2021 return	2021 net profit margin	Price/2022 EPS	Empl. (000s)	Median empl. comp. (000s)	2021E rev (bn)	Implied labor cost as a % of revenue
COMMUNICATION SERVICES								
DISH Network Corp.	DISH	0 %	6 %	12 x	14	\$57	\$18	4 %
Discovery Inc.	DISCA	(22)	11	8	10	67	12	5
Fox Corp.	FOXA	28	12	12	9	81	13	6
T-Mobile US Inc.	TMUS	(14)	4	34	75	64	81	6
Netflix Inc.	NFLX	11	16	42	9	220	30	7
ViacomCBS Inc.	VIAC	(17)	8	8	22	95	28	7
CONSUMER DISCRETIONARY								
Under Armour Inc.	UAA	23 %	6 %	26 x	17	\$7	\$6	2 %
Ross Stores Inc.	ROST	(6)	9	21	94	9	19	4
Pool Corp.	POOL	53	11	31	5	50	5	4
V.F. Corp.	VFC	(12)	9	20	40	14	12	4
Gap Inc.	GPS	(11)	2	10	117	7	18	5
CarMax Inc.	KMX	38	4	16	27	47	26	5
CONSUMER STAPLES								
Coca-Cola Co.	KO	11 %	26 %	12 x	80	\$11	\$38	2 %
Archer-Daniels-Midland	ADM	37	3	14	39	65	80	3
Constellation Brands	STZ	16	18	21	9	37	9	4
ENERGY								
Diamondback Energy	FANG	127 %	33 %	7 x	1	\$115	\$6	2 %
FINANCIALS								
Everest Re Group	RE	20 %	NM	8 x	2	\$146	\$11	2 %
Aflac Inc.	AFL	35	NM	12	12	64	22	4
Globe Life Inc.	GL	(0)	NM	12	3	65	5	4
Lincoln National	LNC	39	NM	7	11	78	19	4
S&P Global Inc.	SPGI	45	NM	31	23	25	8	7
Synchrony Financial	SYF	36	NM	8	17	46	10	7
HEALTH CARE								
AmerisourceBergen	ABC	38 %	1 %	12 x	22	\$59	\$212	1 %
McKesson Corp.	MCK	44	1	11	76	44	253	1
Cardinal Health	CAH	(0)	1	9	47	55	162	2
Cigna Corp.	CI	12	4	10	74	66	170	3
Align Technology	ALGN	23	22	42	18	12	4	5
Hologic Inc.	HOLX	5	35	19	6	84	5	9
Bristol-Myers Squibb	BMJ	3	36	8	30	147	46	10

Company	Ticker	2021 return	2021 net profit margin	Price/2022 EPS	Empl. (000s)	Median empl. comp. (000s)	2021E rev (bn)	Implied labor cost as a % of revenue
INDUSTRIALS								
C.H. Robinson Worldwide	CHRW	17 %	4 %	18 x	15	\$54	\$21	4 %
Expeditors Intl	EXPD	43	8	21	17	48	14	6
PACCAR Inc.	PCAR	6	9	14	26	79	23	9
A. O. Smith Corp.	AOS	59	11	24	14	23	3	9
INFORMATION TECHNOLOGY								
Apple Inc.	AAPL	35 %	25 %	29 x	147	\$58	\$366	2 %
Western Digital	WDC	18	11	7	66	8	17	3
Skyworks Solutions	SWKS	3	34	13	10	17	5	3
Seagate Tech Holdings	STX	88	14	12	40	9	11	4
CDW Corp.	CDW	57	5	24	10	97	20	5
Monolithic Power Systems	MPWR	35	28	55	2	34	1	6
Western Union	WU	(15)	16	8	11	31	5	7
HP Inc.	HPQ	57	7	9	53	88	62	8
Enphase Energy Inc.	ENPH	4	23	50	1	119	1	8
PayPal Holdings	PYPL	(19)	21	37	27	84	26	9
NortonLifeLock Inc.	NLOK	28	36	14	3	100	3	10
Lam Research Corp.	LRCX	54	27	19	14	105	15	10
Zebra Technologies	ZBRA	55	17	28	9	65	6	10
FLEETCOR Technologies	FLT	(18)	38	16	8	35	3	11
MATERIALS								
Mosaic Co.	MOS	72 %	15 %	6 x	13	\$26	\$12	3 %
REAL ESTATE								
Welltower Inc.	WELL	37 %	NM	24 x	0	\$93	\$4	1 %
UTILITIES								
NRG Energy Inc.	NRG	19 %	NM	8 x	4	\$114	\$20	2 %
List median			11 %	14 x	14	\$59	\$14	5 %
S&P 500 median			14	19	20	70	11	13

High Labor Costs as a percent of revenues

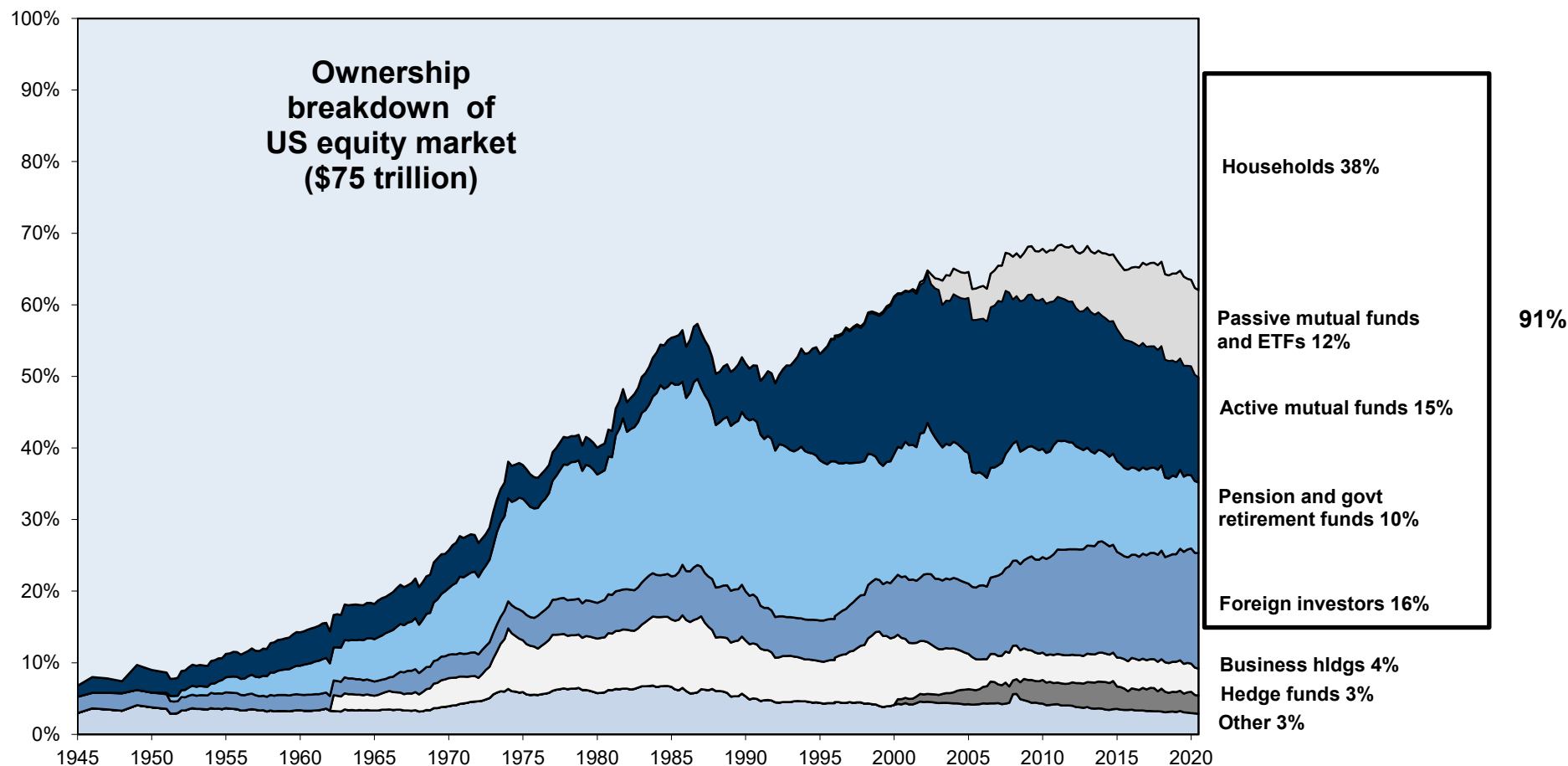
Stocks in our High Labor Cost basket (GSTHHLAB)

Company	Ticker	2021 return	2021 net profit margin	Price/2022 EPS	Empl. (000s)	Median empl. comp. (000s)	Rev (bn)	Implied labor cost as a % of revenue
COMMUNICATION SERVICES								
Interpublic Grp of Cos.	IPG	65 %	11 %	15 x	50	\$64	\$9	36 %
Twitter Inc.	TWTR	(20)	3	54	6	205	5	22
News Corp.	NWSA	25	5	23	24	81	9	21
Omnicom Group Inc.	OMC	22	9	12	64	42	14	19
Electronic Arts	EA	(8)	26	17	11	124	8	18
Verizon Communications	VZ	(8)	17	10	132	170	135	17
CONSUMER DISCRETIONARY								
Hilton Worldwide Hldgs	HLT	40 %	11 %	35 x	141	\$29	\$6	71 %
Marriott Intl	MAR	25	7	31	121	36	13	33
Darden Restaurants	DRI	29	9	18	157	18	9	30
AutoZone Inc.	AZO	77	14	19	100	27	14	19
Leggett & Platt	LEG	(4)	7	14	20	44	5	18
O'Reilly Automotive	ORLY	56	15	23	78	26	13	16
CONSUMER STAPLES								
PepsiCo Inc.	PEP	21 %	11 %	26 x	291	\$47	\$77	18 %
Molson Coors Beverage	TAP	4	9	12	17	74	10	12
Tyson Foods Inc.	TSN	38	5	12	139	37	47	11
ENERGY								
Schlumberger	SLB	40 %	8 %	18 x	86	\$60	\$23	23 %
FINANCIALS								
Aon Plc	AON	43 %	NM	22 x	50	\$81	\$12	33 %
Willis Towers Watson Public L	WLTW	14	NM	17	46	70	10	32
Wells Fargo & Co.	WFC	61	NM	14	269	74	75	27
Marsh & McLennan Cos.	MMC	51	NM	25	76	68	19	27
Arthur J. Gallagher	AJG	39	NM	28	32	62	8	25
Comerica Inc.	CMA	62	NM	16	8	92	3	25
HEALTH CARE								
IQVIA Holdings Inc.	IQV	57 %	12 %	26 x	70	\$96	\$14	49 %
DaVita Inc.	DVA	(3)	8	13	67	65	12	37
Quest Diagnostics	DGX	48	16	18	49	72	10	36
Cerner Corp.	CERN	20	17	26	26	76	6	35
Universal Health Svc.	UHS	(5)	7	11	89	43	12	31
HCA Healthcare Inc.	HCA	58	9	14	275	55	58	26
Perrigo Plc	PRGO	(11)	7	15	12	93	4	26
INDUSTRIALS								
Robert Half Intl	RHI	81 %	9 %	20 x	164	\$33	\$6	87 %
Jacobs Engineering Group	J	29	6	19	55	86	14	33
Huntington Ingalls Industries	HII	12	6	13	42	71	9	32
Eaton Corp.	ETN	47	13	23	92	64	20	29
INFORMATION TECHNOLOGY								
Cognizant Tech Solutions	CTSH	10 %	12 %	20 x	290	\$33	\$18	52 %
F5 Inc.	FFIV	39	25	20	6	199	3	47
ServiceNow Inc.	NOW	18	19	82	13	209	6	47
Gartner Inc.	IT	109	15	43	16	121	5	41
Fortinet Inc.	FTNT	142	19	68	8	149	3	38
Citrix Systems Inc.	CTXS	(26)	19	18	9	130	3	36
Autodesk Inc.	ADSK	(8)	25	40	12	136	4	36
NetApp Inc.	NTAP	42	17	17	11	188	6	33
Akamai Technologies	AKAM	11	27	19	8	121	3	29
Jack Henry & Associates	JKHY	4	18	34	7	75	2	28
Juniper Networks	JNPR	63	12	17	10	117	5	25
Trimble Inc.	TRMB	31	18	28	11	71	4	22
Corning Inc.	GLW	6	13	16	50	57	14	20
Cisco Systems Inc.	CSCO	46	27	17	78	127	50	20
MATERIALS								
International Paper	IP	4 %	7 %	10 x	49	\$98	\$23	21 %
REAL ESTATE								
CBRE Group Inc.	CBRE	73 %	NM	19 x	100	\$66	\$27	25 %
UTILITIES								
Consolidated Edison	ED	23 %	NM	19 x	14	\$259	\$13	28 %
List median		12 %	19 x	50	\$73	\$10	\$10	28 %
S&P 500 median		14	19	20	70	11	11	13

Money flow and demand for stocks

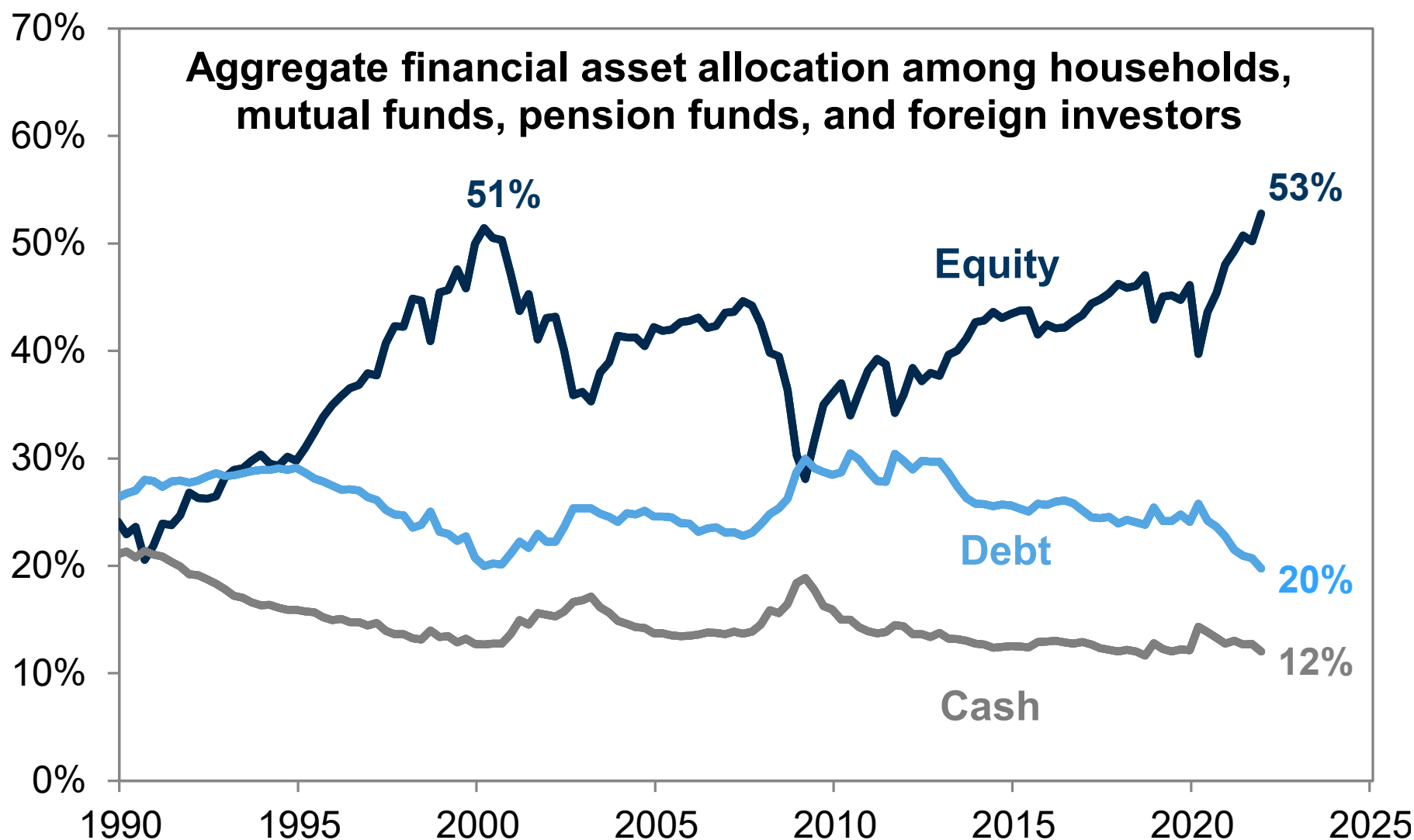
Ownership of US equity market since 1945

Households, mutual funds, pensions, and foreign investors own 91% of market



Equity allocations higher than at Tech Bubble peak

53% aggregate investor equity allocation is at all-time high, and will keep rising



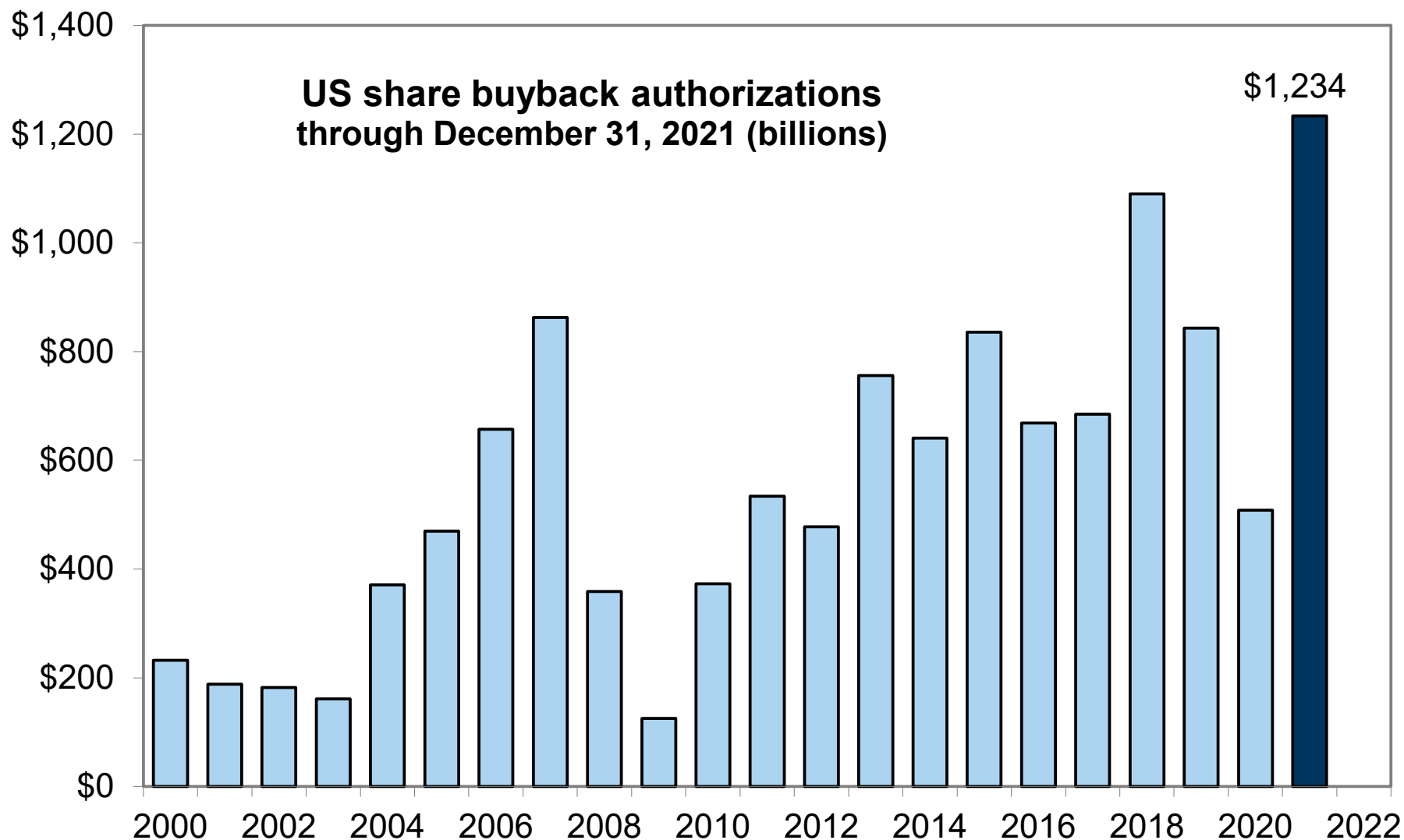
Corporations will be key source of US equity demand

Buybacks had been largest source of equity demand for last 10 years until 2020

Category	Net US equity demand (\$ billions)			
	2019	2020	2021E	2022E
Corporations	\$ 583	\$ 39	\$ 300	\$ 350
Households	62	436	650	200
Foreign Investors	(205)	638	100	100
Pension Funds	(202)	(143)	(150)	(150)
Mutual Funds	(219)	(482)	(300)	(250)
Life Insurance	1	1	-	-
Other	(26)	(1)	-	-
<i>less</i>				
Credit ETFs	157	247	200	150
Purchases of foreign stocks	(163)	242	400	100

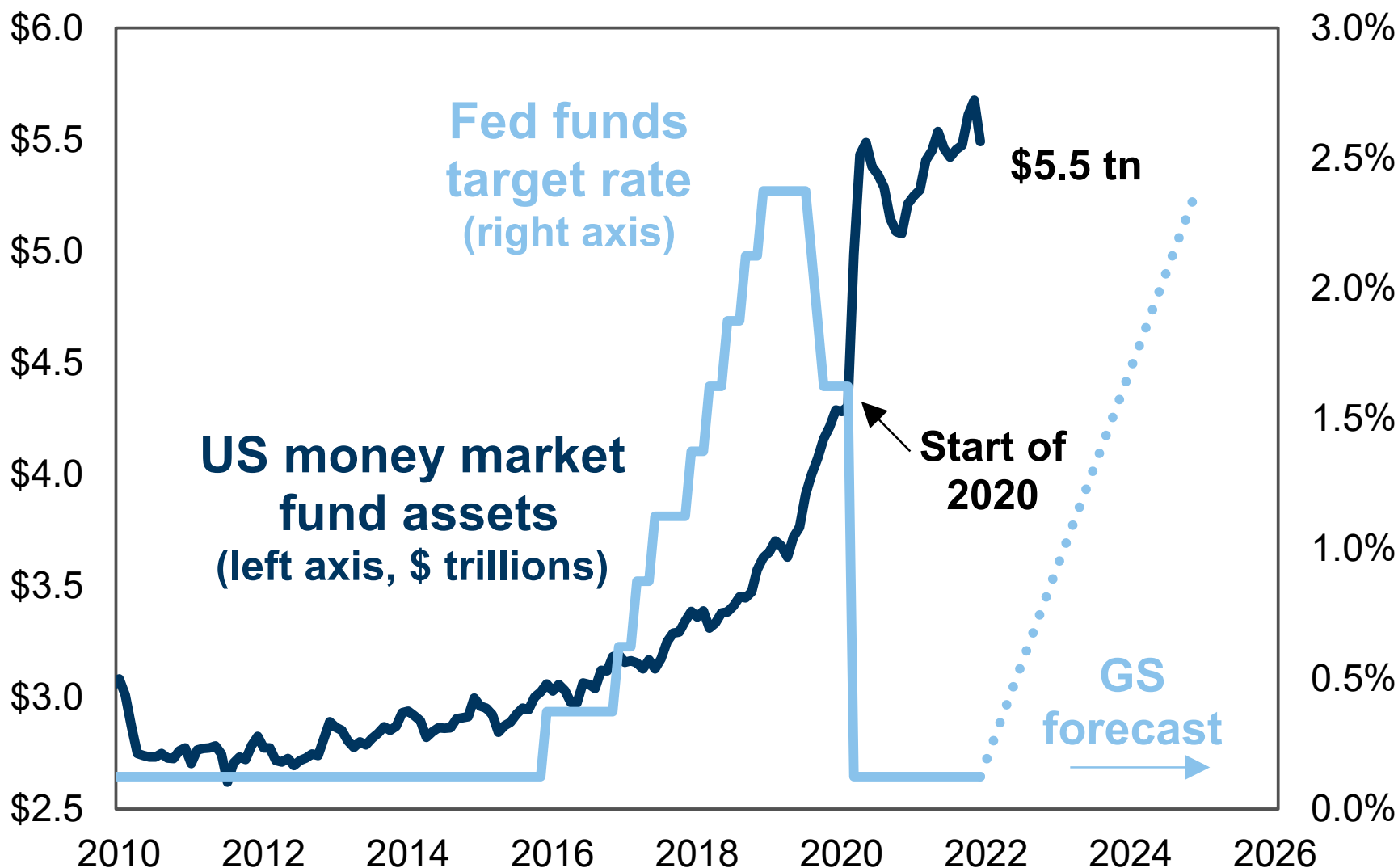
2021 buyback authorizations exceeded \$1.2 trillion

Corporations will be the largest source of US equity demand in 2022



Money market mutual fund assets total \$5.5 trillion

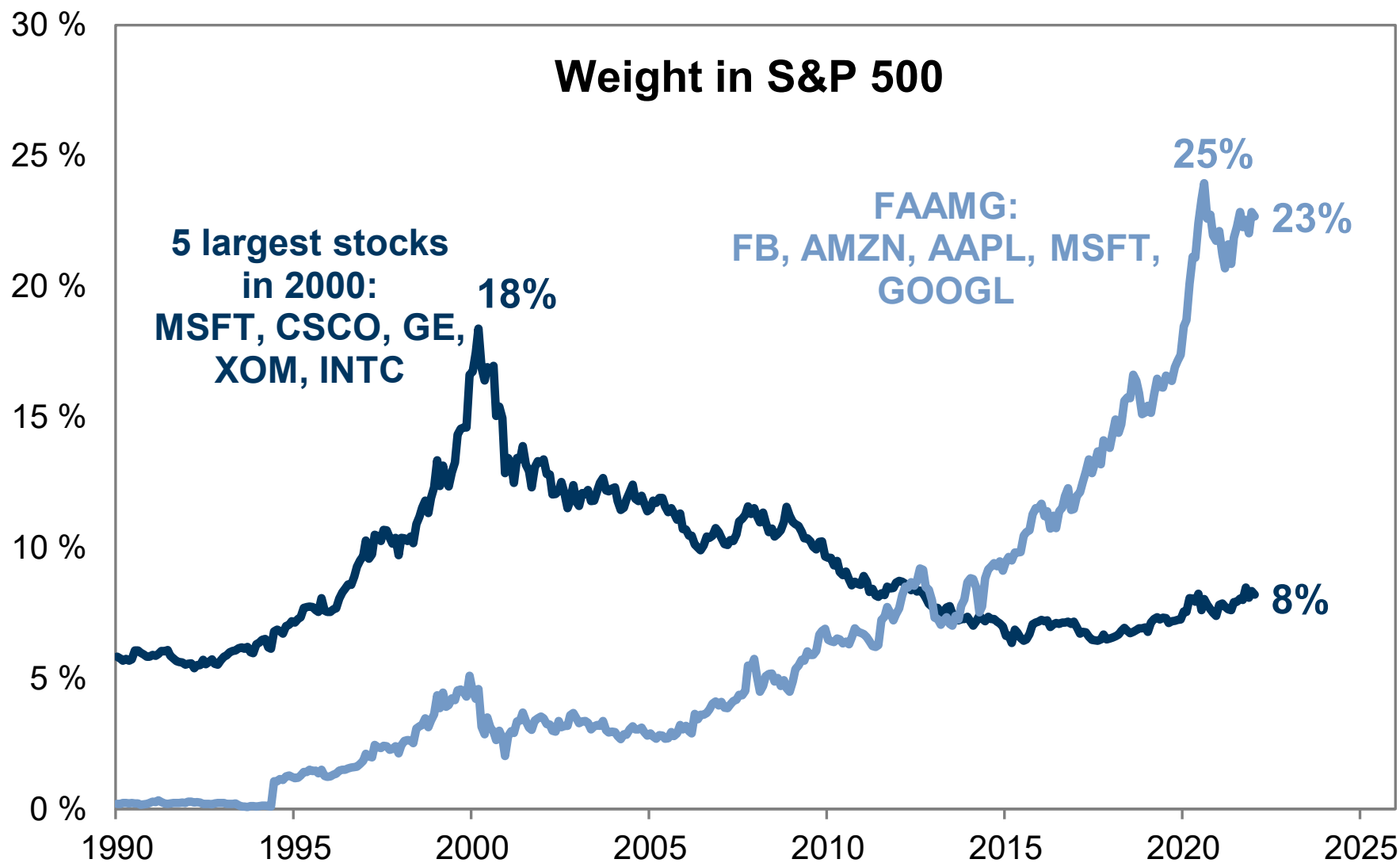
Current assets are \$1 trillion greater than pre-pandemic while rates are near 0%



Market concentration

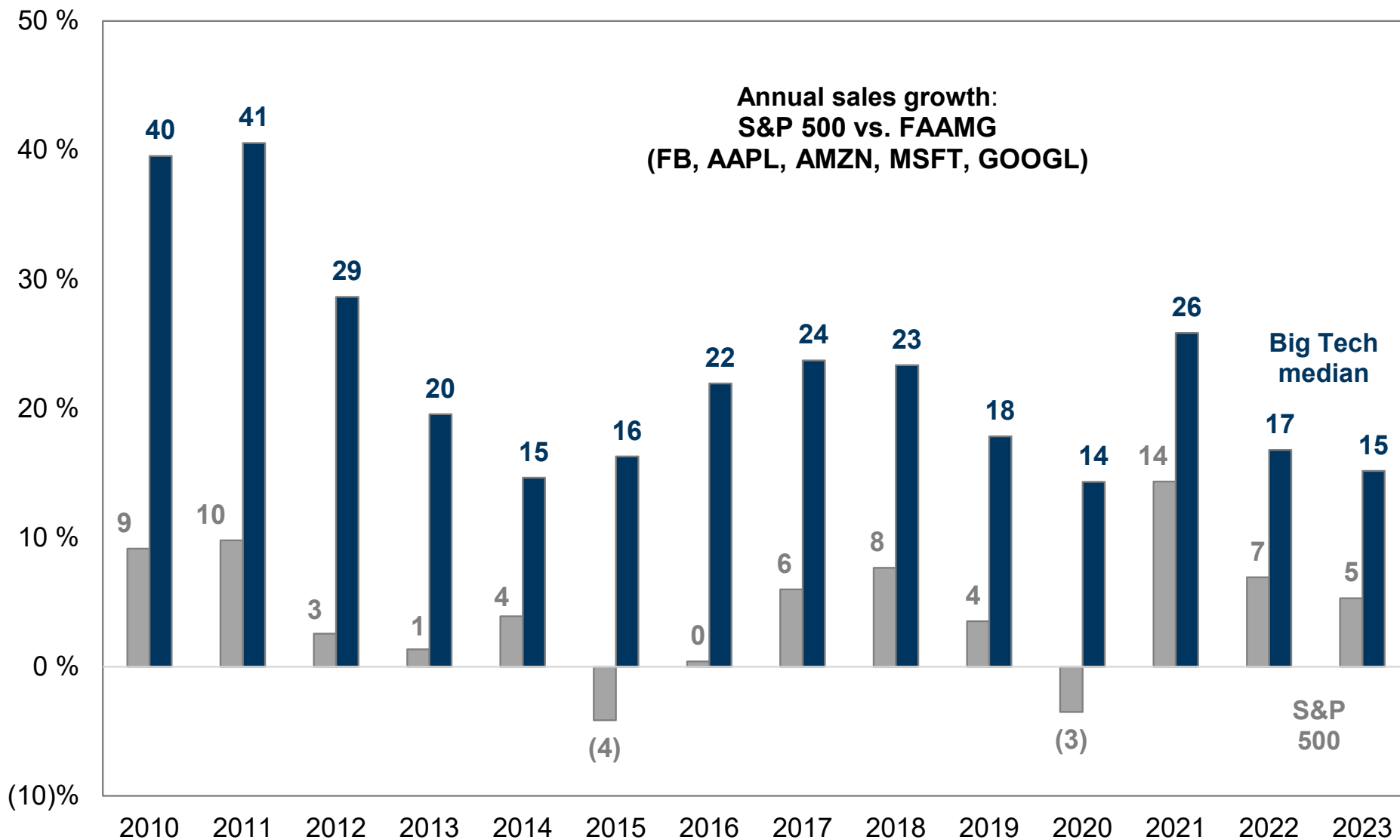
Equity market leadership is difficult to maintain

5 largest stocks in 2000 comprise only 8% of S&P 500 equity cap today



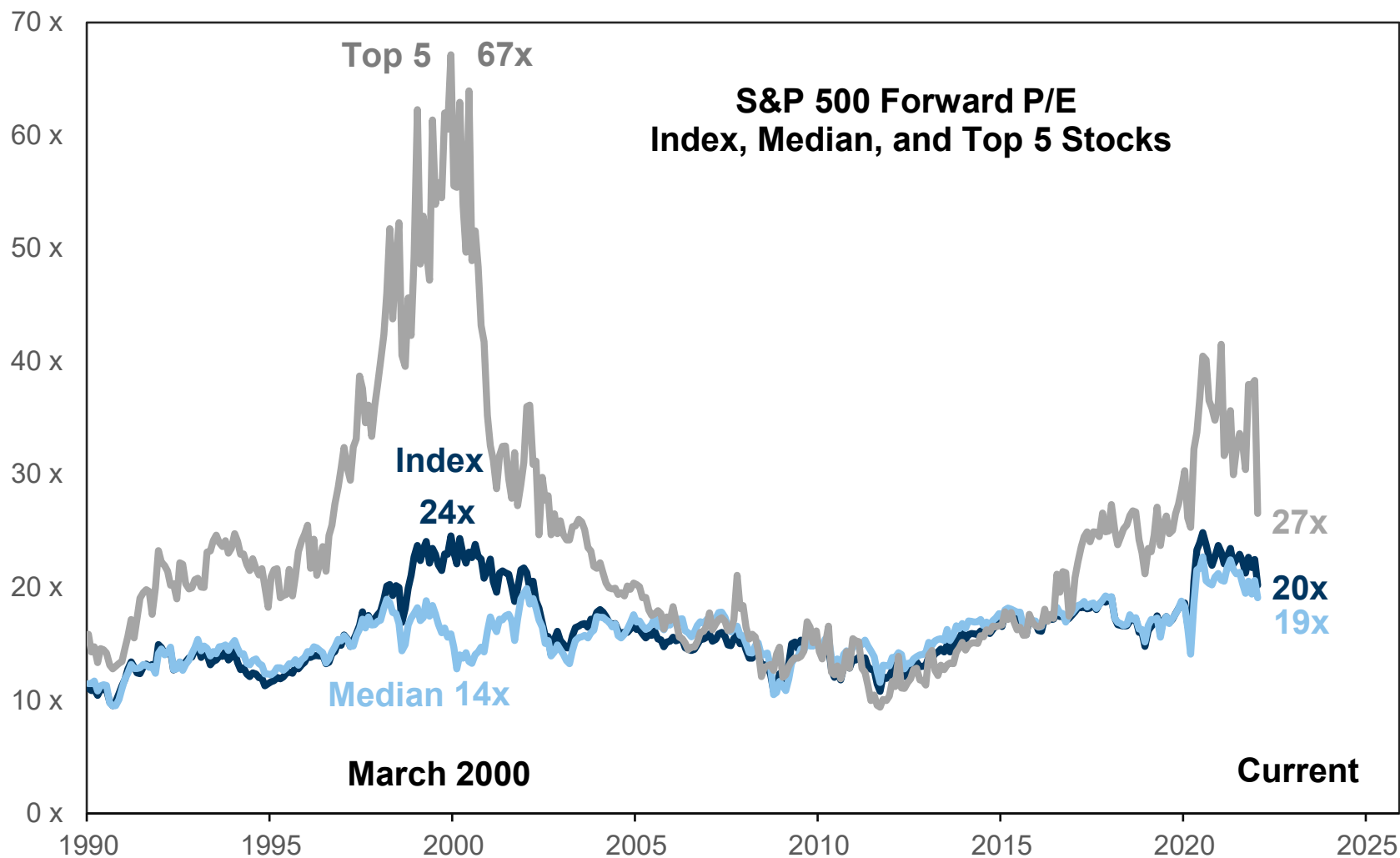
Decade of sustained rapid sales growth by FAAMG

CAGR revenue growth since 2010: 19% for FAAMG vs. 5% for S&P 500



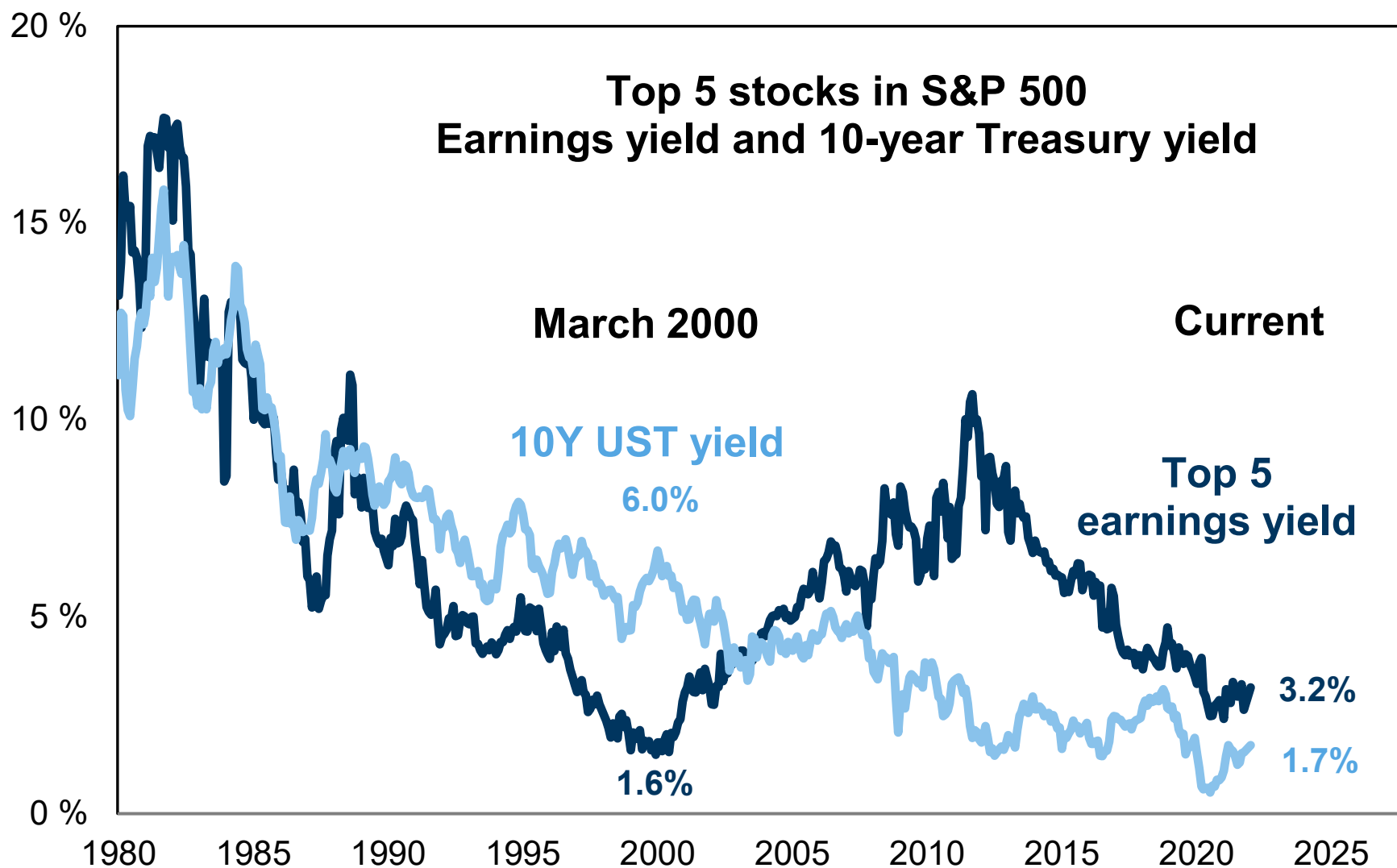
S&P 500 P/E multiple: index, median, top 5 stocks

Top 5 stocks trade at 27x forward P/E vs. 19x for median and 20x for index



Top 5 earnings yield in 2000 was *below* Treasuries

Bond yield was 6% in 2000 (vs. 1.7% today); earnings yield was 1.6% (vs. 3.2%)



S&P 500 index concentration in 2000 and 2020

Top 5 stocks in 2000 fell short of lofty sales and earnings growth expectations

Five largest stocks in March 2000

Company	Ticker	Market cap (\$ bn)	Total return		1999-2001 Sales CAGR		3-yr Growth Investment Ratio	EV / 2001E Sales	Price/ 2001E EPS	Earnings yield	Earnings yield gap (bp) (10Y = 6.0%)
			1999	2000	Consensus	Realized					
			1999	2000	Consensus	Realized					
Microsoft Corp	MSFT	\$557	68 %	(63)%	16 %	10 %	31 %	20 x	52 x	1.9 %	(412)bp
Cisco	CSCO	533	131	(29)	39	11	58	20	105	0.9	(508)
General Electric	GE	513	54	(6)	13	8	28	7	38	2.6	(342)
Intel	INTC	442	39	(27)	16	(5)	36	13	39	2.5	(349)
Exxon Mobil	XOM	271	13	10	NA	10	3	NA	21	4.7	(128)
Top 5 aggregate		\$2,316	59 %	(37)%	16 %	8 %	26 %	11 x	44 x	2.3 %	(373)bp
S&P 500 ex. Top 5		10,370	16	(4)	(6)	8	34	2	22	4.6	(140)
S&P 500		\$12,686	21 %	(9)%	(7)%	8 %	33 %	3 x	24 x	4.2 %	(183)bp

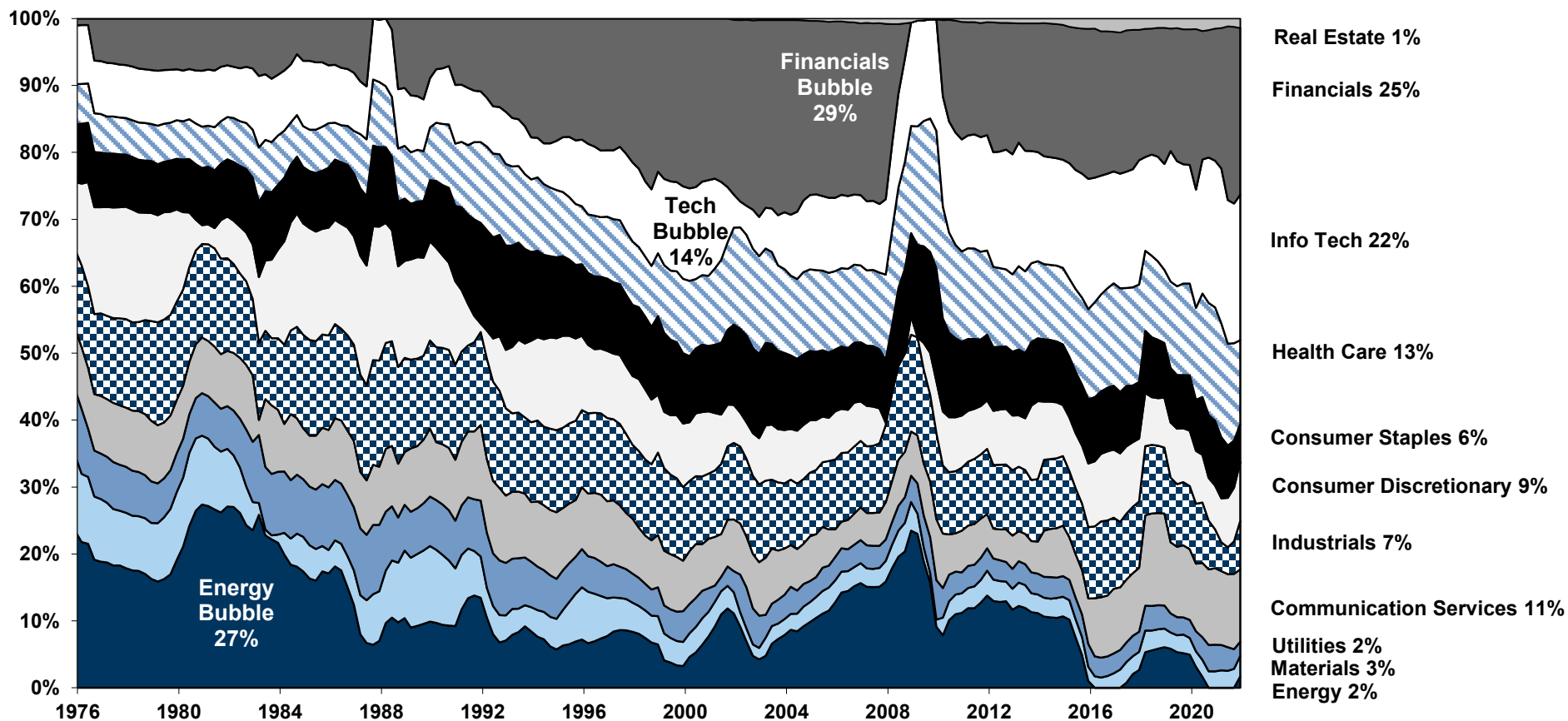
Five largest stocks today

Company	Ticker	Market cap (\$ bn)	Total return		Consensus 2021-23E Sales CAGR		3-yr Growth Investment Ratio	EV/ 2022E Sales	Price/ 2022E EPS	Earnings yield	Earnings yield gap (bp) (10Y = 1.8%)
			2021	YTD	Estimated	Realized					
			2021	YTD	Estimated	Realized					
Microsoft	MSFT	\$2,223	52 %	(12)%	15%		37 %	10x	30x	3.3 %	156 bp
Apple	AAPL	2,665	35	(9)	5		20	7	28	3.6	185
Amazon	AMZN	1,447	2	(14)	18		106	3	58	1.7	(4)
Alphabet	GOOGL	1,608	65	(10)	16		59	5	23	4.3	254
Meta Platforms	FB	717	23	(10)	19		66	5	21	4.7	290
Top 5		\$8,660	35 %	(11)%	14%		52 %	5x	29x	3.4 %	168 bp
S&P 500 ex. Top 5		28,579	28	(7)	5		12	3	18	5.6	380
S&P 500		\$37,238	29 %	(8)%	6%		19 %	3x	20x	5.1 %	331 bp

Sectors

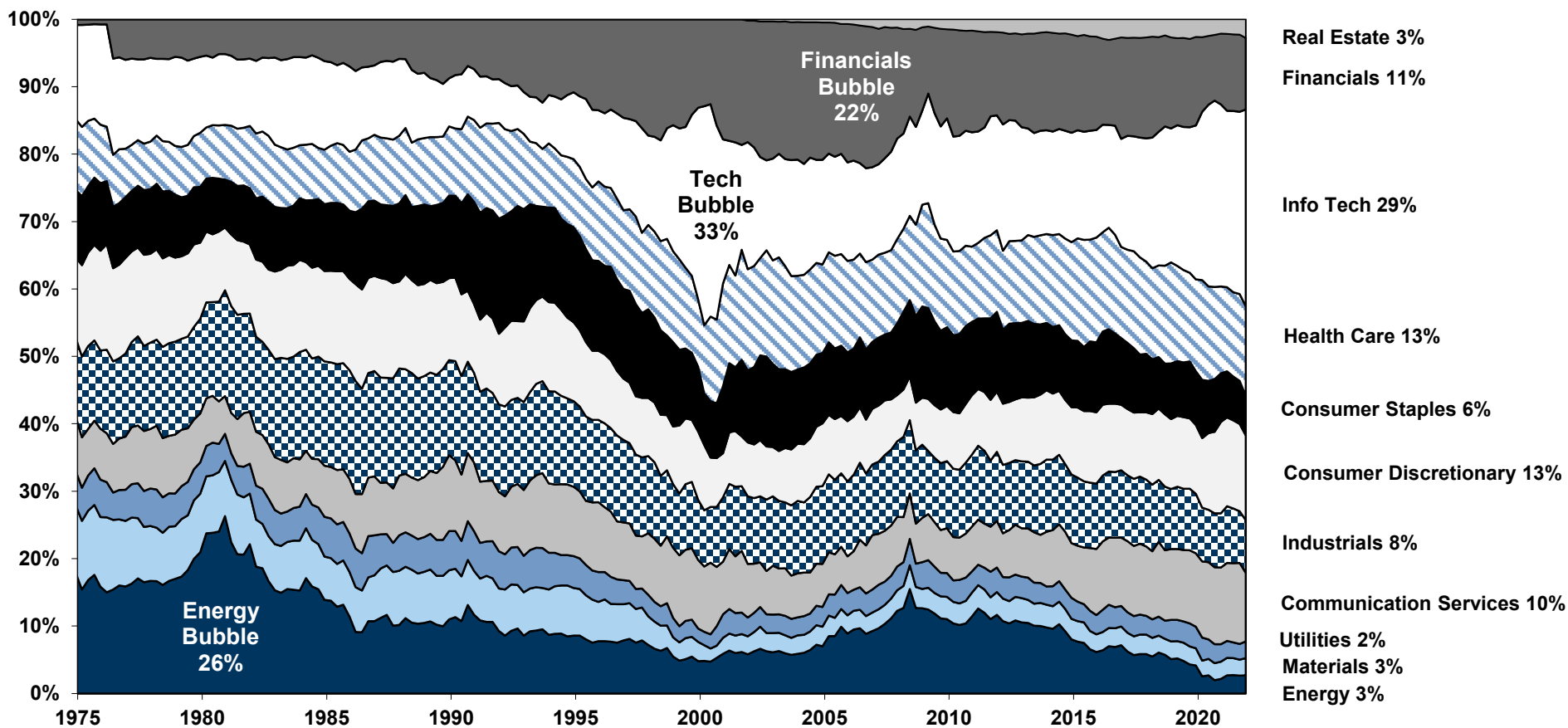
Sector share of S&P 500 *net income* since 1975

Information Technology generated 14% of S&P 500 net income in 2000



Sector share of S&P 500 equity cap since 1975

Tech accounted for 33% of S&P 500 equity capitalization at bubble peak in 2000



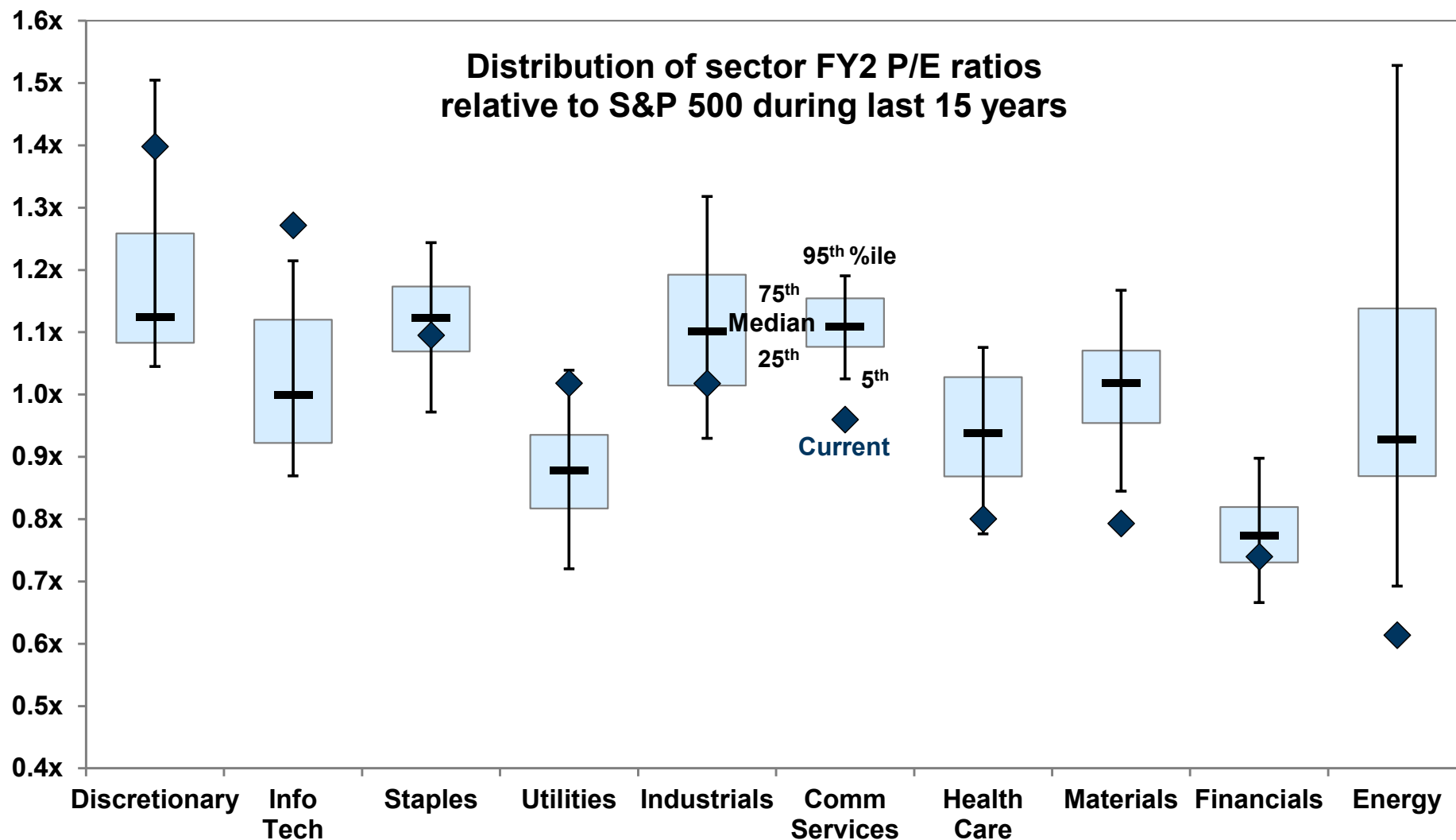
GS US Portfolio Strategy Sector Recommendations

Overweight Information Technology, Financials, and Health Care

Sector	Goldman Sachs recommended sector weightings	Current S&P 500 weight	Total return YTD	Cons. 2022 growth (% , y/y)		Consensus FY2 P/E
				Sales	EPS	
Information Technology	Overweight	28 %	(11)%	8 %	7 %	25 x
Health Care		13	(8)	7	8	16
Financials		11	(2)	NM	(11)	14
Energy	Neutral	3	13	9	35	12
Real Estate		3	(9)	NM	10	24
Materials		3	(7)	4	5	16
Industrials		8	(4)	12	34	20
Consumer Discretionary	Neutral / UW (by industry)	12	(12)	14	27	28
Communication Services		10	(9)	13	5	19
Consumer Staples	Underweight	6	(1)	5	6	22
Utilities		3	(4)	NM	3	20
S&P 500		100 %	(8)%	9 %	8 %	20 x

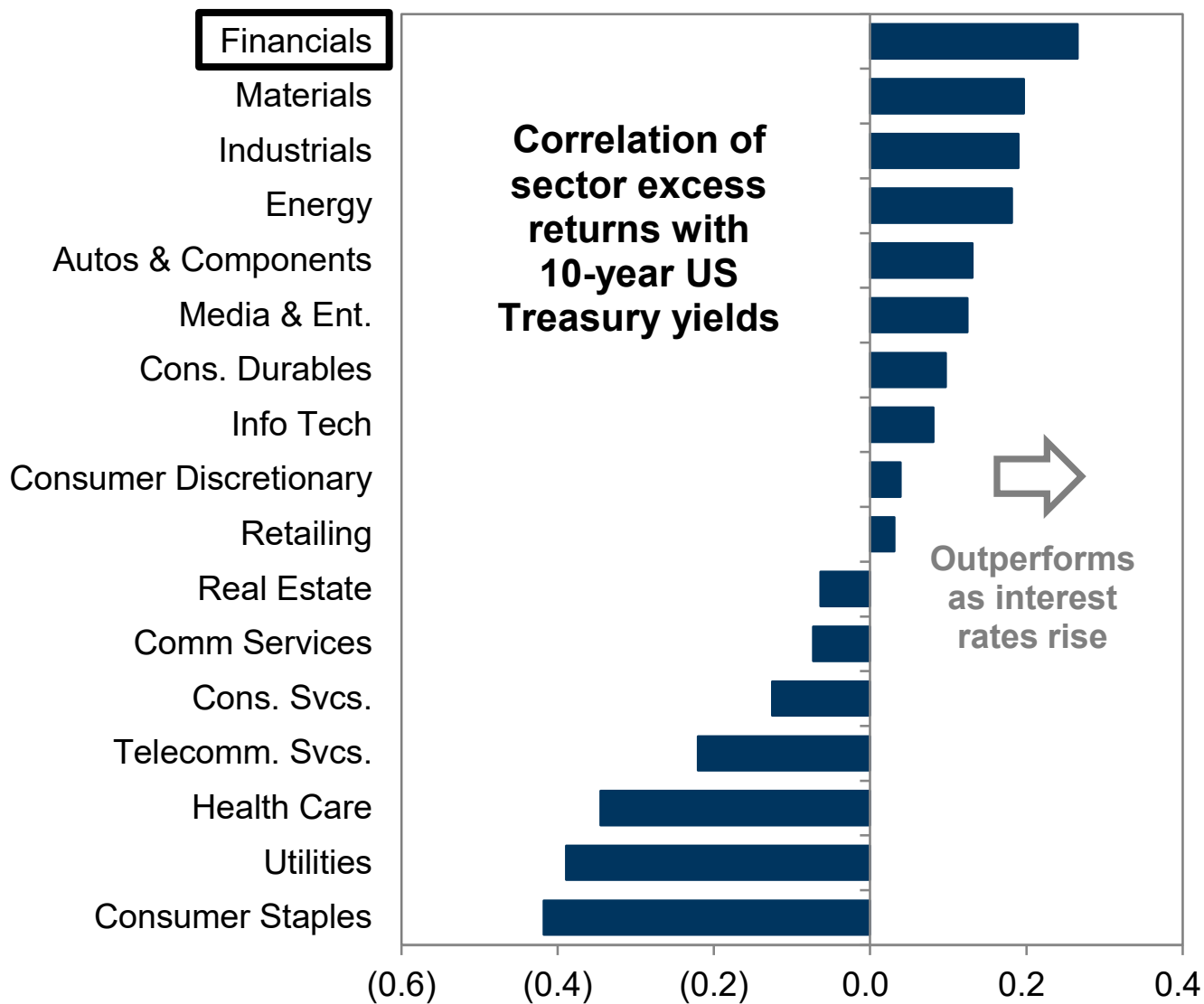
Distribution of sector historical relative P/E multiples

Index-relative valuations across sectors sit near tails



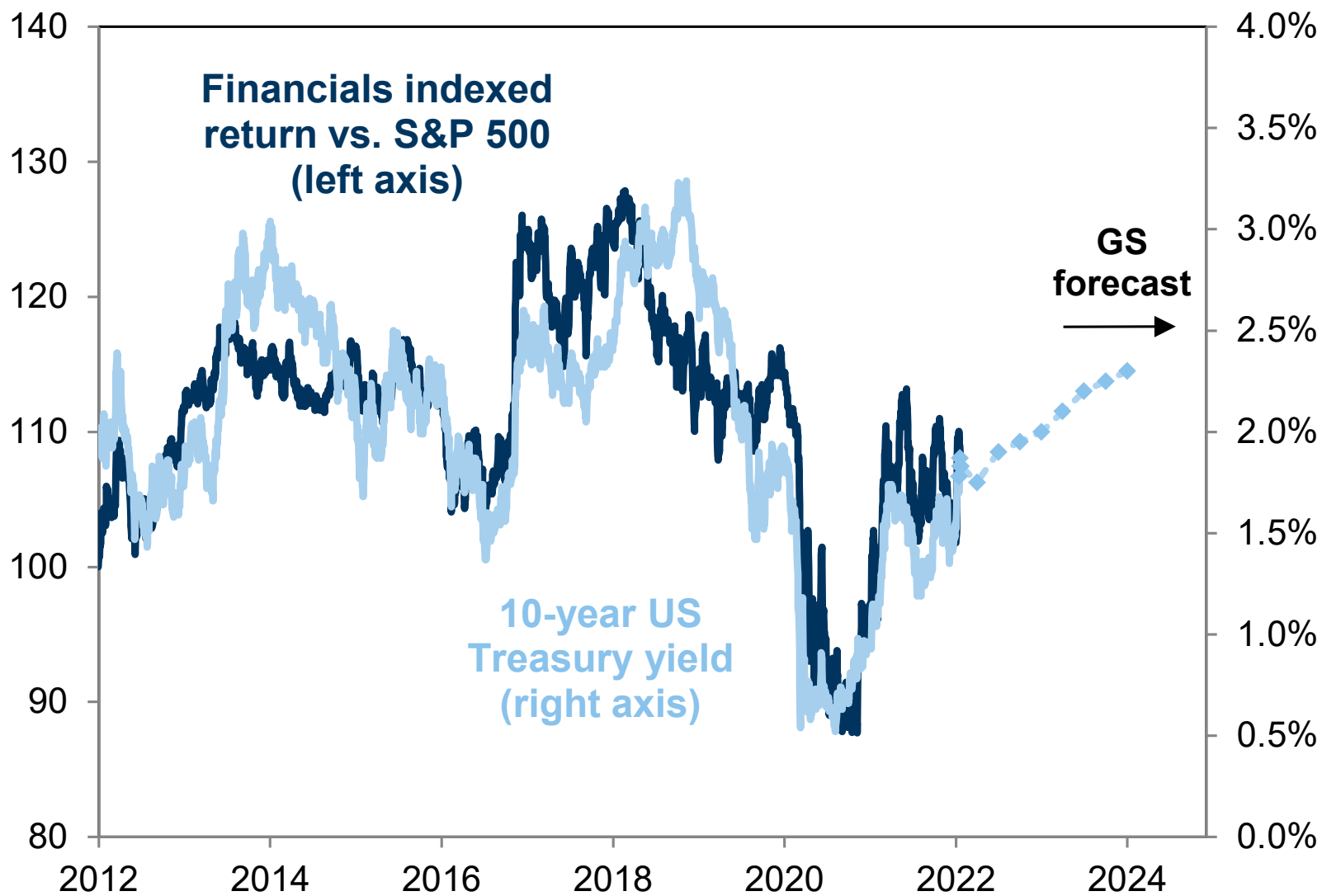
Sector and industry group sensitivity to interest rates

Underweight allocations to Consumer Staples and Utilities as rates rise



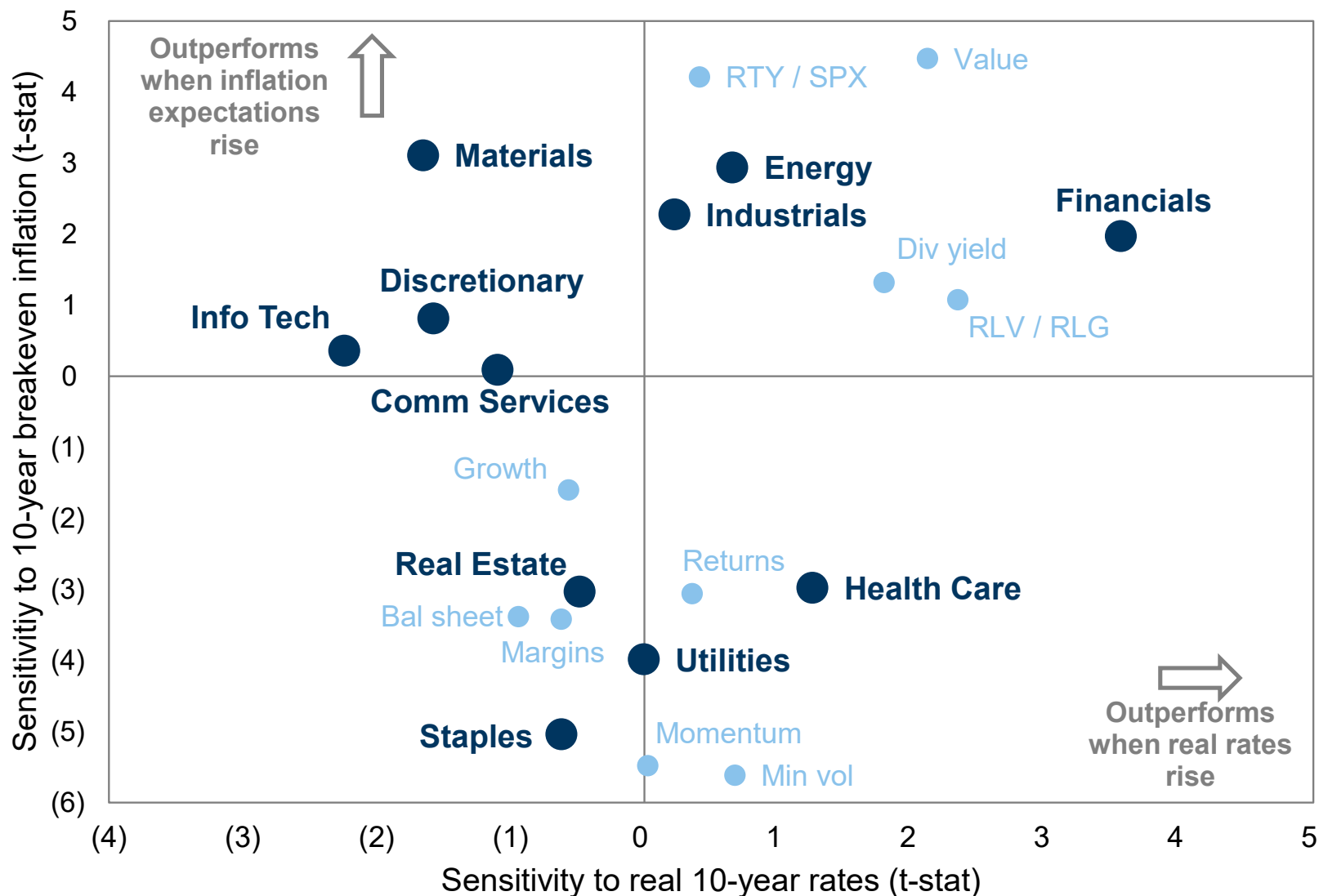
Bank earnings benefit from rising rates

Financials returns closely track the path of interest rates



Sector correlations with real rates and inflation

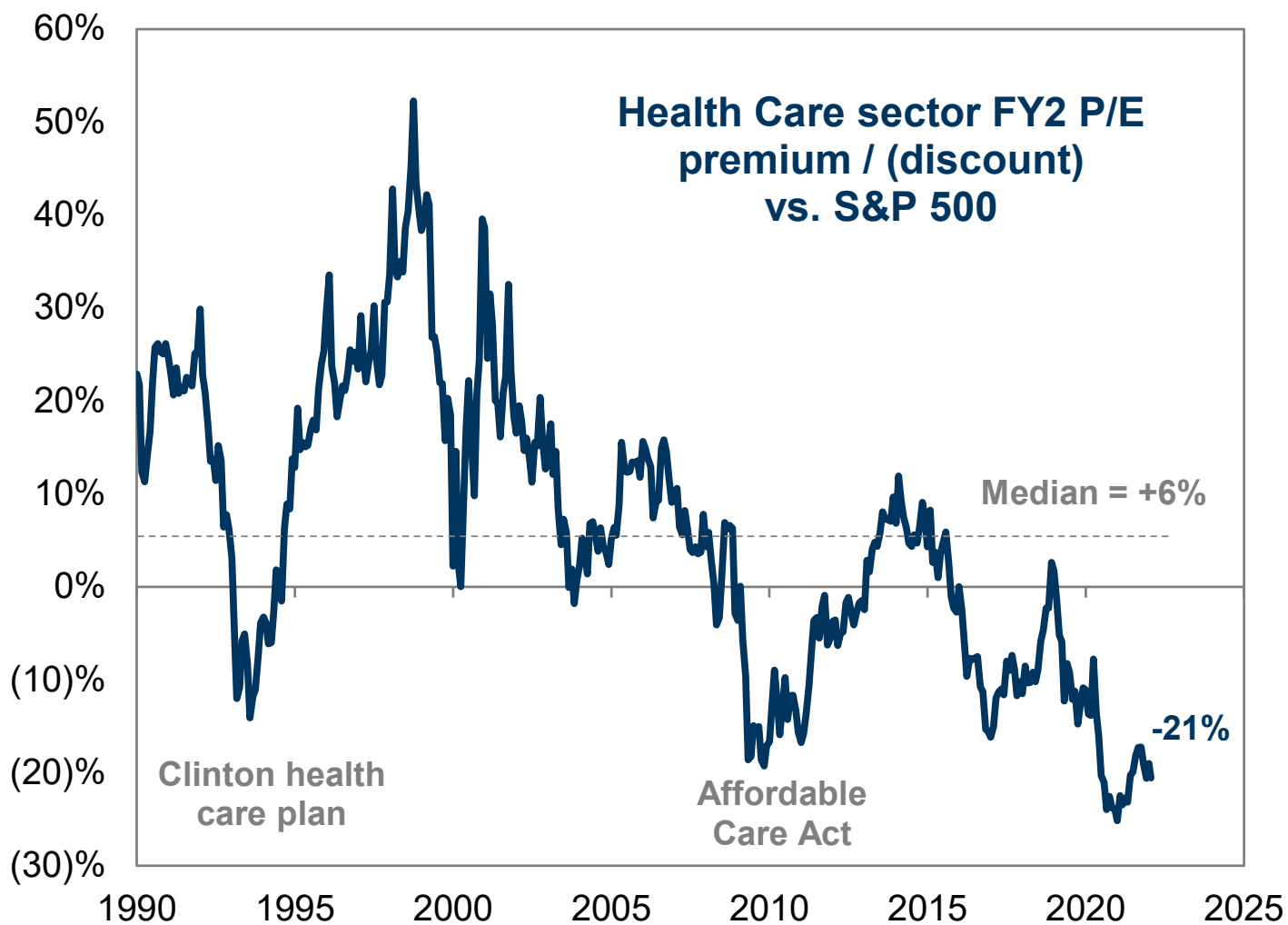
Sector and factor correlations with real interest rates and breakeven inflation



Sector excess returns vs. S&P 500; factor long/short returns; quarterly changes since 2015.

We expect Health Care valuations to recover

Health Care trades near the greatest valuation discount vs. S&P 500 since 1990



Global markets

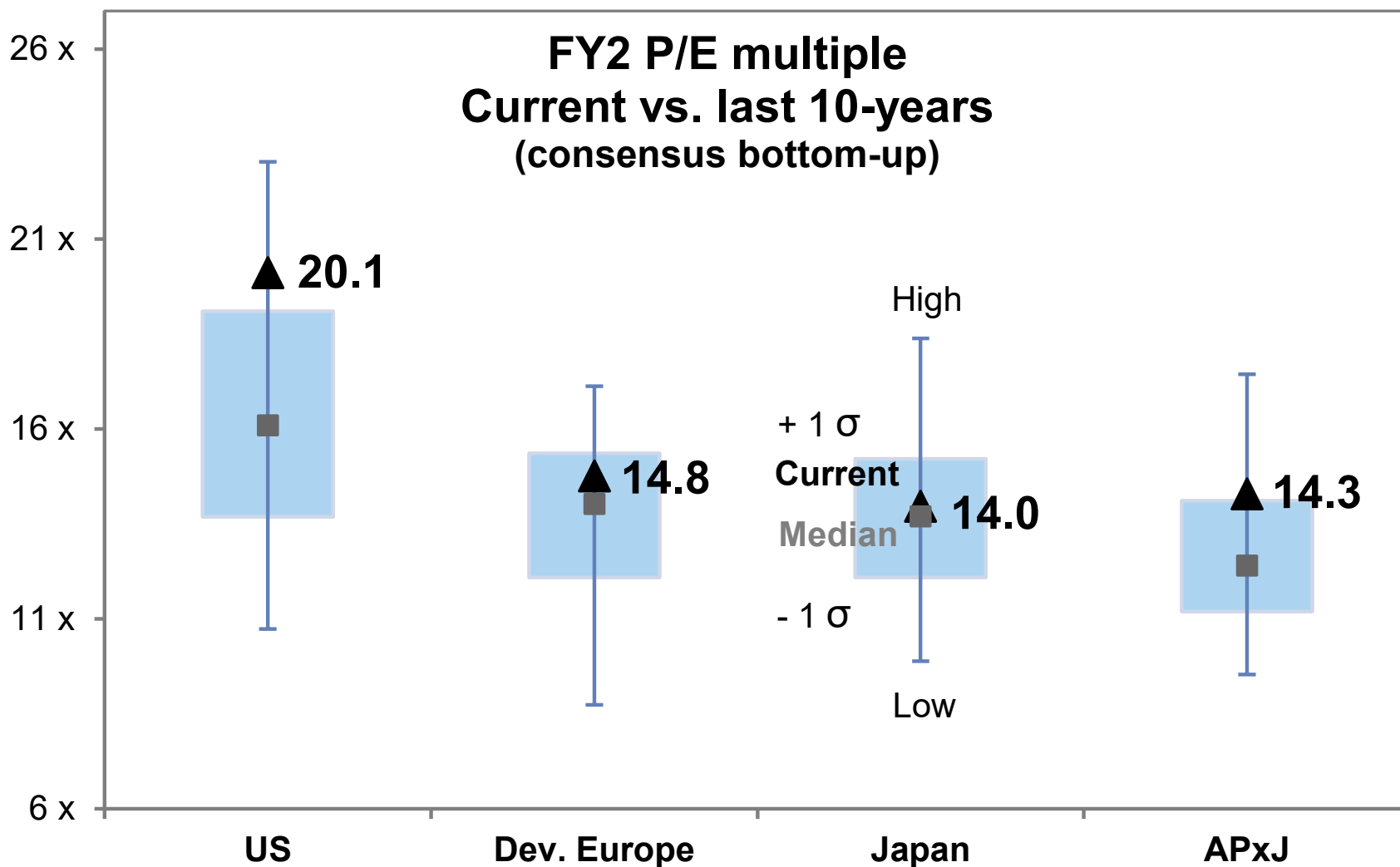
Global equity market returns, valuation, and growth

Earnings growth will be primary driver of returns rather than change in valuation

	INDEX		EARNINGS		VALUATION			RETURN	
	Index level		Adjusted		Forward P/E (GS)		Div Yield	12-month Total Return	
	Current	12m target	EPS Growth		Current Price/2022E EPS	2022E Price target/2023E EPS		Local	USD
			2022	2023					
TOPIX	1897	2250	7 %	9 %	13.1 x	14.3 x	2.4	21 %	20 %
MXAPJ	612	720	7	11	13.9	14.8	2.7	20	20
S&P 500	4356	5100	8	4	19.3	21.6	1.5	19	19
STOXX Europe 600	460	530	6	4	15.2	16.9	3.1	18	20

Global equity market valuation vs. history

Stock markets trade at slightly elevated absolute valuations relative to history



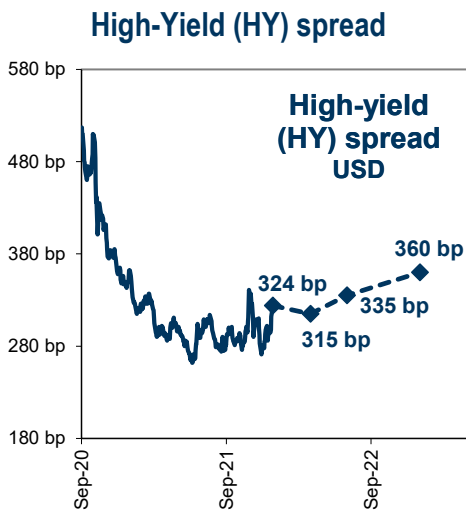
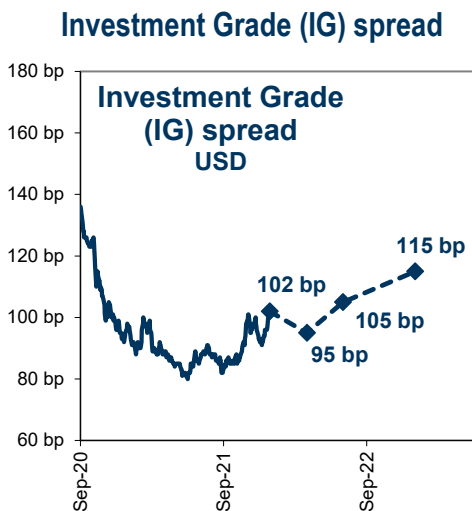
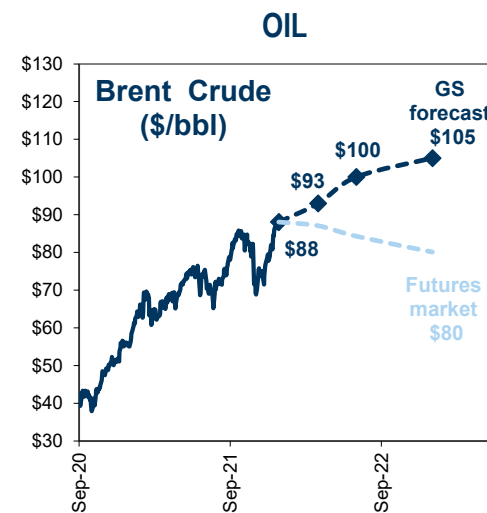
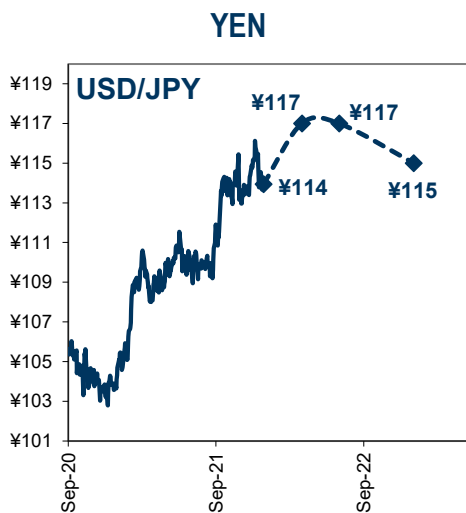
Goldman Sachs 2022 global macro forecasts

Equities, rates, credit, FX, and commodities

	units	Current	3m	6m	12m	Change to Target
Equities						
TOPIX	level	1897	2180	2200	2250	19 %
S&P 500	level	4356	4850	5000	5100	17
MXAPJ	level	612	655	680	720	18
STOXX Europe 600	level	460	495	505	530	15
Ten Year Rates						
Euro Area (Germany)	%	(0.1)	0.0	0.1	0.3	39 bp
US	%	1.7	1.8	1.9	2.0	26
Japan	%	0.1	0.1	0.2	0.2	7
Corporate Bonds						
Investment grade	bp	102	95	105	115	13 bp
High yield	bp	324	315	335	360	36
Currencies						
Euro / US Dollar	EUR/\$	1.13	1.13	1.14	1.15	2 %
US Dollar / Yen	\$/¥	114	117	117	115	1
Sterling / US Dollar	£/\$	1.35	1.36	1.36	1.35	0
Commodities						
WTI Crude Oil	\$/bbl	82	90	97	101	23 %
LME Copper	\$/mt	9800	10500	11000	12000	22
Brent Crude Oil	\$/bbl	88	93	100	105	19
COMEX Gold	\$/troy oz	1853	2000	2000	2000	8
NYMEX Nat. Gas	\$/mmBtu	4	4	3	4	(12)

Goldman Sachs global macro forecasts

Euro, Yen, Oil, Investment-Grade credit, high-yield credit, and gold



Goldman Sachs economics forecasts vs. consensus

2022 US GDP forecast of 3.4% is below consensus expectation of 3.8%

Country/Region	Real GDP growth					
	2022E			2023E		
	GS	Consensus	Difference	GS	Consensus	Difference
US	3.4 %	3.8 %	(0.4)pp	2.2 %	2.4 %	(0.2)pp
Euro Area	4.2	4.0	0.2	2.5	2.5	0.0
Germany	3.6	4.0	(0.4)	2.6	2.6	0.0
France	4.1	4.0	0.1	2.4	2.3	0.1
Italy	4.3	4.2	0.1	2.2	2.1	0.1
Spain	7.3	5.5	1.8	4.1	3.5	0.6
Japan	2.8	2.9	(0.1)	1.6	1.4	0.2
United Kingdom	4.6	4.5	0.1	2.4	2.2	0.2
Canada	3.9	3.8	0.1	3.5	3.0	0.5
China	4.5	5.2	(0.7)	5.0	5.2	(0.2)
India	9.0	9.3	(0.3)	6.4	7.6	(1.2)
Brazil	0.8	0.7	0.1	2.4	2.1	0.3
Russia	3.0	2.6	0.4	2.8	2.1	0.7
World	4.4 %	4.3 %	0.1 pp	3.6 %	3.6 %	0.0 pp

Disclosure Appendix

January 25, 2022

Reg AC

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