



## Global Investment Research

The Goldman Sachs Group, Inc.

# Where to Invest Now

Better than feared

August 2022

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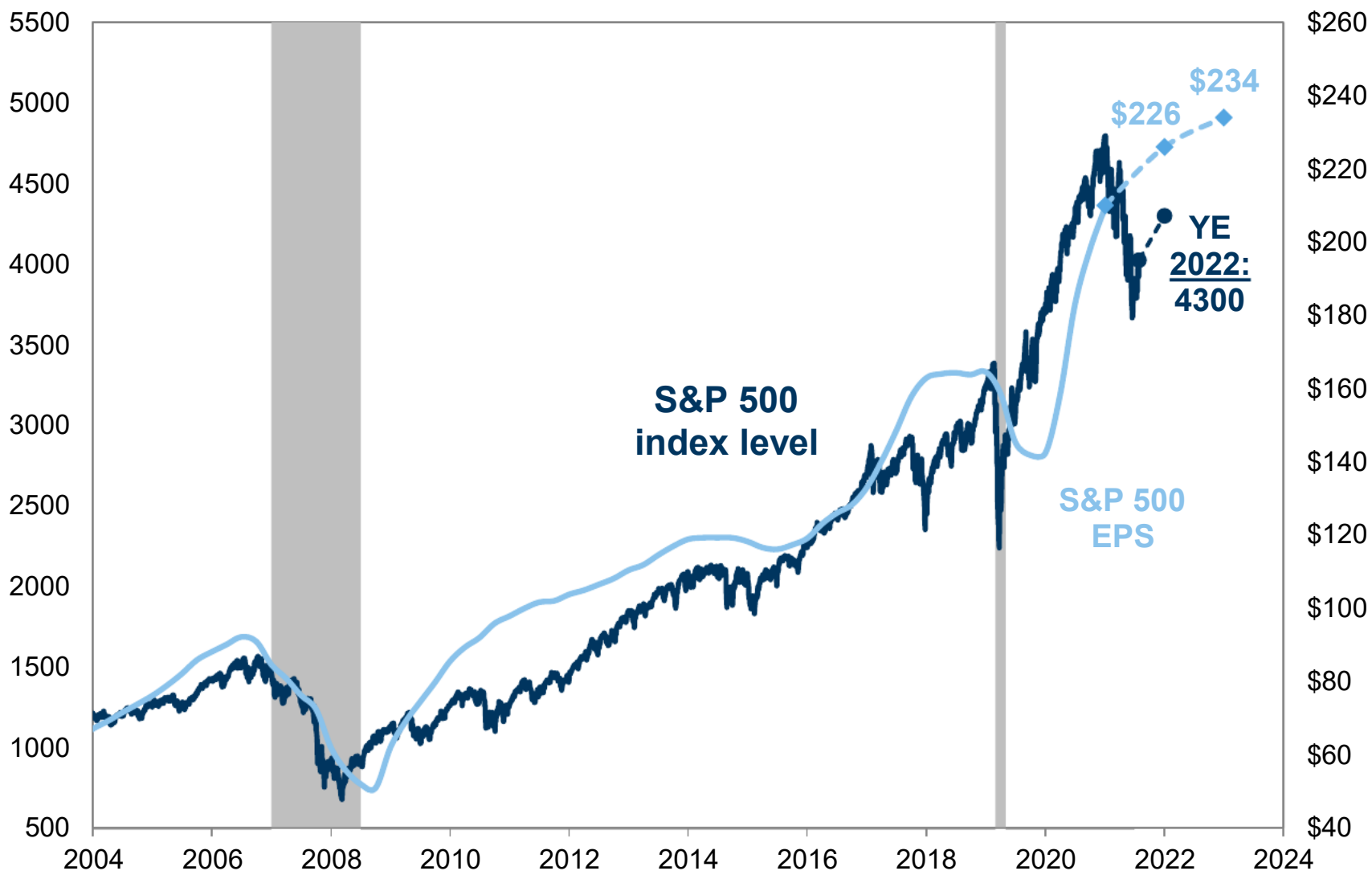
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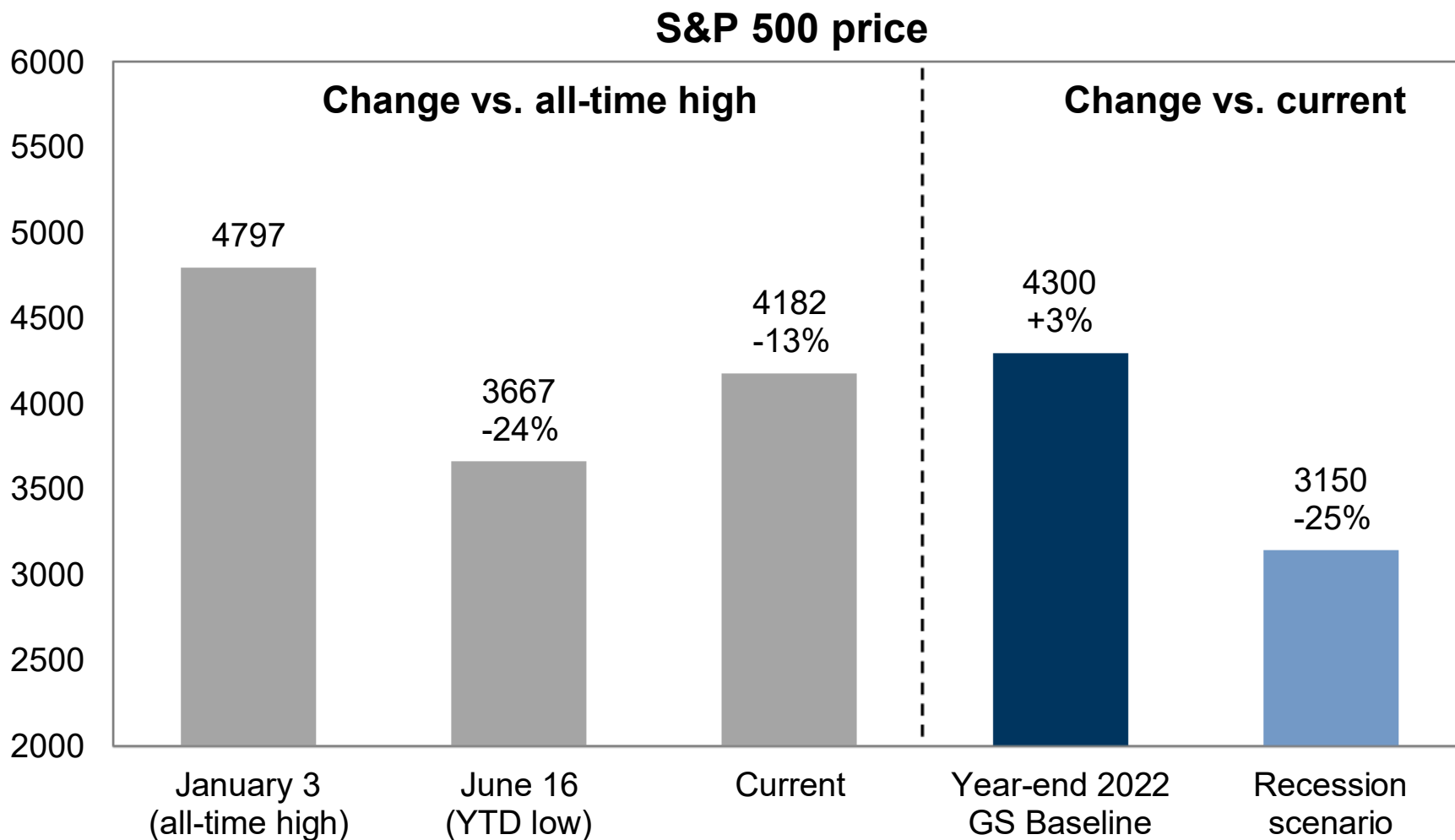
# Path of the S&P 500 index level and earnings

S&P 500 EPS will rise by 8% and index will end 2022 at 4300



# Goldman Sachs equity market forecasts

S&P 500 will end 2022 at 4300 (no recession) vs. 3150 (recession scenario)



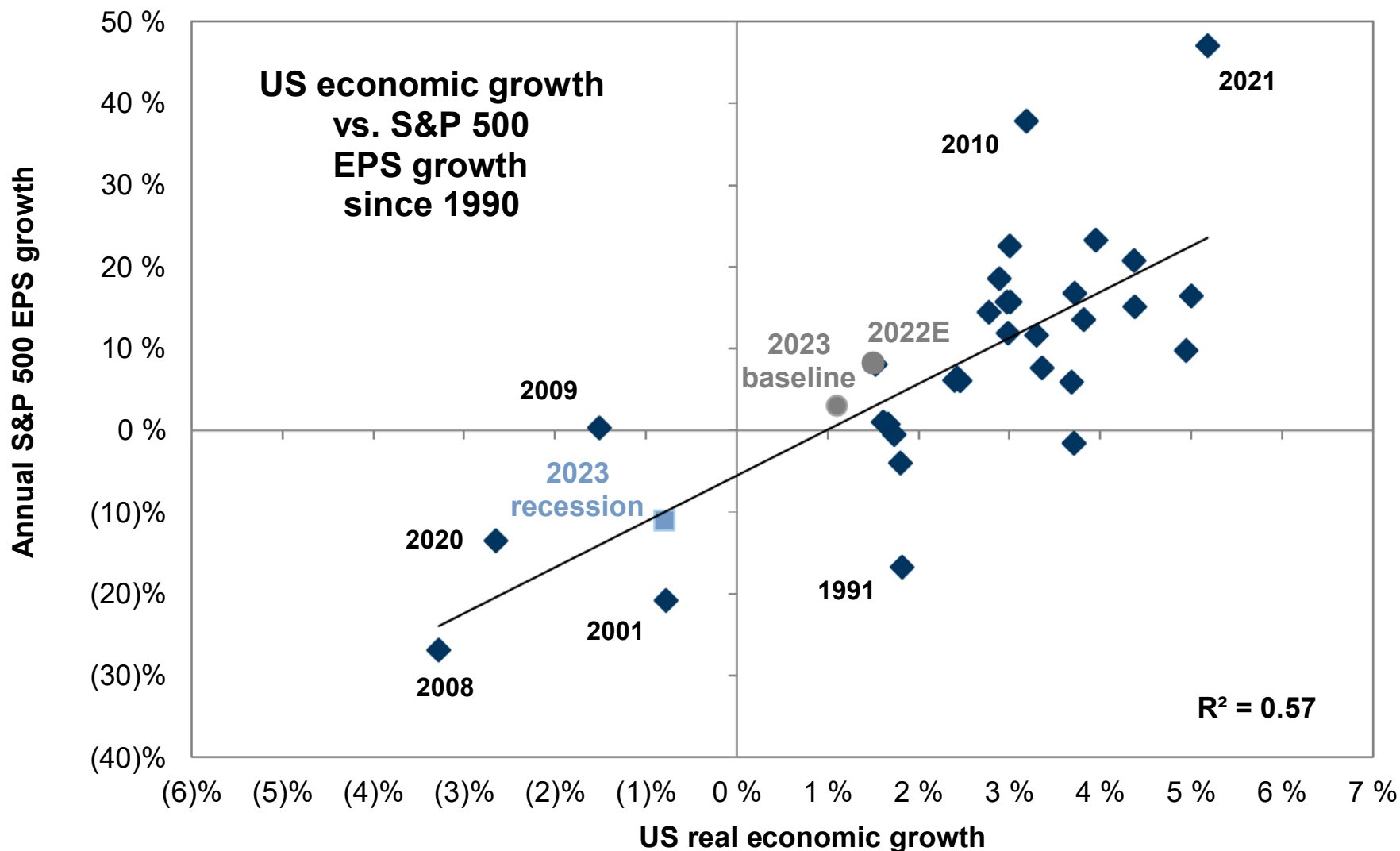
# 2023 scenarios: S&P 500 sales, margins, and EPS

Consensus growth (+7%) vs. our top-down Baseline (+3%) & Recession (-11%)

	2021A	GS top-down 2022E	2023E		
			Goldman Sachs		Consensus bottom-up
			Baseline	Recession Scenario	
S&P 500 ex. Financials, Utilities, Real Estate					
<i>Sales growth (year/year)</i>	16 %	12 %	4 %	(2)%	4 %
<b>Profit Margin</b>	<b>12.2%</b>	<b>12.3%</b>	<b>12.0%</b>	<b>11.0%</b>	<b>12.5%</b>
<i>Year/Year growth</i>	251 bp	9 bp	(25)bp	(126)bp	20 bp
<b>S&amp;P 500 adjusted EPS</b>	<b>\$209</b>	<b>\$226</b>	<b>\$234</b>	<b>\$200</b>	<b>\$244</b>
<i>Year/Year growth</i>	47 %	8 %	3 %	(11)%	7 %

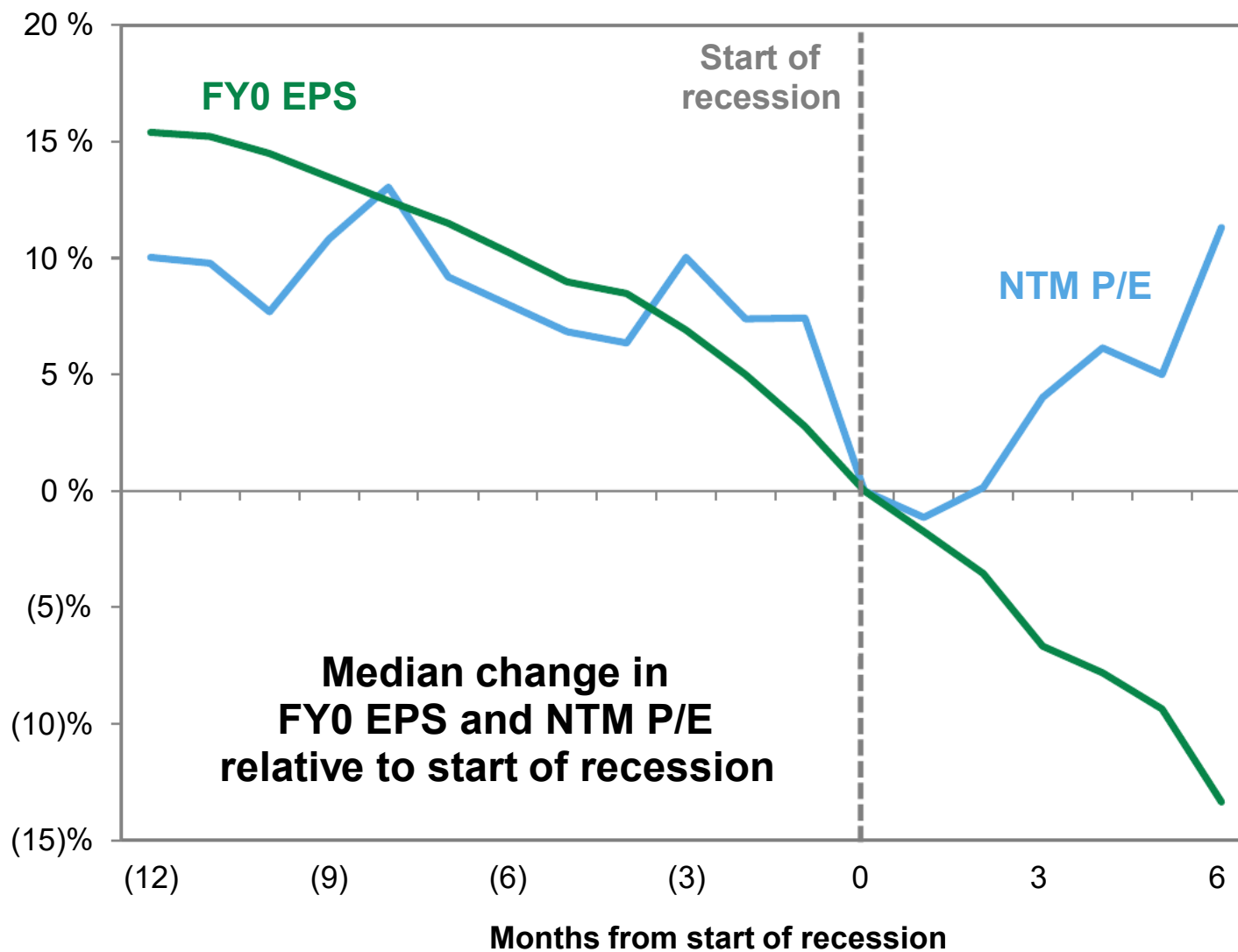
# S&P 500 EPS vs. US economic growth since 1990

If a recession unfolds in 2023, S&P 500 EPS would fall by 11% (vs. growth of 3%)



# Path of earnings and valuations around recessions

Earnings typically continue to fall but P/E stabilizes after a recession starts



# S&P 500 price based on P/E and expected EPS

13% median peak-to-trough EPS decline during 12 recessions since 1948

## 2023 EPS scenario

	Cons. Estimate	GS baseline	GS recession
	<b>\$244</b>	<b>\$234</b>	<b>\$200</b>
vs. cons. 2022	(+7%)	(+2%)	(-12%)
	Est. at YE 2022 assuming halfway revision		
	<b>\$244</b>	<b>\$239</b>	<b>\$222</b>

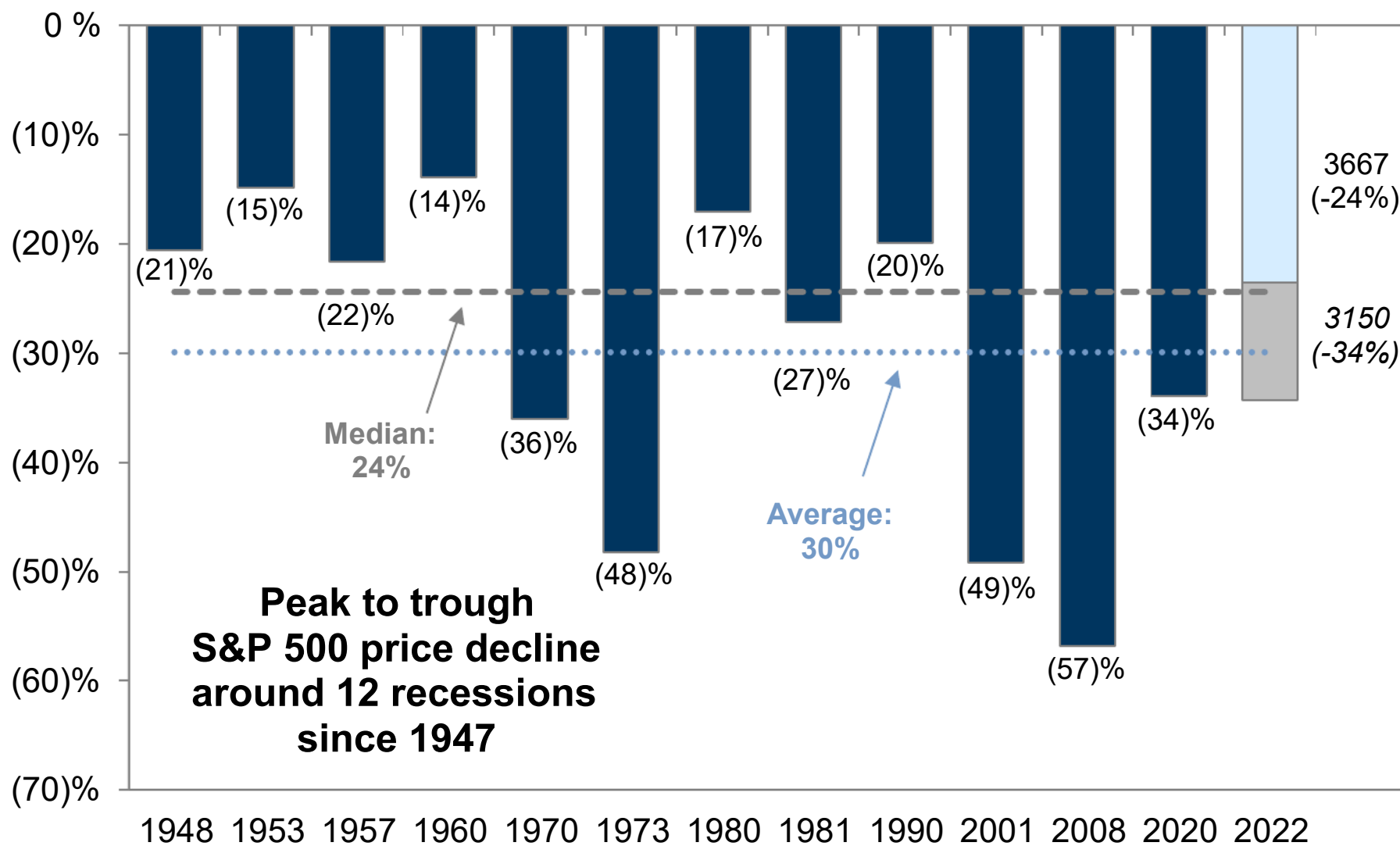
Forward P/E	Current	19x	4650	4550	4200	
		18x	4400	4300	4000	
		17x	4150	4050	3800	
		16x	3900	3850	3550	
		15x	3650	3600	3350	
		14x	3400	3350	3100	
		Mar. '20	13x	3150	3100	2900

# **Recession risk**



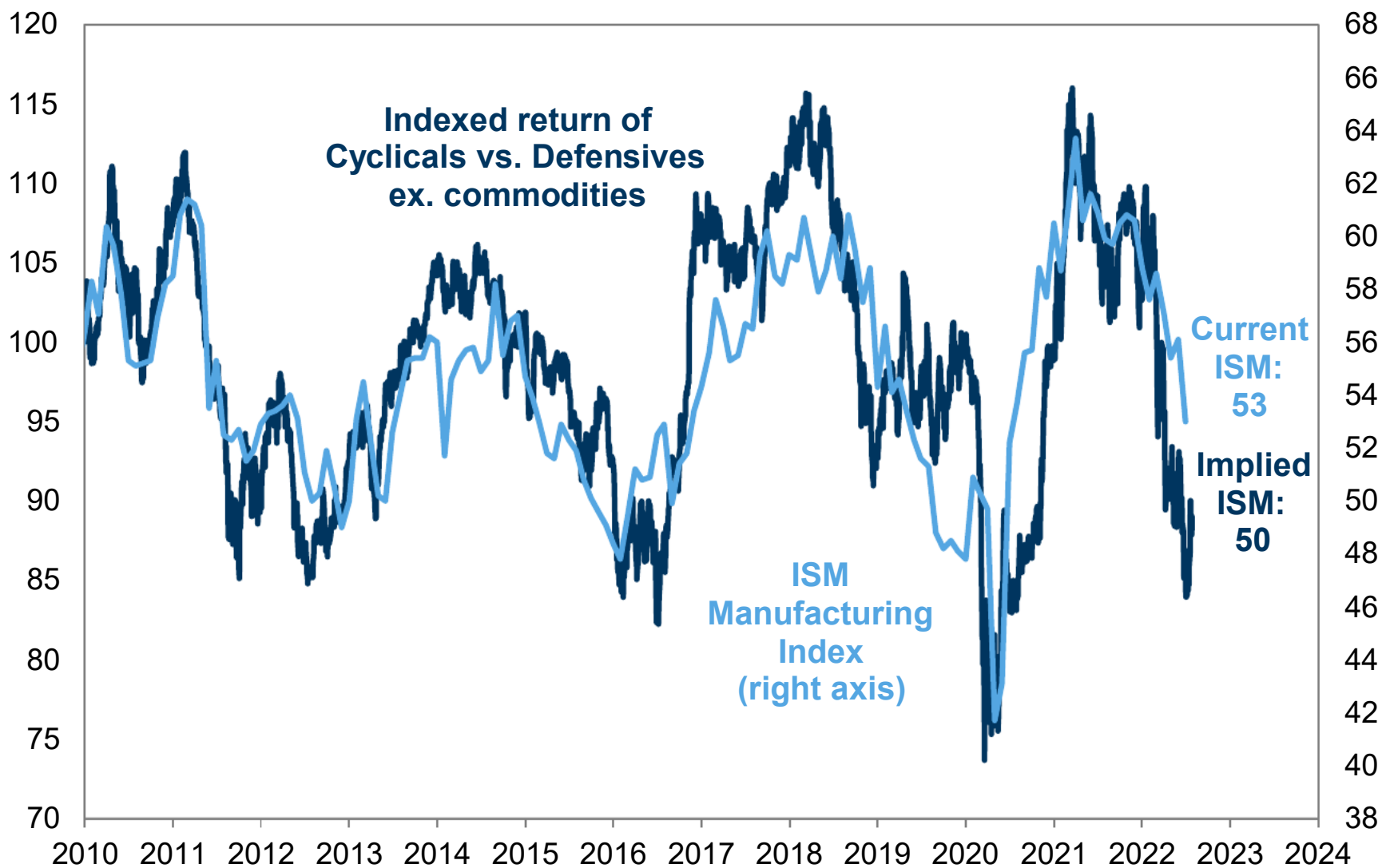
# 2022 S&P 500 drawdown vs. prior recession declines

Bear market fall of 24% to 3667 matches median drop; 30% drop implies 3350



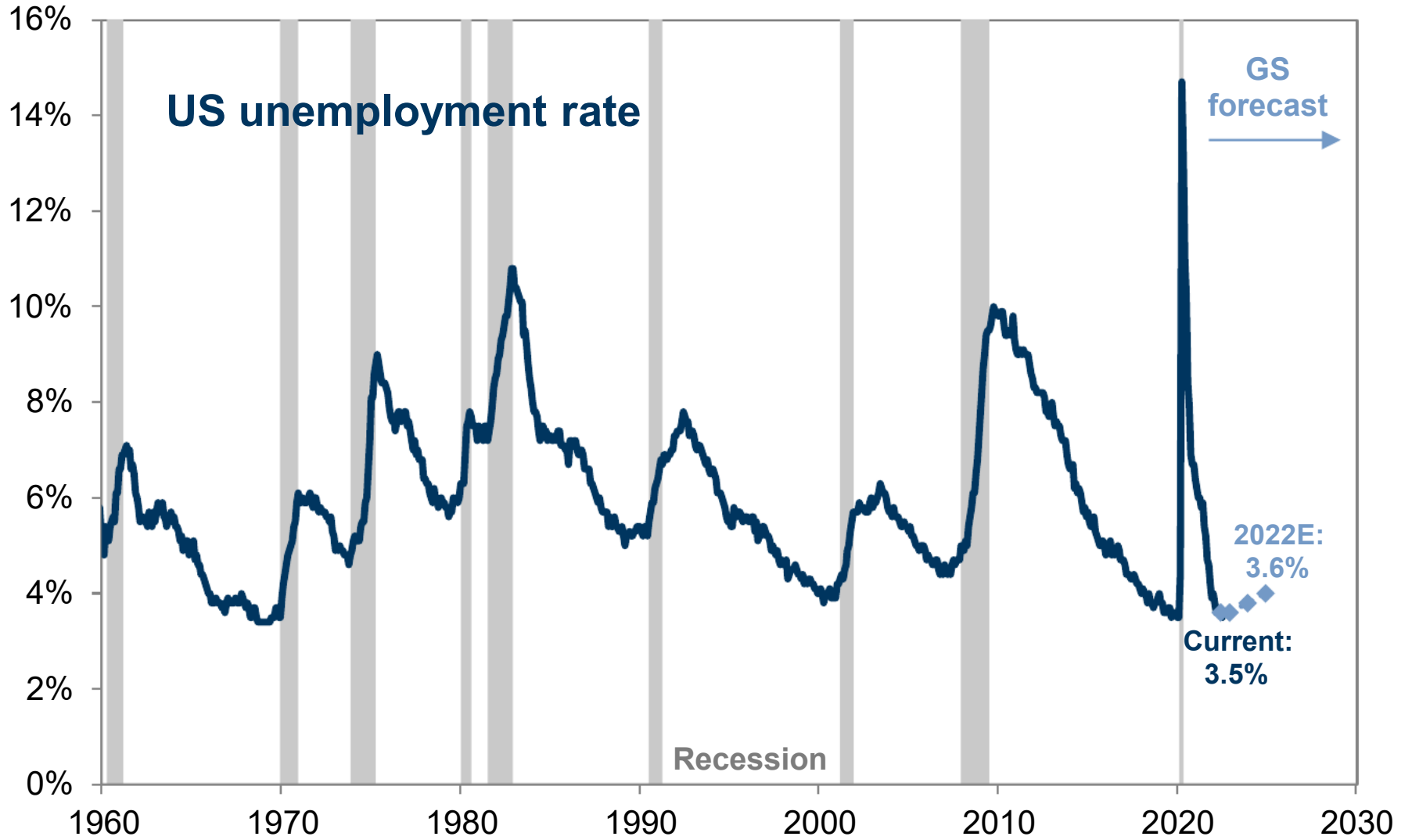
# Returns within the market suggest slowdown likely

Cyclicals have underperformed Defensives amid rising concern about recession



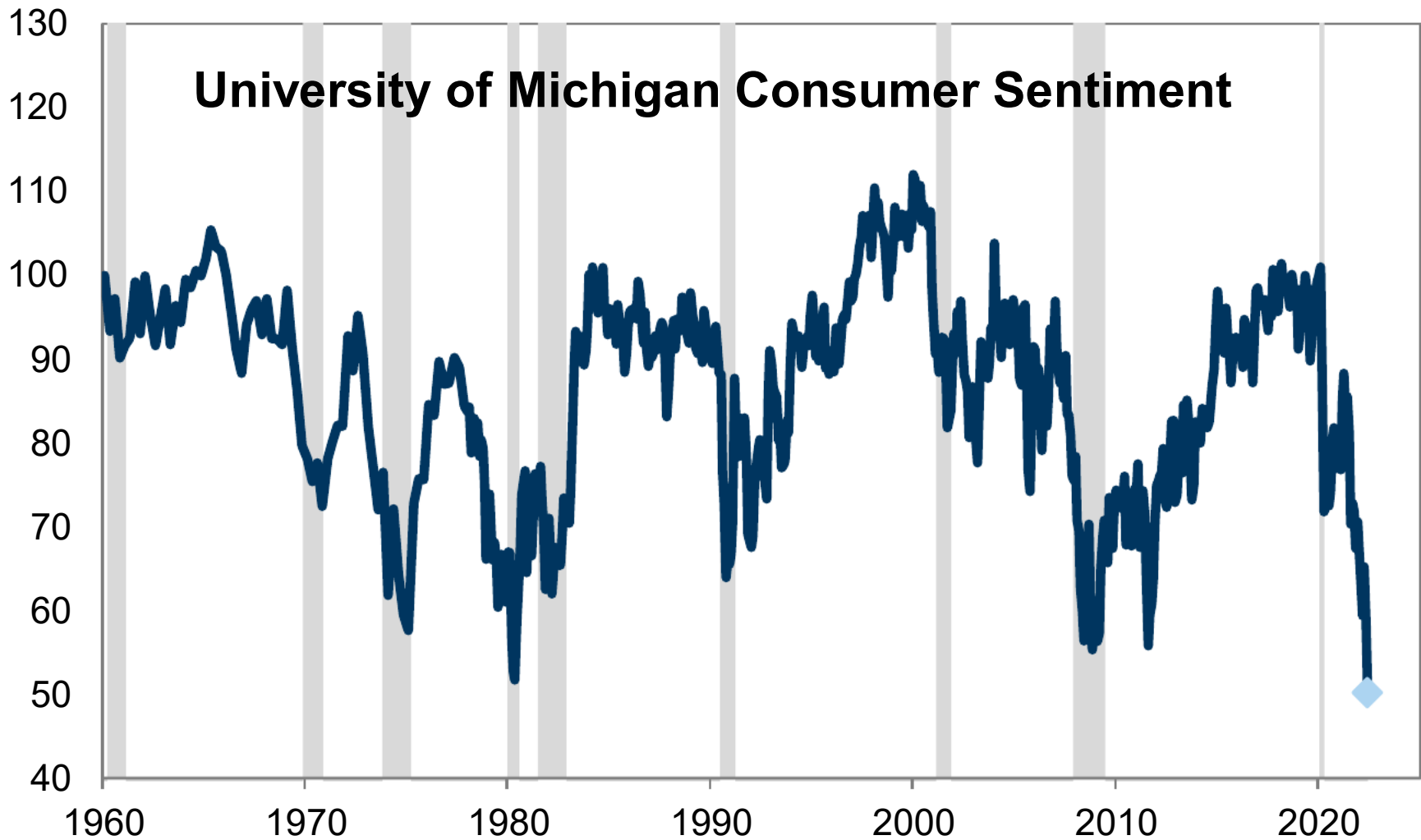
# US unemployment rate of 3.5% is near record low

A 0.3 pp rise in the unemployment rate has been associated with recessions



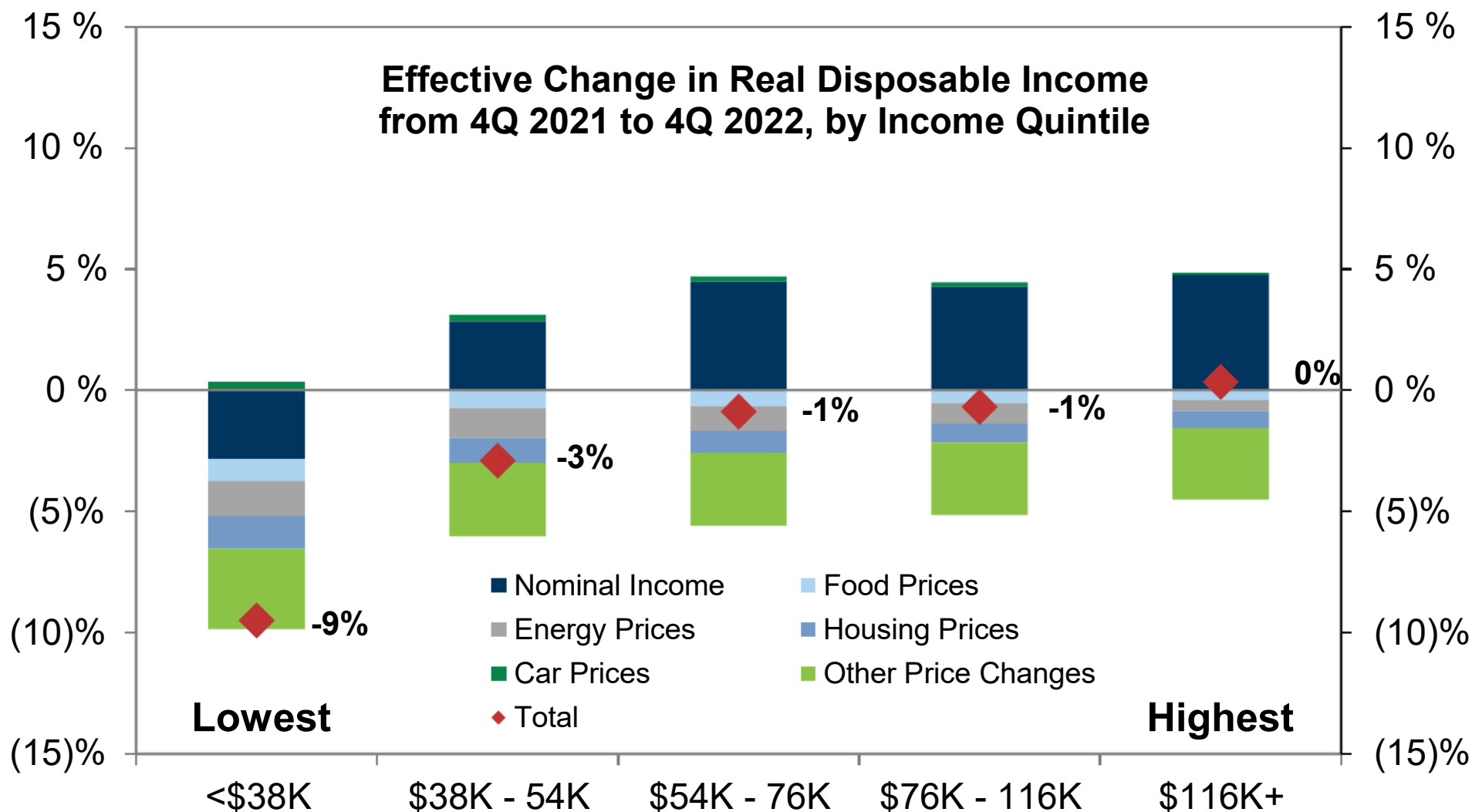
# Consumer sentiment at lowest level in 60 years

High inflation has pushed Univ. of Michigan Consumer Sentiment to record low



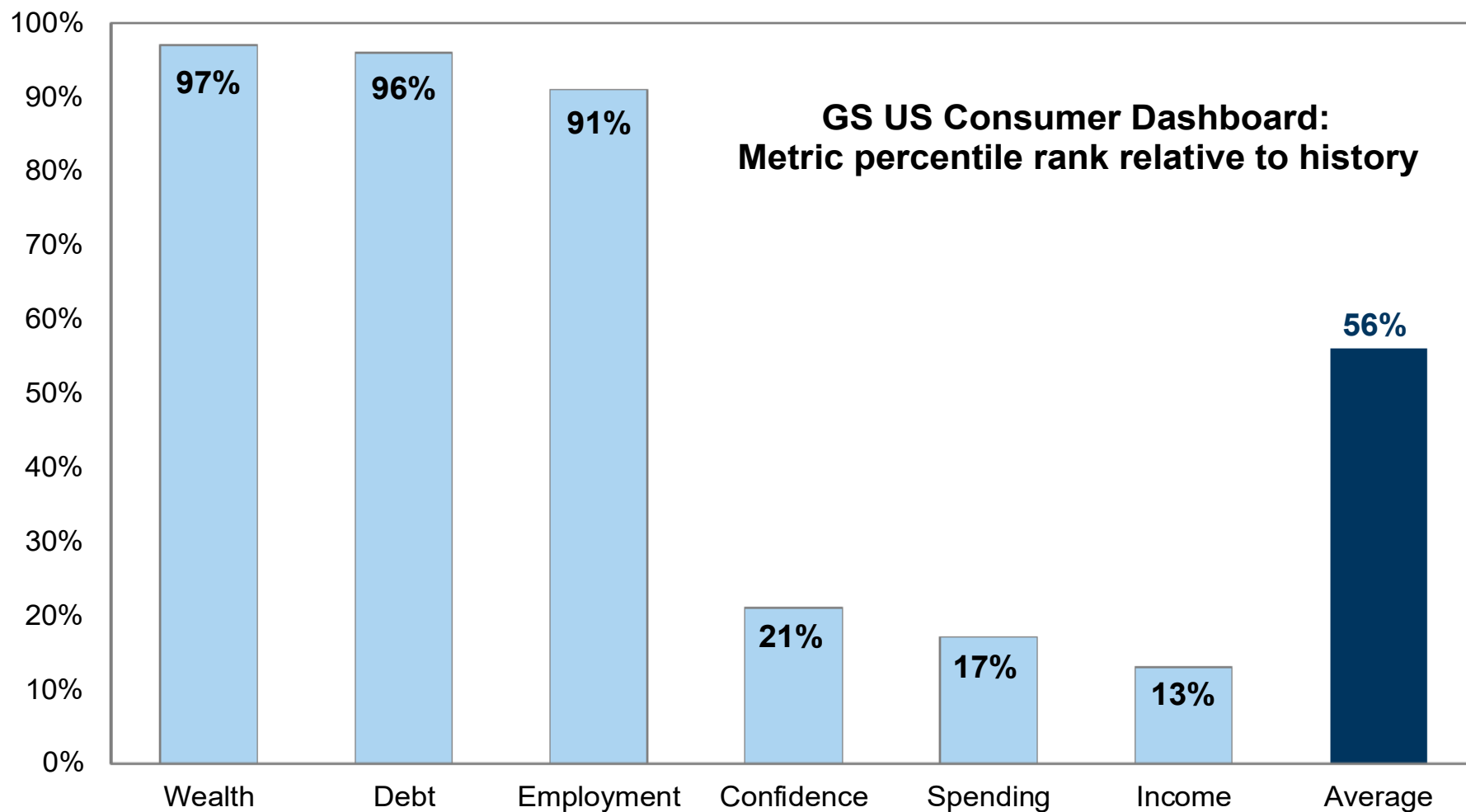
# Effective change in real disposable income

Lower-income households will experience sharpest declines



# The state of the US consumer

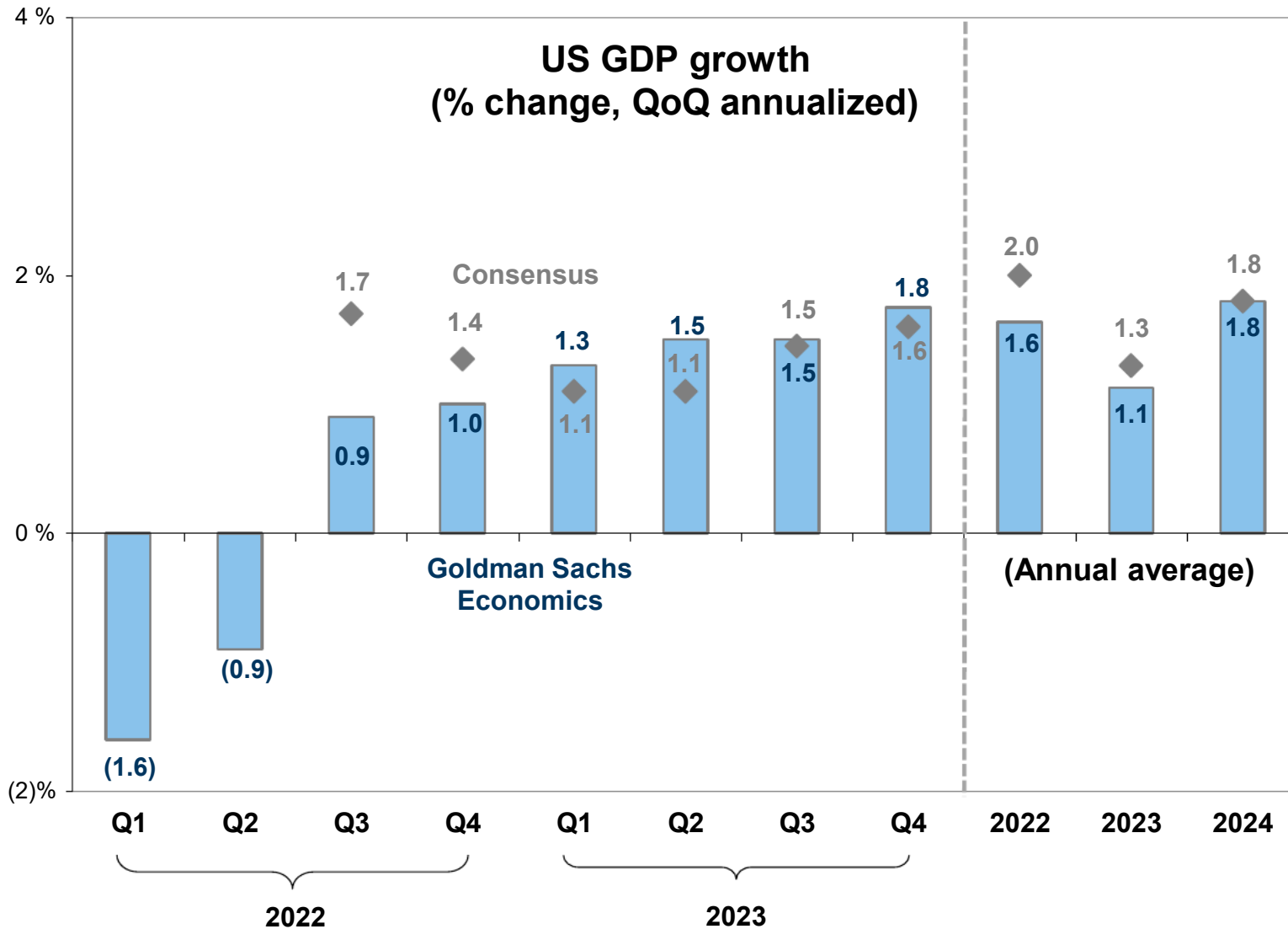
Divergence between employment and debt vs. income and confidence



Data covers 1980-present. Measures used as follows. Spending: 3MMA of real spending growth. Employment: Unemployment gap (vs. NAIRU). Income: 3MMA of real income growth. Wealth: Ratio of household net worth to disposable income. Debt: Household debt service ratio. Confidence: Average of normalized University of Michigan and Conference Board measures.

# US GDP growth: Goldman Sachs vs. consensus

GS Economics assigns a 30% probability of a US recession in next 12 months



# Earnings and margins



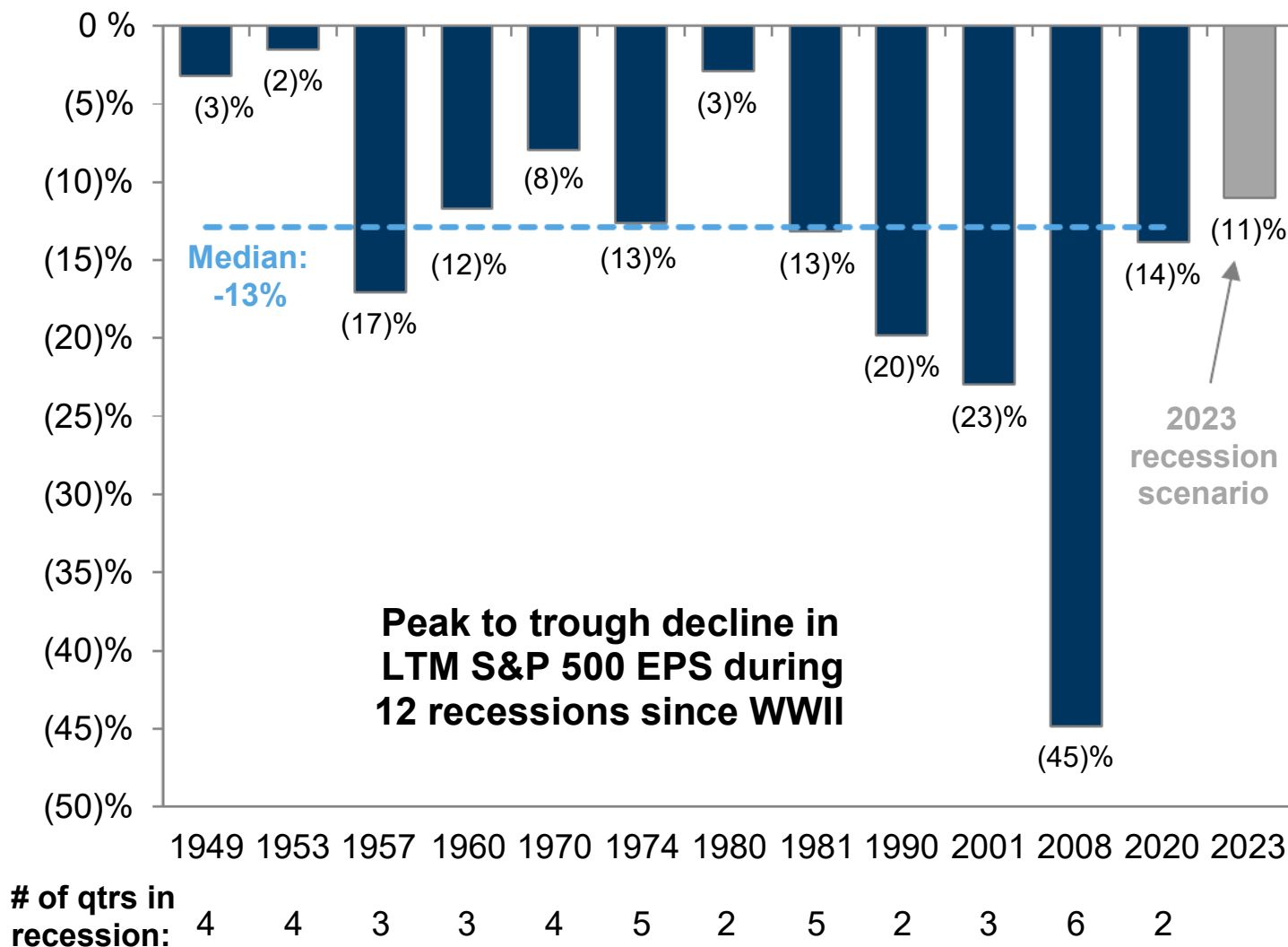
# Sales, margins, and EPS during historical recessions

If a moderate recession unfolds in 2023, S&P 500 EPS would fall by 11%

Recession	Recession length (quarters)	Peak to trough decline		
		S&P 500 LTM EPS growth	ex. Financials, Utilities Sales growth	Margin change
1970	4	(8)%	5 %	(83)bp
1974	5	(13)	7	(110)
1980	2	(3)	6	(51)
1981	5	(13)	(2)	(71)
1990	2	(20)	9	(174)
2001	3	(23)	(7)	(177)
2008	6	(45)	(2)	(153)
2020	2	(14)	(3)	(99)
Median	4	(14)%	2 %	(105)bp
<b>2023 recession scenario</b>	<b>4</b>	<b>(11)</b>	<b>(0)</b>	<b>(126)</b>
<b>2023 baseline</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>(25)</b>

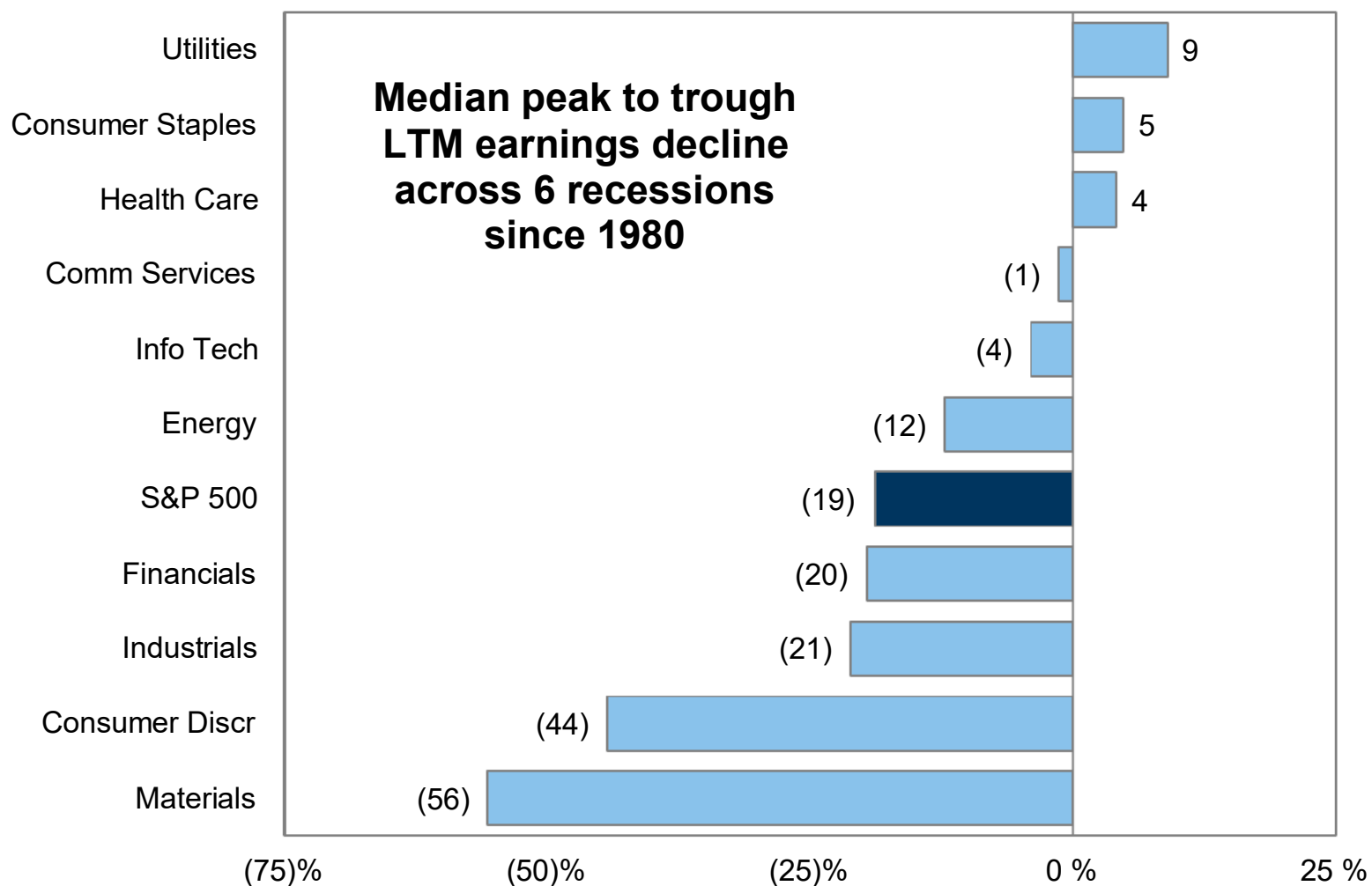
# Median EPS decline of 13% during prior recessions

Recent declines were dominated by Autos (1990), Tech (2001), and Financials (2008)



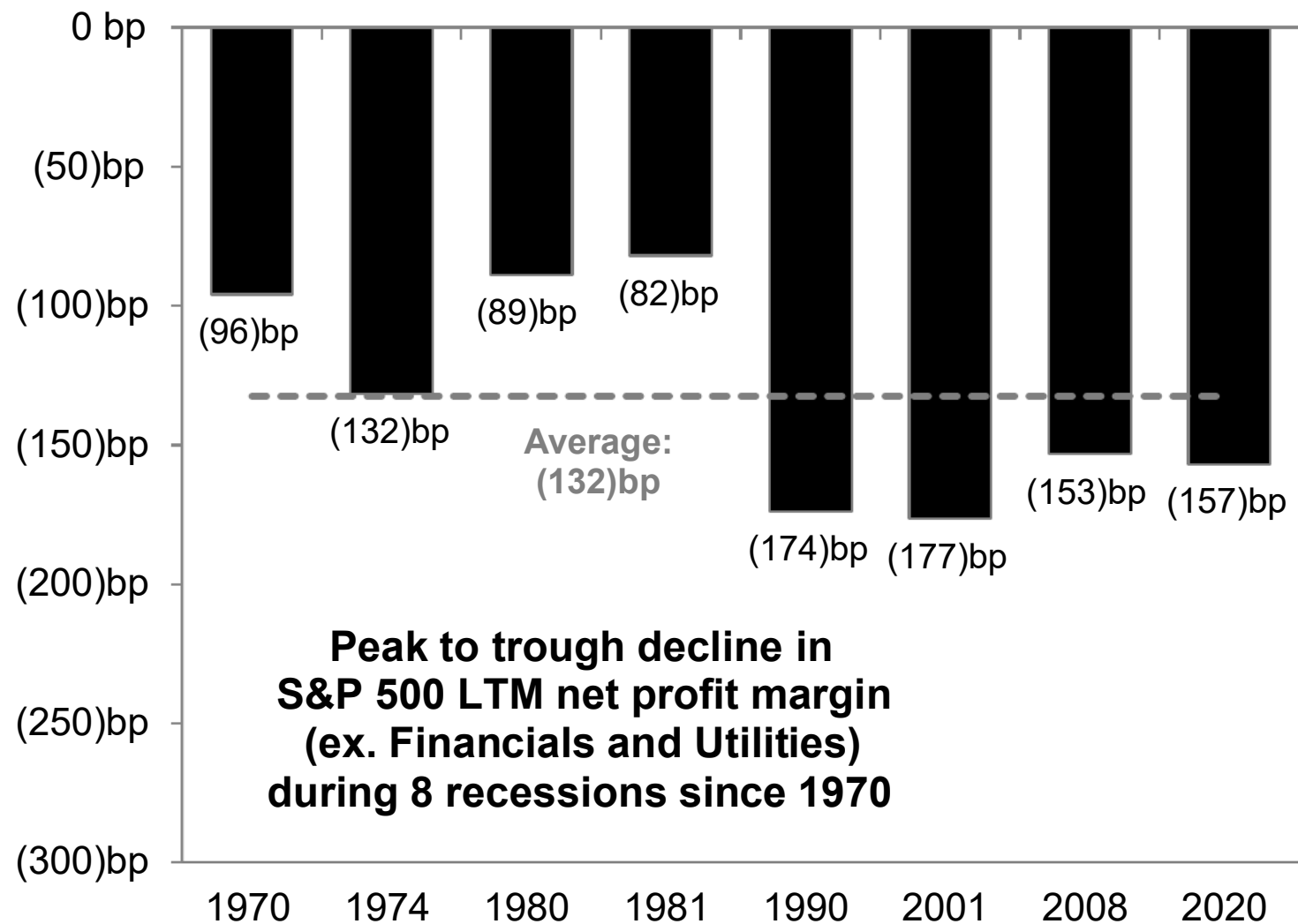
# Earnings decline across sectors during recessions

Materials and Discretionary hit hardest; Utilities and Staples more protected



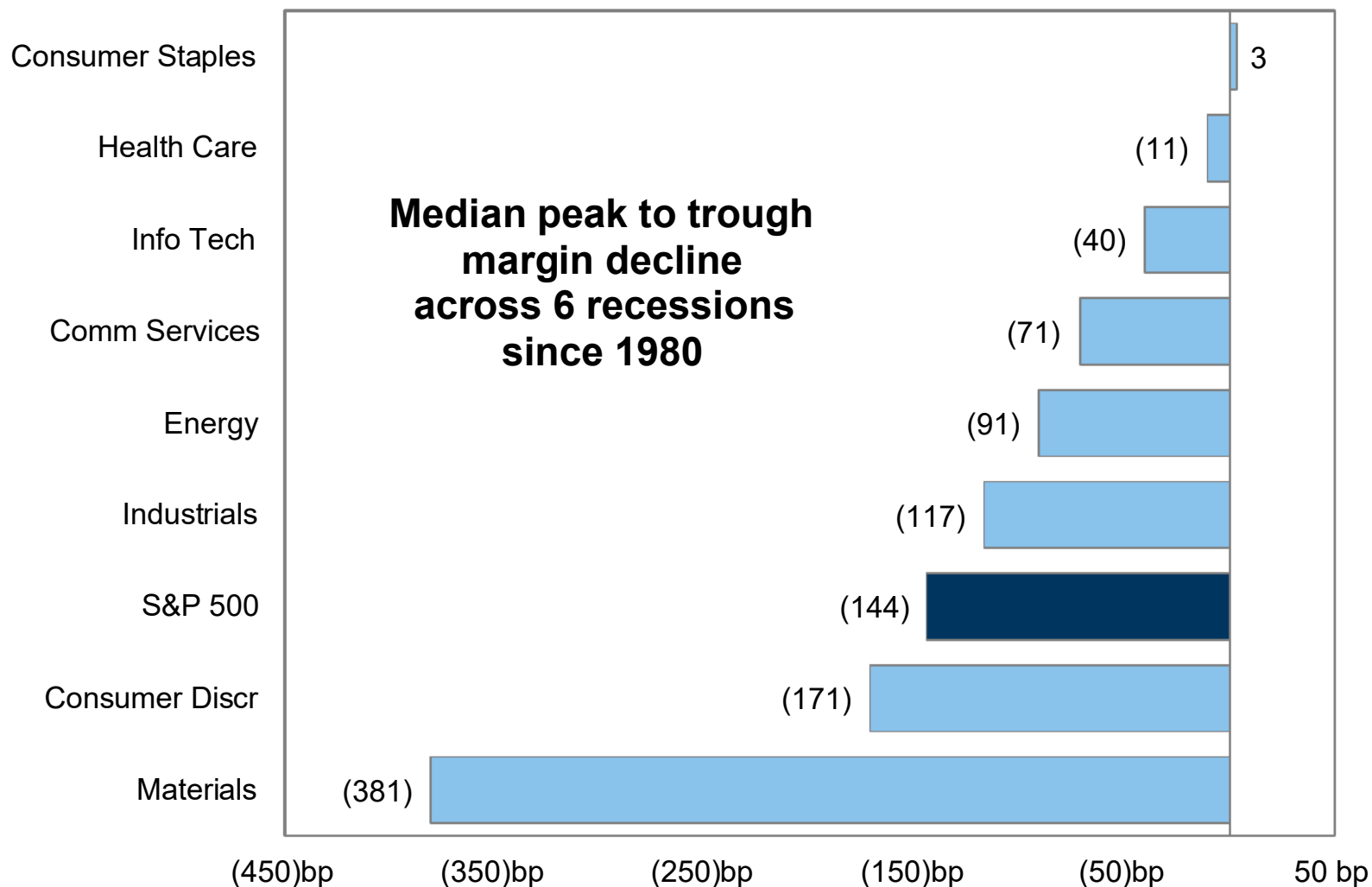
# S&P 500 profit margin contractions in recessions

Median S&P 500 stock experiences a peak-to-trough margin decline of 130 bp



# Margin declines across sectors during recessions

Materials contracts most; Consumer Staples and Health Care more protected



# 2Q sales, margins, and earnings for S&P 500

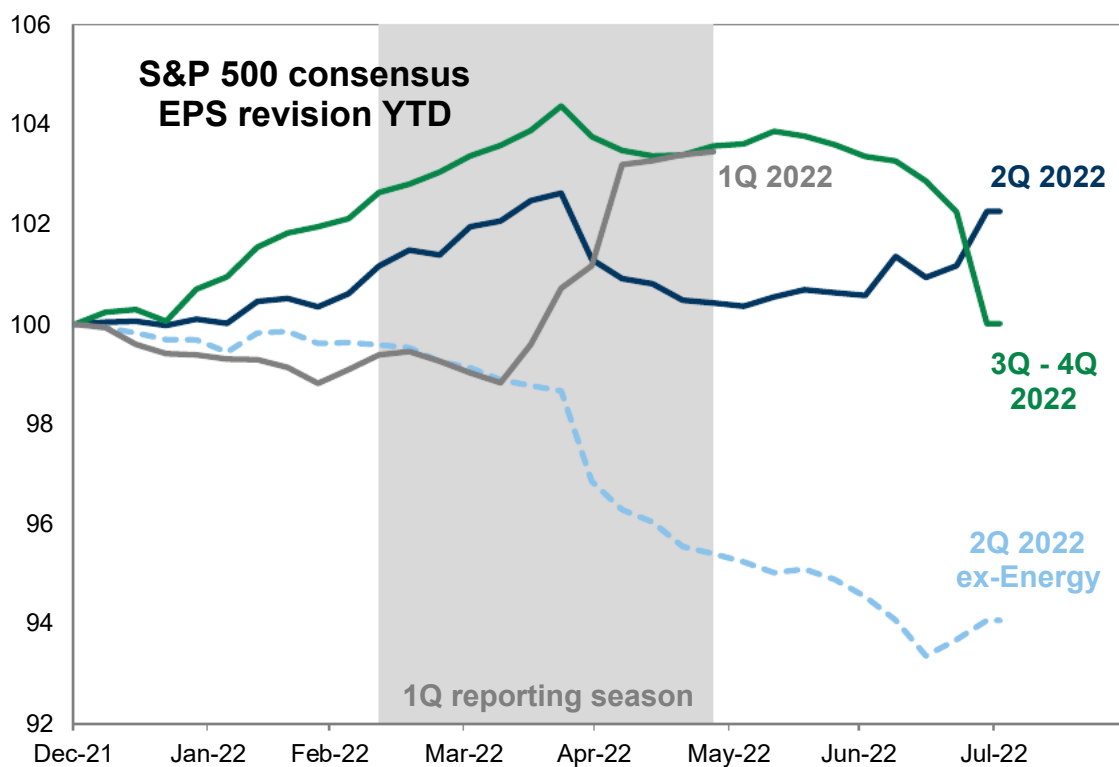
EPS growth of +8% year/year (*but -2% excluding Energy*), Financials down 23%

## 2Q 2022 bottom-up consensus (year/year)

Sector	EPS	Sales	Margin		Median stock EPS growth
	Growth	Growth	Level	Change	
Energy	287 %	74 %	14.6 %	803 bp	228 %
Industrials	26	13	10.0	105	7
Real Estate	23	NM	NM	NM	(19)
Materials	15	16	14.5	(15)	6
Health Care	7	9	11.3	(26)	(4)
Info Tech	3	9	23.5	(137)	7
Consumer Staples	2	10	7.2	(53)	1
Consumer Discretionary	(6)	12	6.7	(127)	(3)
Utilities	(7)	NM	NM	NM	(1)
Comm Services	(11)	10	14.9	(358)	(18)
Financials	(23)	NM	NM	NM	(16)
<b>S&amp;P 500</b>	<b>8 %</b>				2 %
<i>ex. Financials and Utilities</i>	17	16 %	12.4 %	4 bp	4
<i>ex. Energy</i>	(2)				1
<i>ex. Energy, Fins, and Utils</i>	3	11	12.1	(85)	2

# Revisions to S&P 500 quarterly 2022 EPS estimates

2Q Energy EPS forecasts up 103% while Cons. Discretionary slashed by 24%

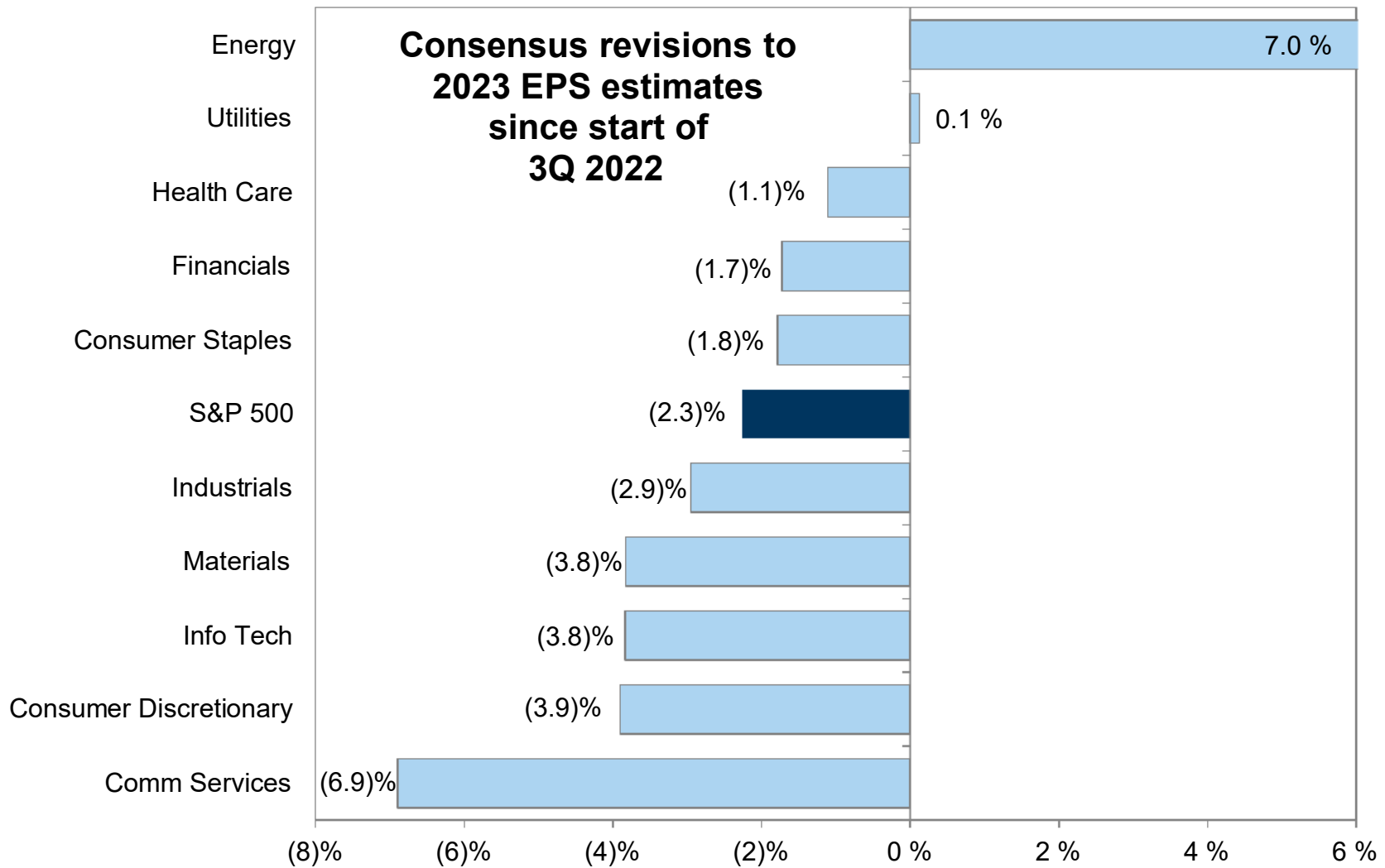


## 2Q 2022 EPS revisions YTD

	YTD
Energy	103 %
Materials	13
Real Estate	11
<b>S&amp;P 500</b>	<b>1</b>
Information Technology	(2)
Utilities	(2)
Health Care	(3)
Financials	(4)
Consumer Staples	(5)
<b>S&amp;P 500 ex-Energy</b>	<b>(5)</b>
Industrials	(4)
Communication Services	(12)
Consumer Discretionary	(23)

# 2023 S&P 500 EPS revisions since start of 3Q

Communication Services has experienced largest negative EPS revisions





# 2023 EPS: Baseline, recession, and consensus

Sector EPS breakdown of GS baseline vs. recession vs. consensus scenarios

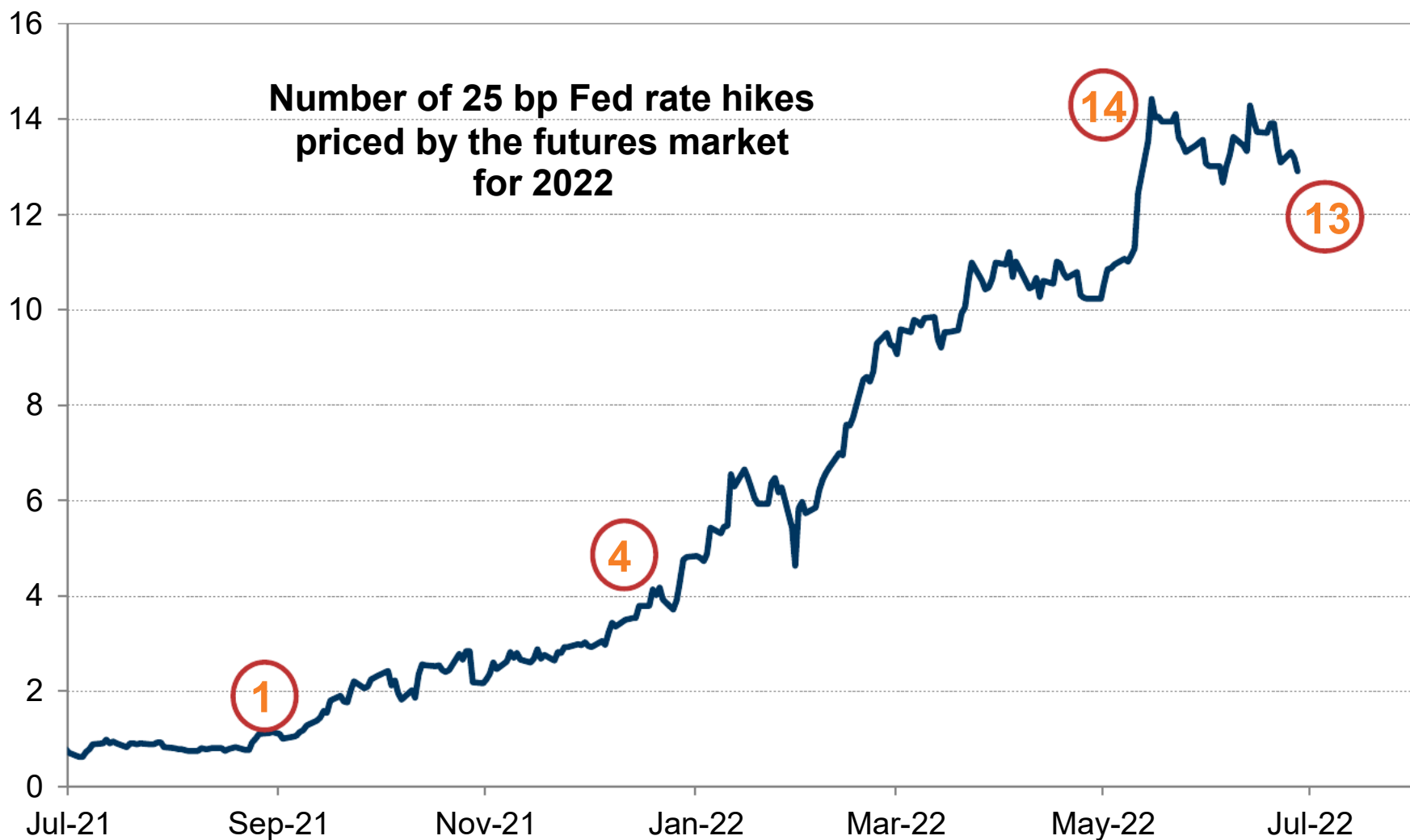
## GS top-down S&P 500 2023E EPS

	Baseline		Recession scenario		Consensus bottom-up 2023E EPS		Potential revision from consensus to GS recession
	Contribution	Growth	Contribution	Growth	Contribution	Growth	
Utilities	\$6	3 %	\$6	3 %	\$6	3 %	0 pp
Health Care	36	(1)	36	(1)	36	(1)	(1)
Energy	24	(7)	15	(15)	20	(15)	(0)
Consumer Staples	12	3	12	(1)	13	7	(7)
Information Technology	51	6	49	(3)	54	10	(14)
Materials	7	(7)	6	(24)	7	(8)	(16)
Communication Services	21	4	20	(9)	23	11	(21)
Real Estate	6	8	4	(20)	6	9	(29)
Financials	37	13	29	(15)	38	13	(28)
Industrials	16	3	12	(25)	19	15	(40)
Consumer Discretionary	16	6	10	(38)	20	28	(66)
<b>S&amp;P 500</b>	<b>\$234</b>	<b>3 %</b>	<b>\$200</b>	<b>(11)%</b>	<b>\$244</b>	<b>7 %</b>	<b>(18)pp</b>

# **Rates and equities**

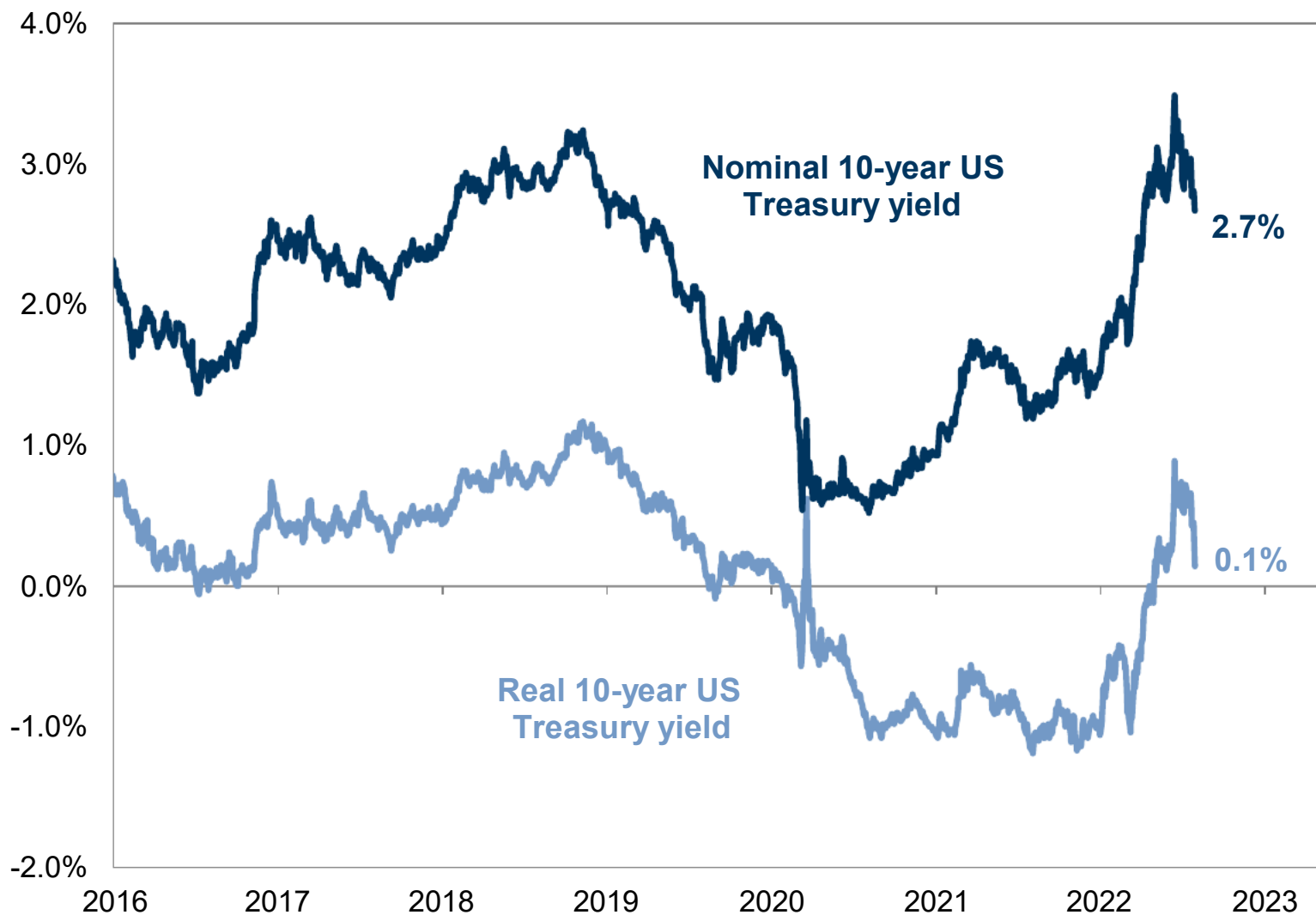
# Rapid change in expected pace of Fed tightening

# of expected 2022 Fed hikes: In September 2021 it was 1; today it is 13



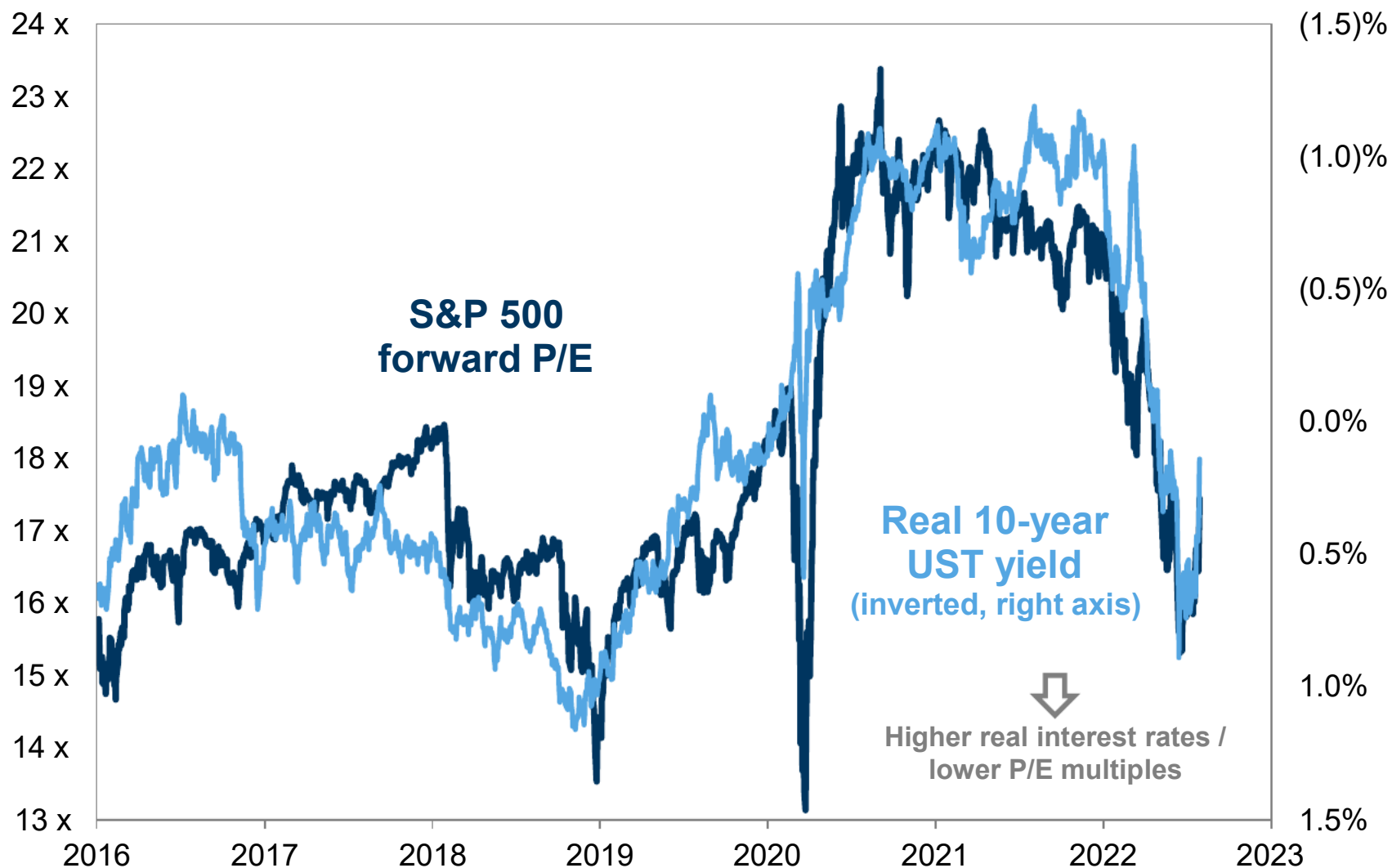
# Real rates and nominal rates have both surged YTD

Inflation and hawkish Fed pushed real rates from -1.0% in March to +0.1% today



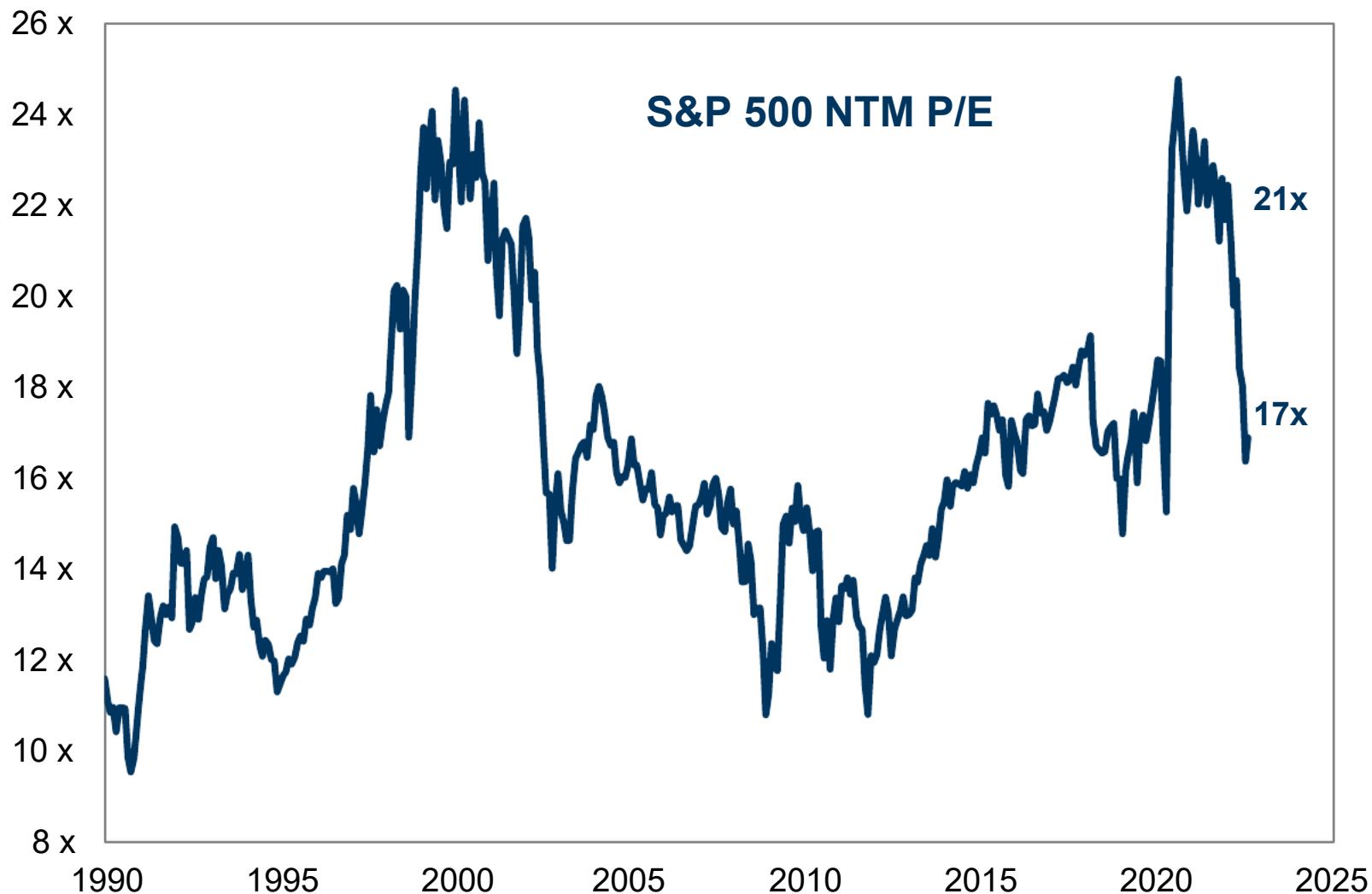
# S&P 500 P/E multiple vs. real 10-year Treasury yield

Equity valuations have declined as real interest rates have climbed



# Collapse in equity valuation explains the bear market

S&P 500 P/E multiple compressed by 27% from 21x in January to 17x today



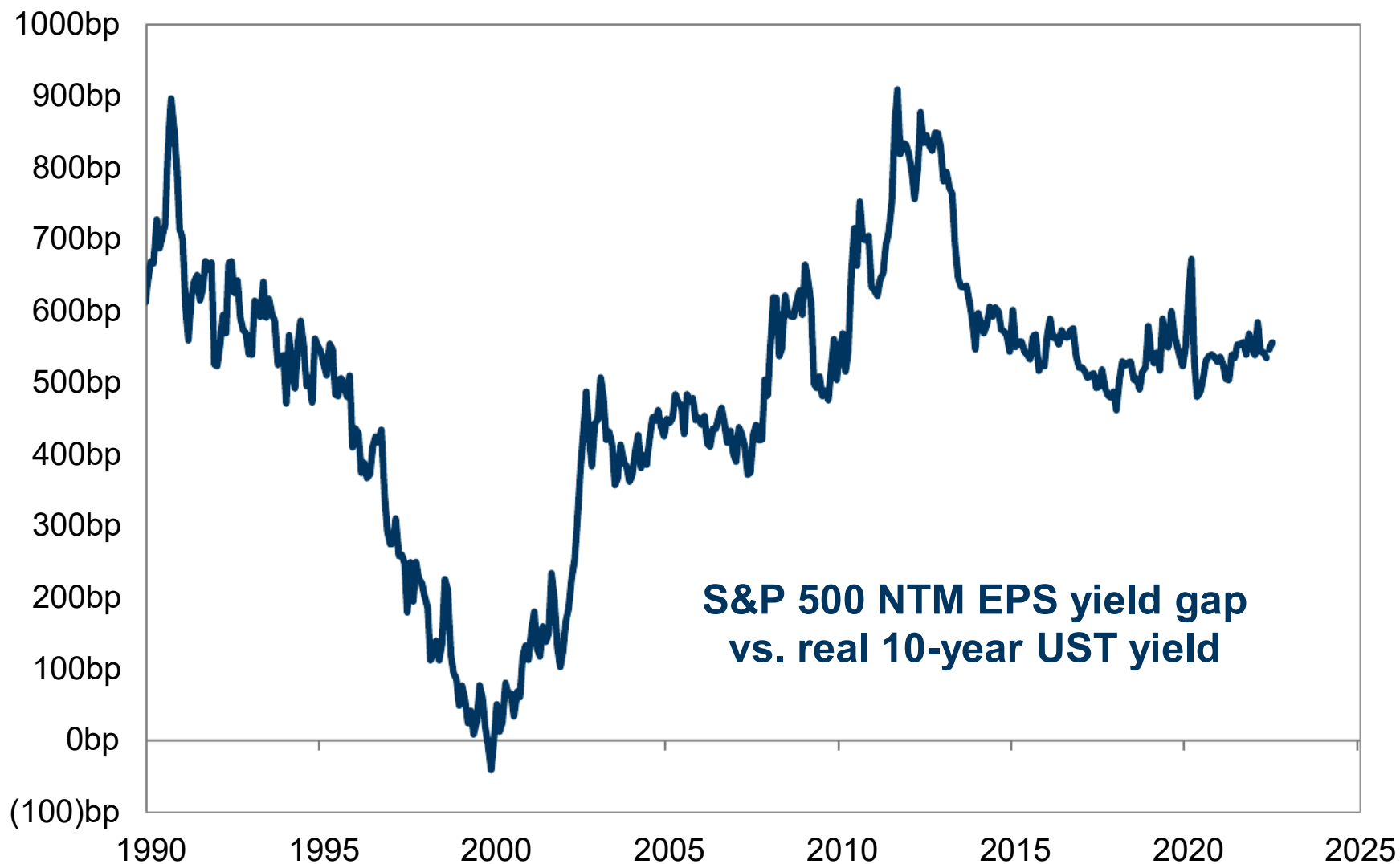
# Absolute and relative valuations for equities differ

Median absolute valuation metric at 88<sup>th</sup> percentile while relative at 55<sup>th</sup>

Valuation metric	Aggregate index	
	Current	Historical %ile
US market cap / GDP	226 %	97 %
EV / sales	2.7 x	96
Price / book	4.0 x	90
EV / EBITDA	12.9 x	90
Cash flow yield (CFO)	6.6 %	87
Cyclically adjusted P/E (CAPE)	26.1 x	83
Forward P/E	17.1 x	77
Free cash flow yield	4.2 %	49
<b>Median absolute metric</b>		<b>88 %</b>
Yield gap vs. IG	141 bp	56
Yield gap vs. real 10-year UST	550 bp	55
Yield gap vs. 10-year UST	312 bp	38
<b>Median relative metric</b>		<b>55 %</b>

# The *relative* valuation of equities vs. real rates

Baseline assumes year-end 2022 yield gap narrows to 550 bp (55<sup>th</sup> percentile)





# Historical S&P 500 returns based on GDP and rates

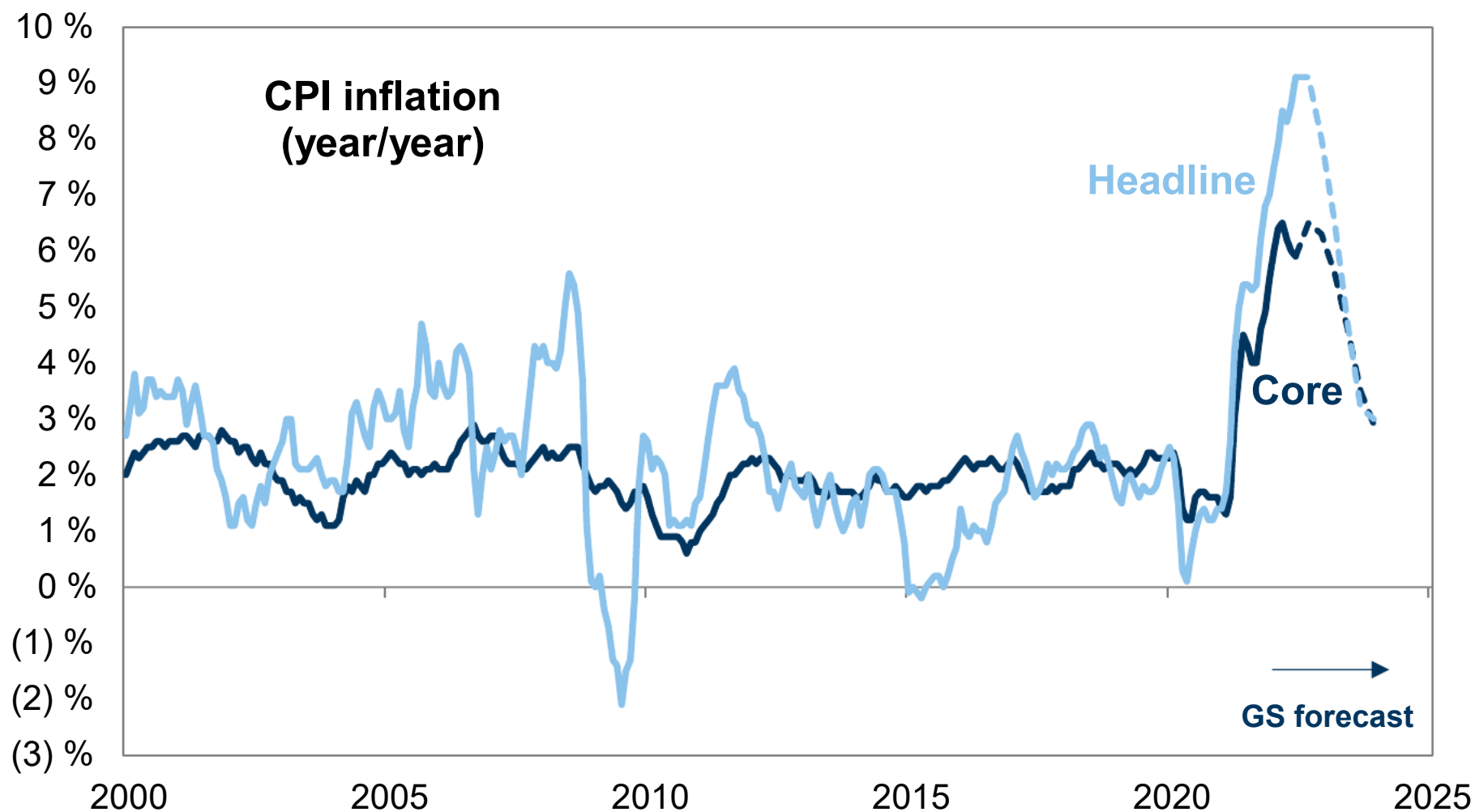
Rising real yield and decelerating but growing GDP implies 8% S&P 500 return

## Average 12-month S&P 500 return since 1975

		Real 10-year Treasury yield			
		Falling	Stable	Rising	All
US real GDP growth	Accelerating	19 %	16 %	19 %	18 %
	Stable	14	15	12	13
	Decelerating but growing	13	9	8	11
	Decelerating & contracting	(3)	(20)	(19)	(11)
	All	12	11	11	11

# Inflation has stayed high, but is forecast to decelerate

GS Economics forecasts core CPI will end 2022 at 6.1% and 2023 at 2.8%



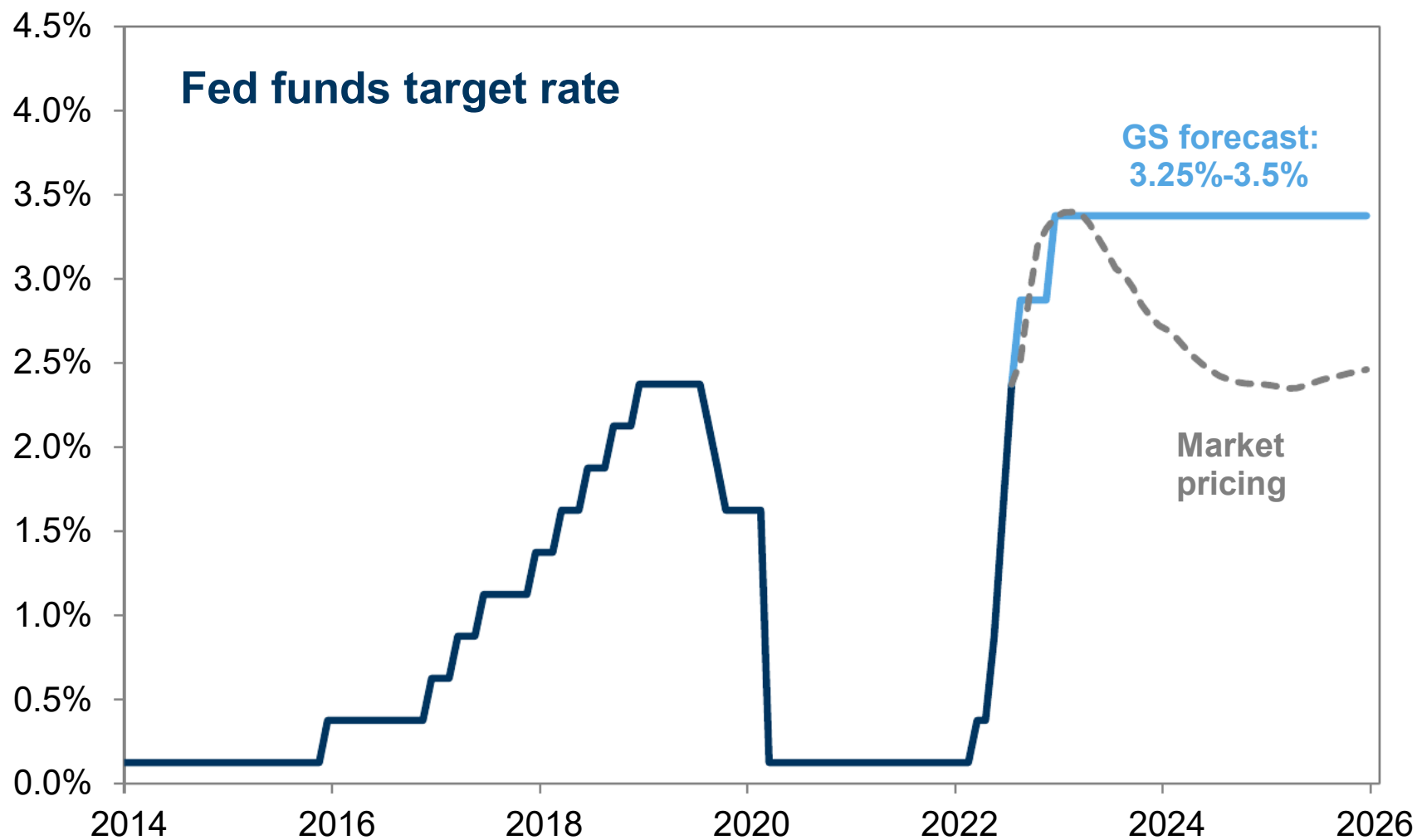
# GS Economics expects core PCE will decline

Core PCE inflation will fall to 4.5% at end-2022 and reach 2.6% at end-2023

GS Economics Core PCE Forecast (Year/Year)					
	Weight	June 2022	Dec. 2022	Dec. 2023	Dec. 2024
<b>Core PCE</b>	<b>100.0</b>	<b>4.8</b>	<b>4.5</b>	<b>2.6</b>	<b>2.3</b>
<b>Core Goods</b>	<b>27.2</b>	<b>5.5</b>	<b>3.2</b>	<b>(1.6)</b>	<b>(0.7)</b>
Pets Products	0.6	9.7	8.8	3.3	2.4
New Vehicles	2.5	11.6	7.6	(2.0)	(1.2)
Residual Core Goods	10.5	7.4	4.7	(0.5)	(0.1)
Clothing & Footwear	3.3	5.0	4.0	0.2	0.2
Pharma & Medical	4.3	2.8	3.4	(0.2)	1.2
Household Appliances	0.5	7.8	2.7	0.4	(1.6)
Recreational Vehicles	0.7	2.3	2.6	1.1	1.1
Jewelry, Watches	0.8	0.7	0.3	0.8	1.1
Video, Audio, Computers	2.3	(1.4)	(2.5)	(4.5)	(6.4)
Expenditures Abroad	0.1	(4.1)	(3.4)	(1.9)	(1.4)
Used Vehicles	1.7	4.2	(6.9)	(17.0)	(5.8)
<b>Core Services</b>	<b>72.8</b>	<b>4.5</b>	<b>4.9</b>	<b>4.0</b>	<b>3.3</b>
Air Transportation	1.0	29.8	24.6	(0.8)	(0.4)
Foreign Travel	1.3	12.2	14.8	3.6	3.2
Housing	17.1	5.5	6.9	4.8	3.7
Food Services & Accommodation	8.1	6.7	6.1	4.4	3.3
Residual Core Services	18.5	5.1	5.8	4.4	3.6
Ground Transportation	0.3	(0.9)	3.4	2.3	2.5
Medical Services	18.0	2.7	2.3	3.1	2.8
Financial Services & Insurance	8.6	0.2	0.9	3.5	3.4

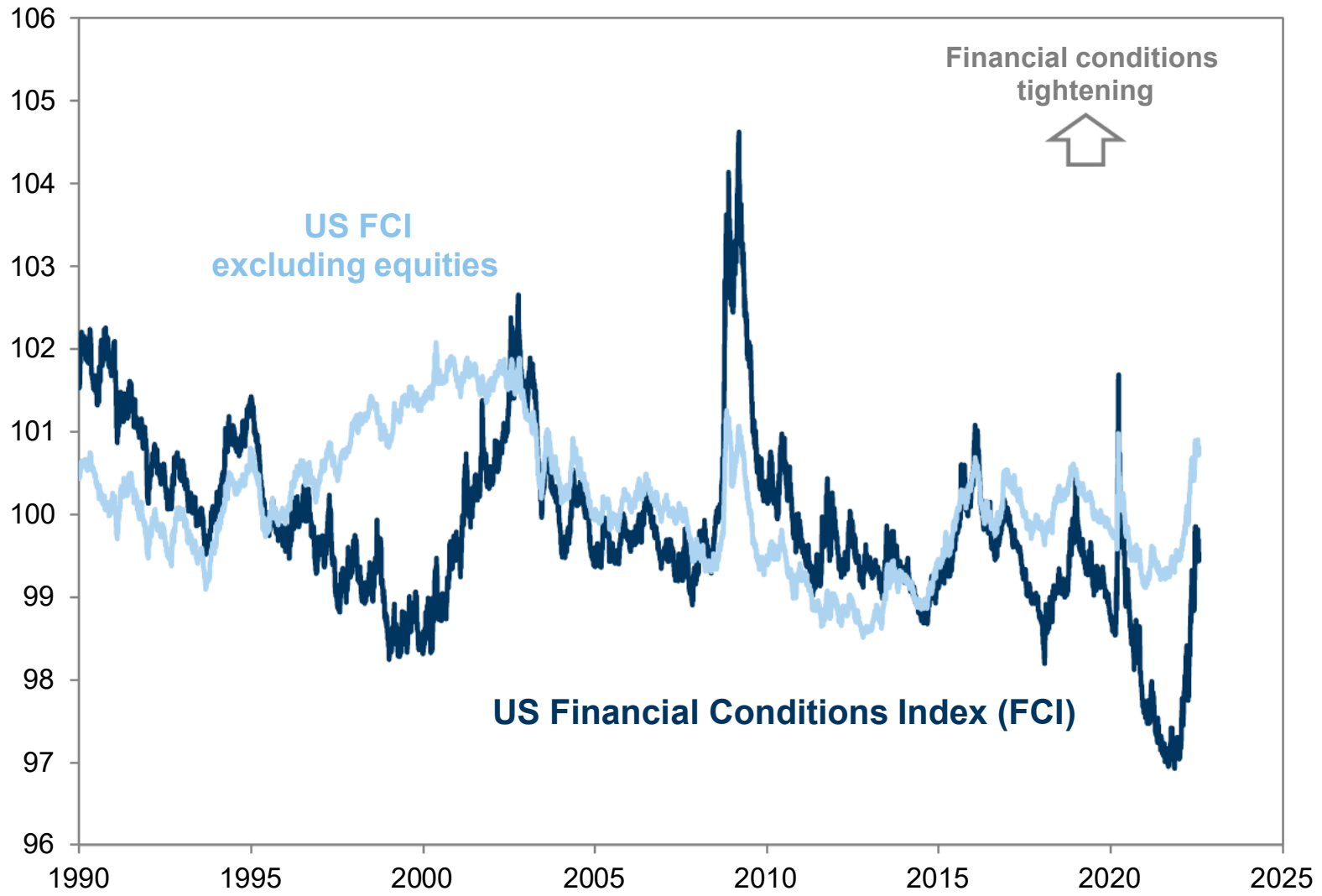
# Fed funds in 2022 will jump from ¼% to over 3¼%

Goldman Sachs Economics forecasts terminal rate of 3.25%-3.5% by 2022 YE



# Financial Conditions Index (FCI) has tightened

Higher Treasury yields, wider credit spreads, and lower P/E multiples



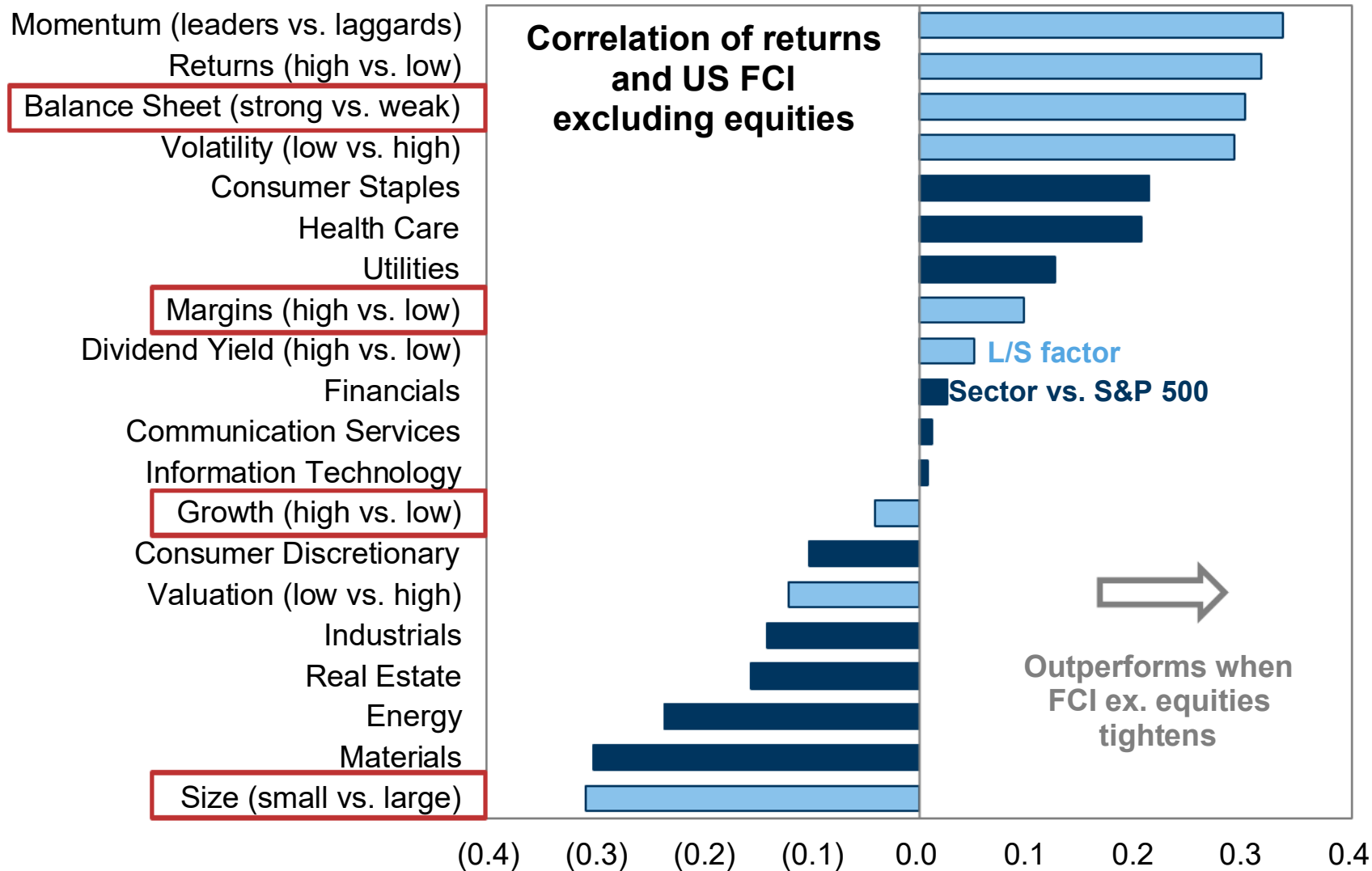
# FCI sensitivity to its various component variables

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

GS US FCI components			
Variable	Component Weight	<i>Ceteris paribus</i> change in variable required to tighten US FCI by 100 bp	2022 YTD change
Nominal Treasury yields	45.1 %	220 bp increase	121 bp
Corporate credit spreads	39.6	250 bp widening	54 bp
Trade-weighted exchange rate	6.0	16.7% appreciation	6%
Equity valuations	4.9	20.4% decline	-25%
Nominal fed funds rate	4.4	22.7 pp increase	2.2 pp
<b>Total</b>	<b>100.0 %</b>		<b>270 bp</b>

# Sector and factor performance when FCI tightens

Defensive sectors and “quality” factors typically outperform

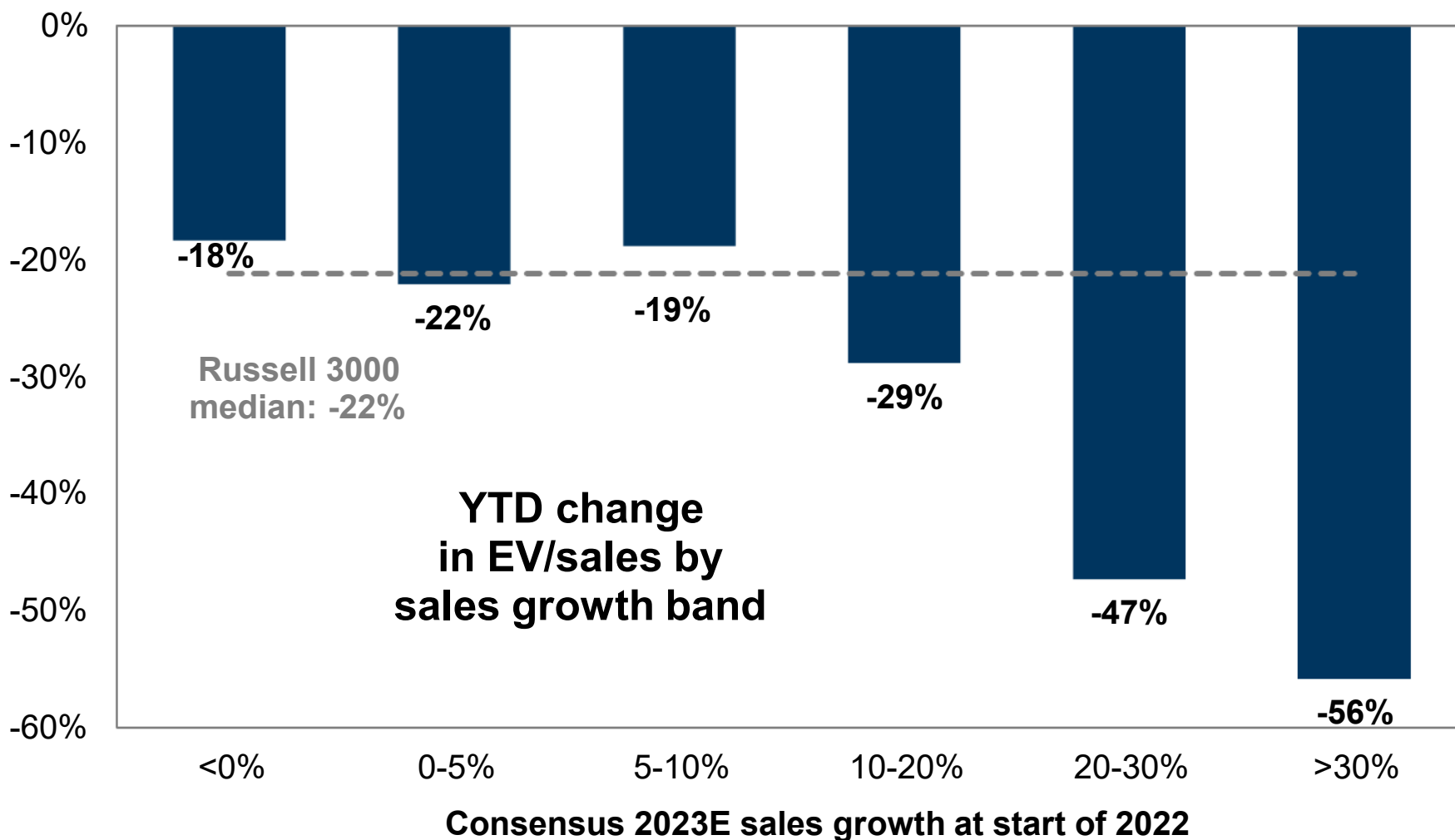


# Repricing of growth



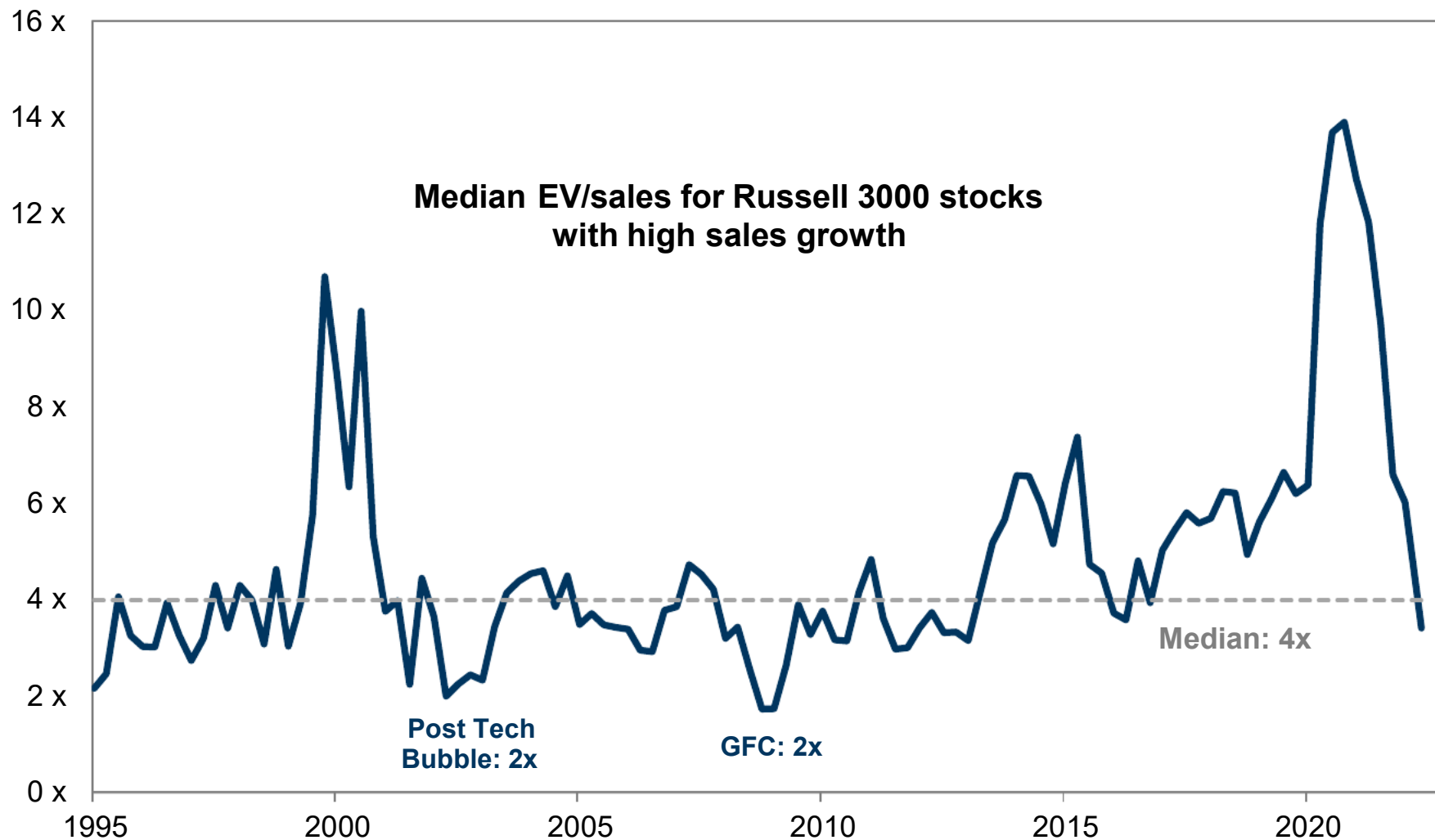
# EV/sales de-rating by 2023 sales growth cohort

Valuation de-rating has been most pronounced among high growth stocks



# Valuation of high-growth stocks over time

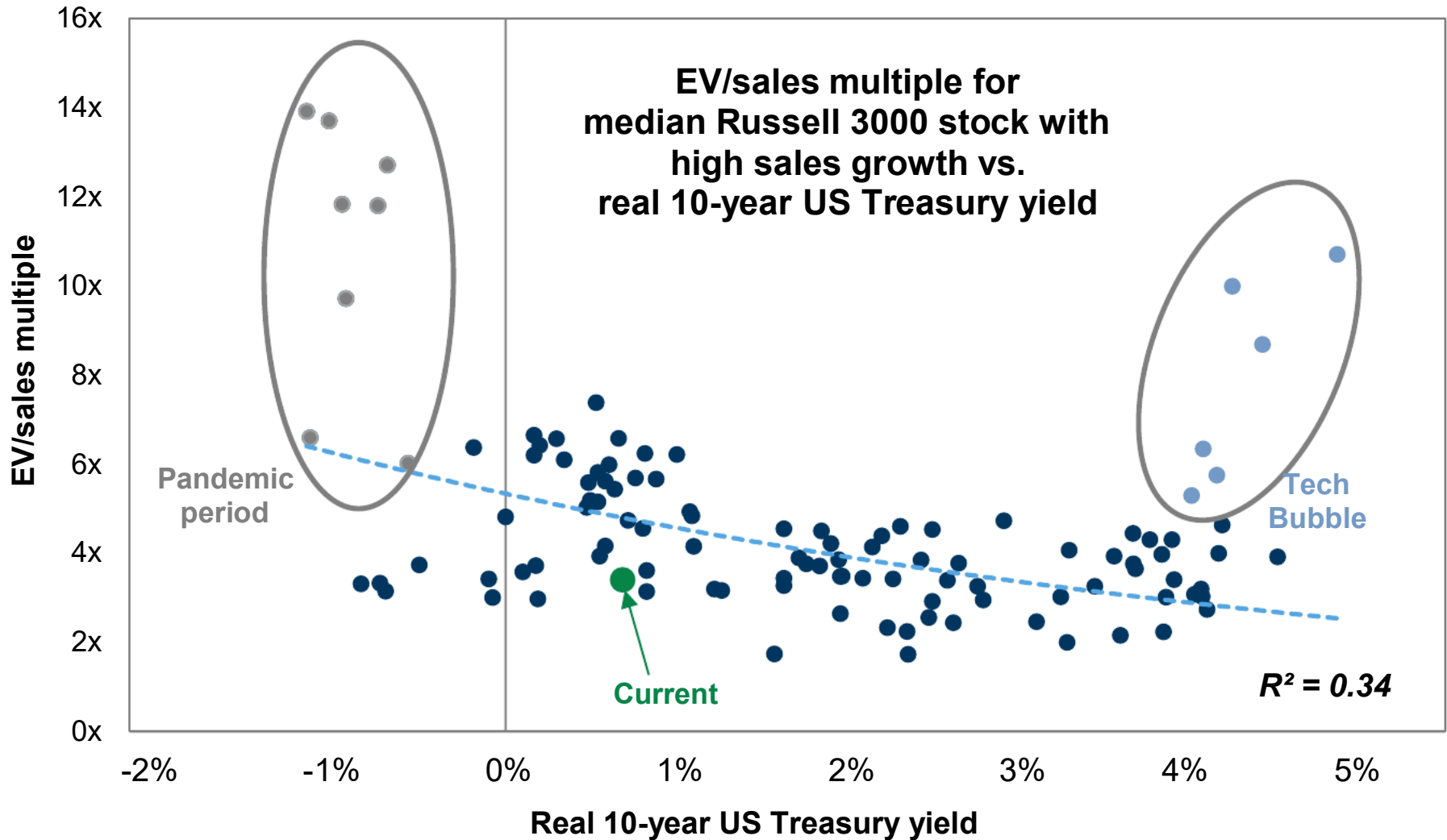
Median EV/sales for high-growth stocks has fallen back below long term avg.



"High growth" stocks rank in top 10% of Russell 3000 based on 3-year average realized sales growth and have positive sales growth in each of last three years (or most recent year if history unavailable).

# Valuations of high-growth stocks and real rates

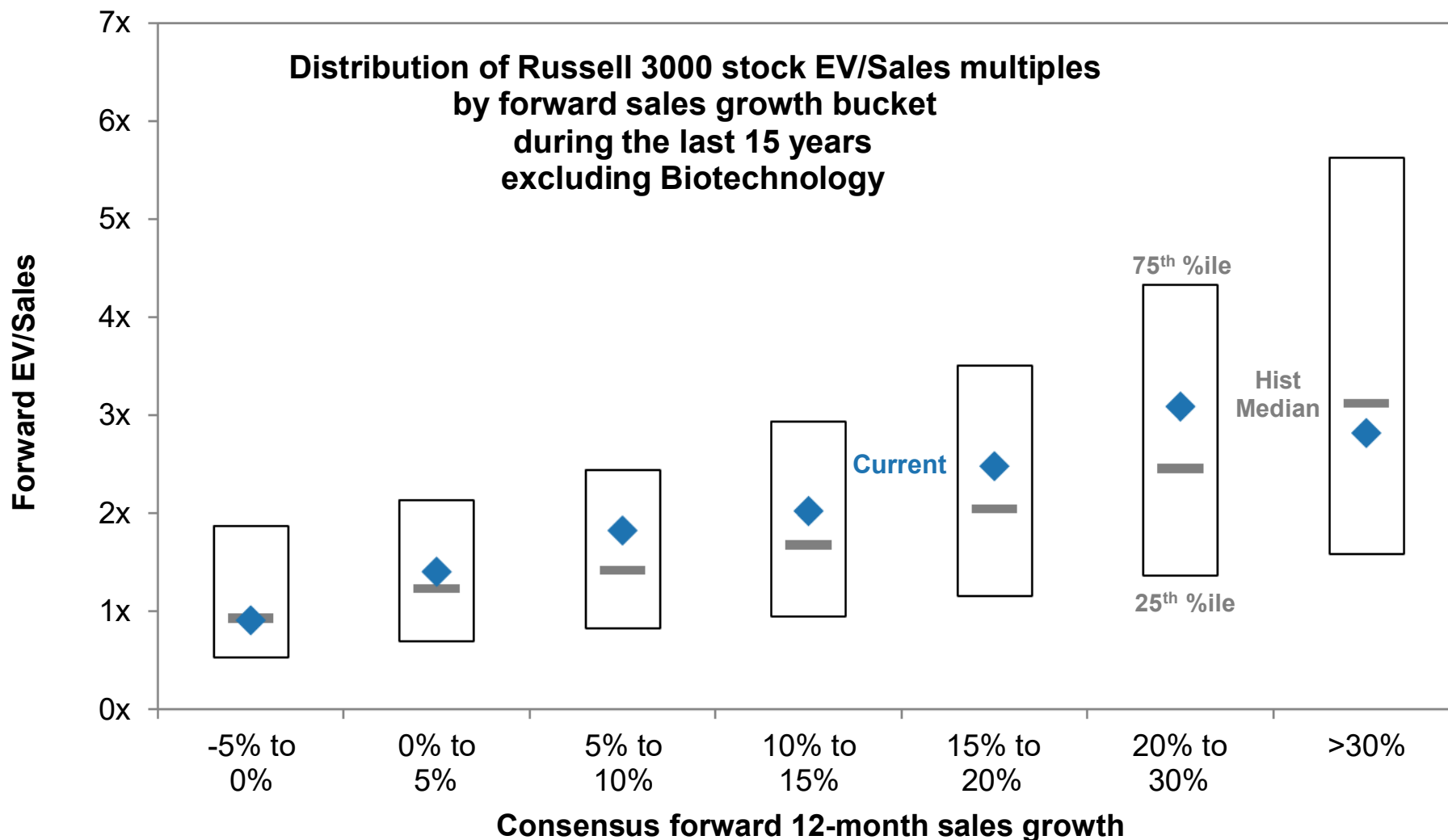
Current median EV/sales for high-growth stocks is 29% below implied level



"High growth" stocks rank in top 10% of Russell 3000 based on 3-year average realized sales growth and have positive sales growth in each of last three years (or most recent year if history unavailable).

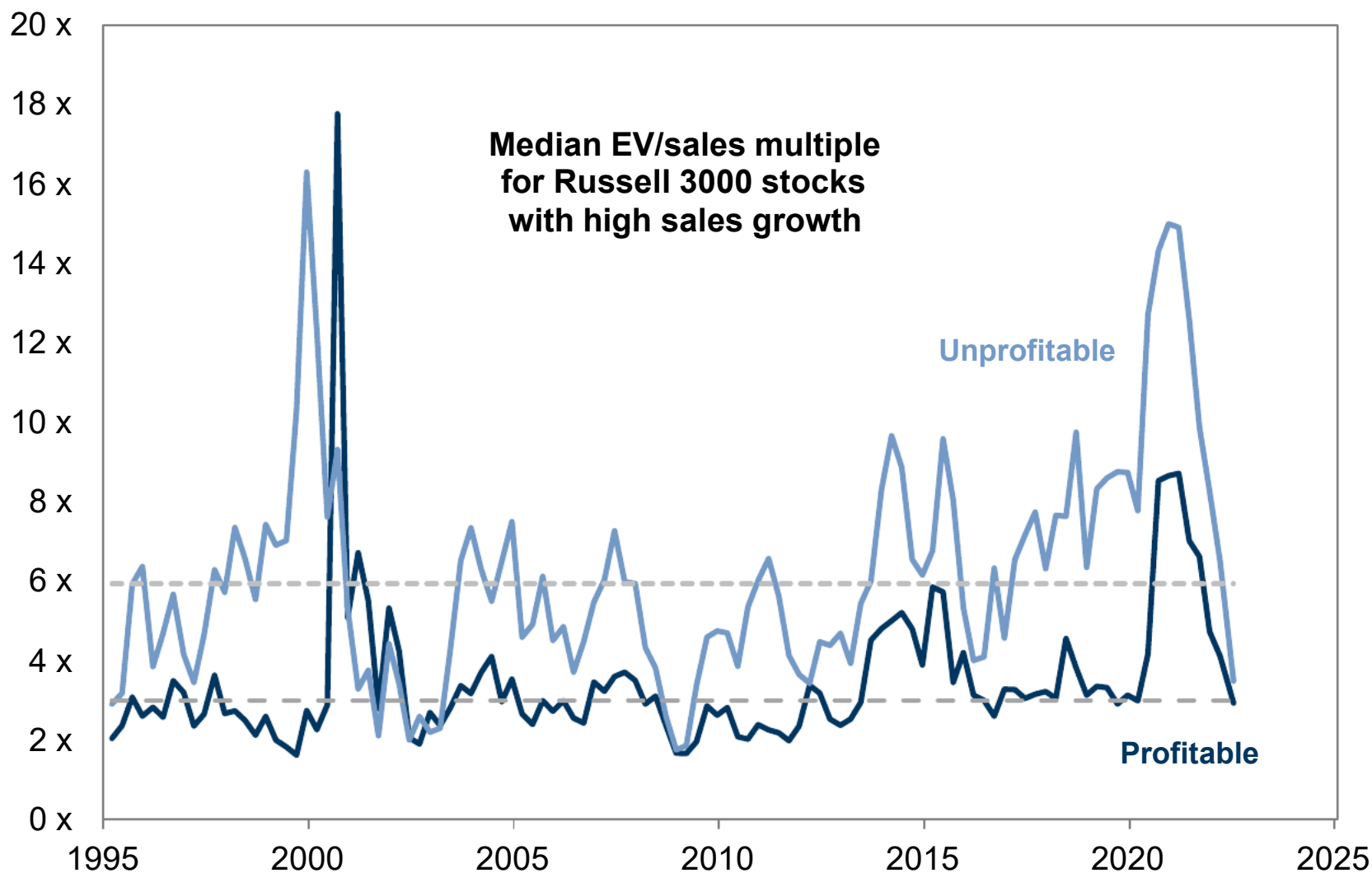
# Distribution of EV/sales by 2023 sales growth cohort

High-growth stocks are now the only cohort trading below long-term valuation



# Valuations of profitable vs unprofitable growth stocks

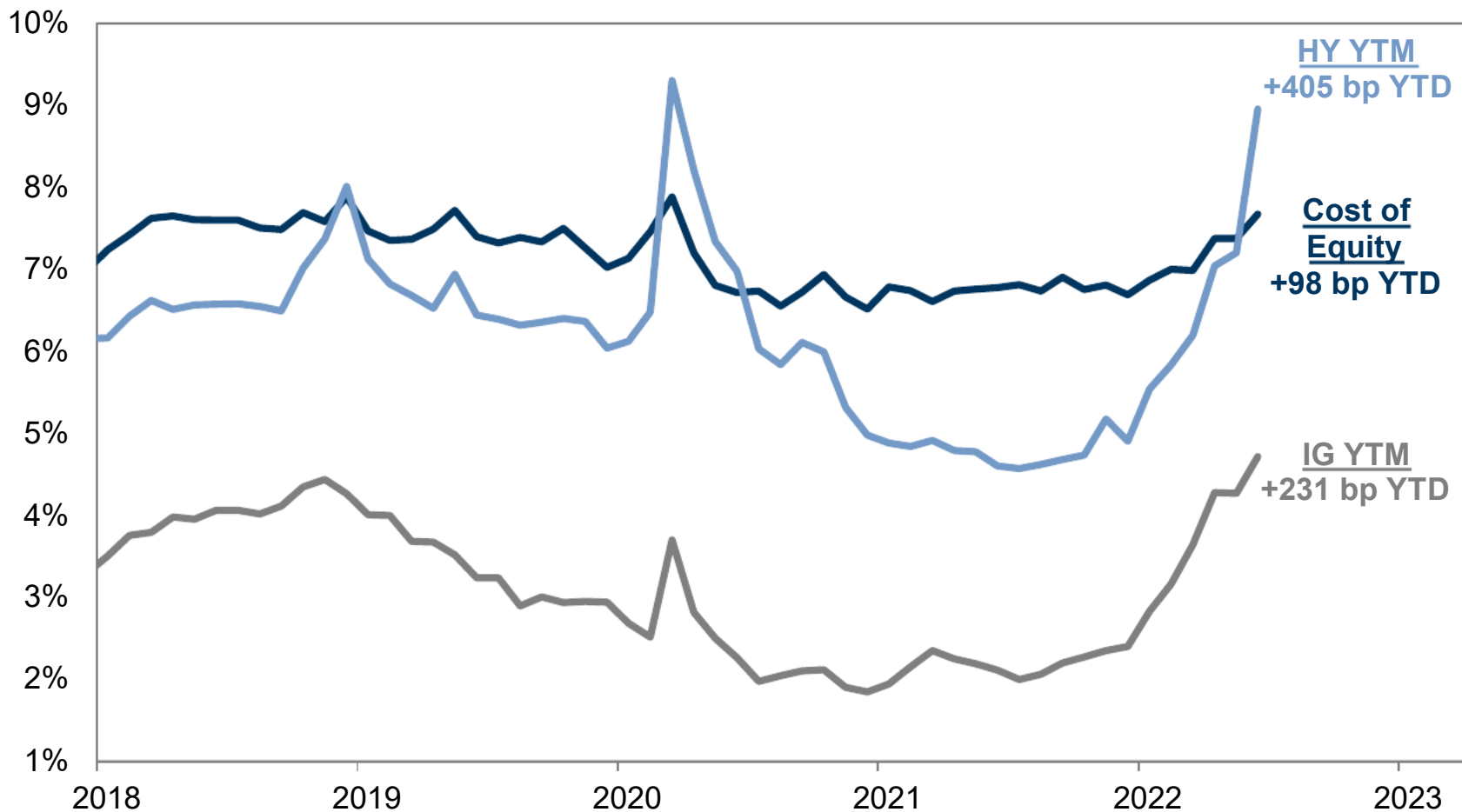
Unprofitable growth stocks are trading below their long-term average



"High growth" stocks rank in top 10% of Russell 3000 based on 3-year average realized sales growth and have positive sales growth in each of last three years (or most recent year if history unavailable).

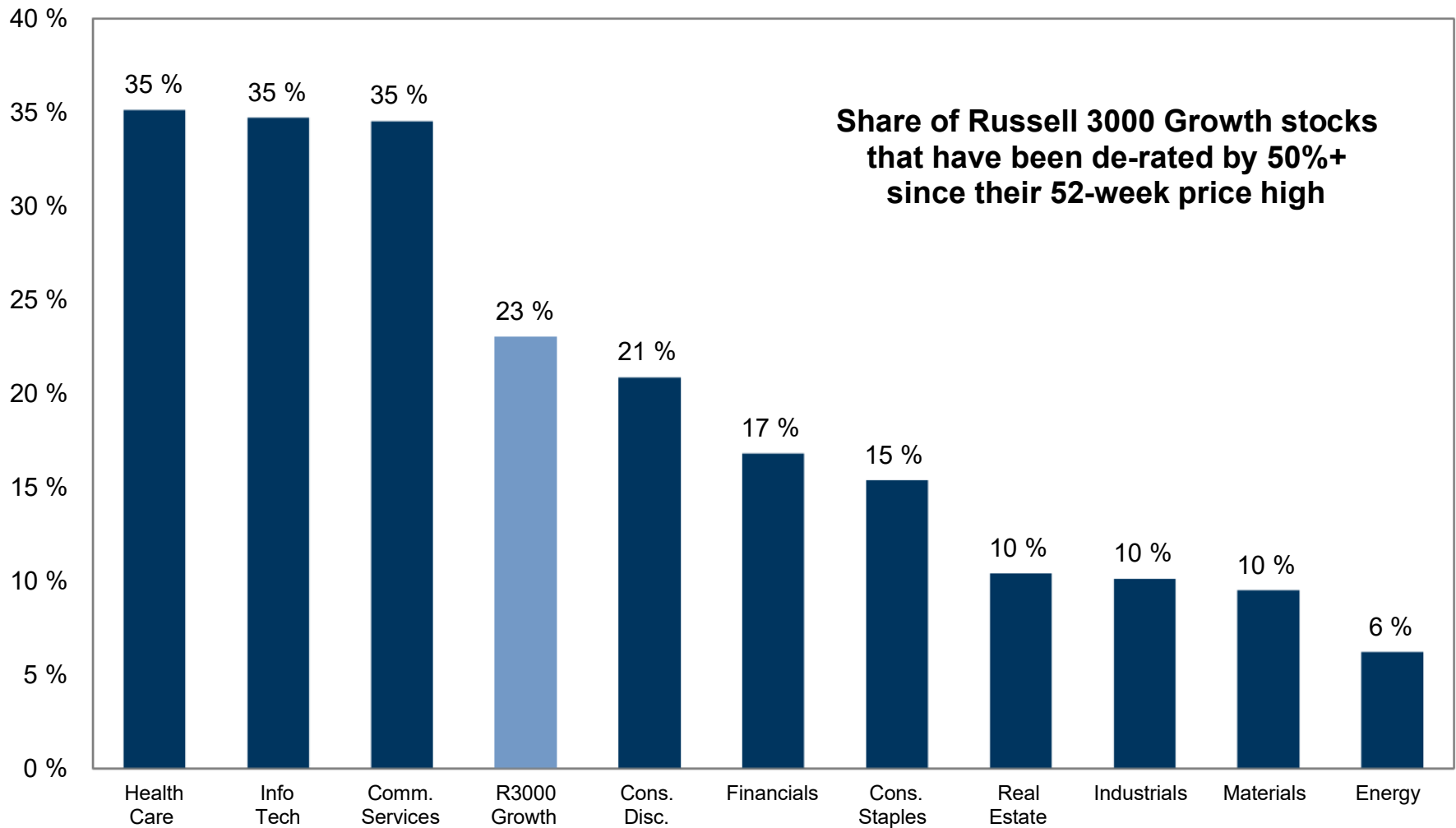
# Cost of equity and cost of debt have both risen YTD

Sharp rise in financing costs make debt issuance a less attractive option



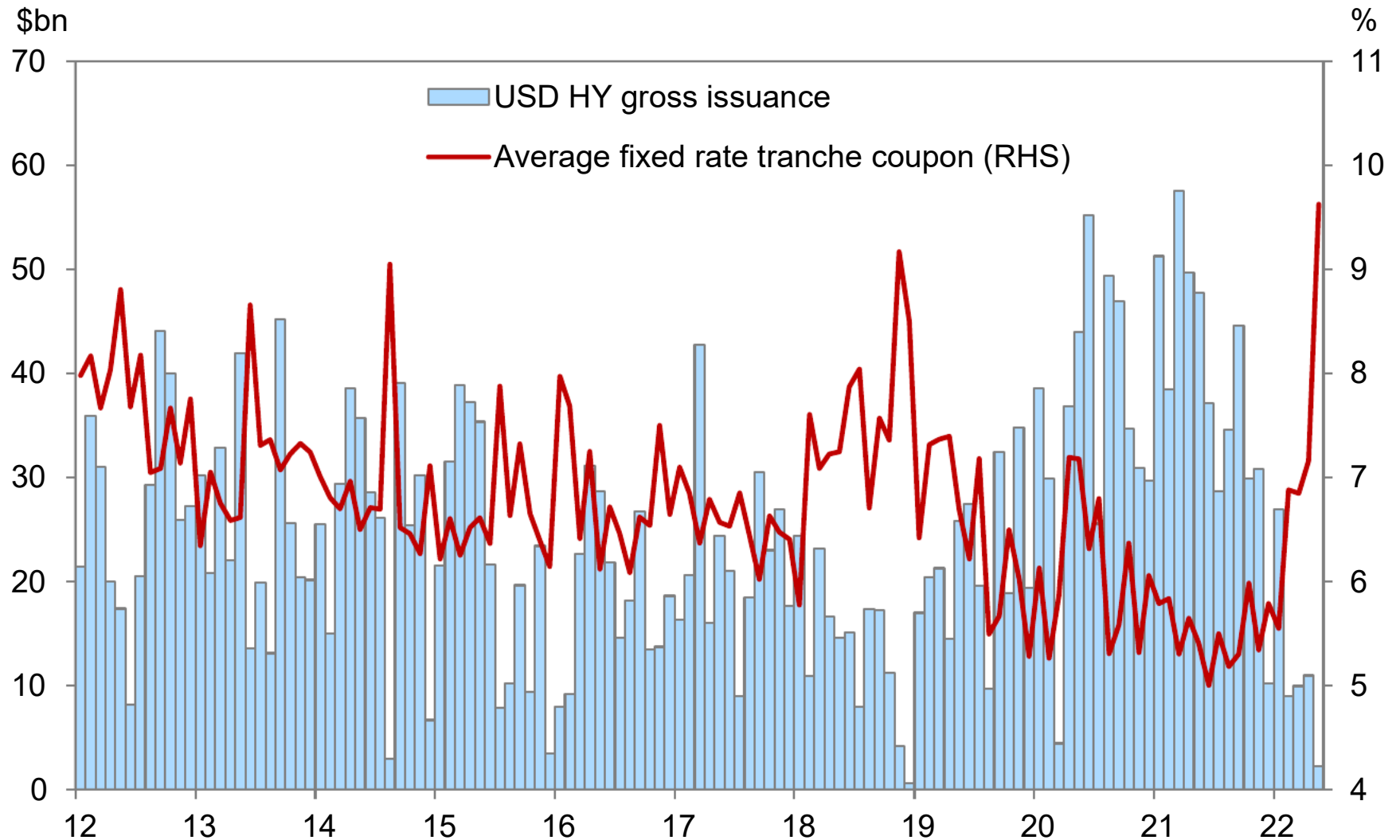
# Growth stock de-ratings by sector

Firms financing operations through equity would do so at lower valuations



# High yield issuance has come to a near stand-still

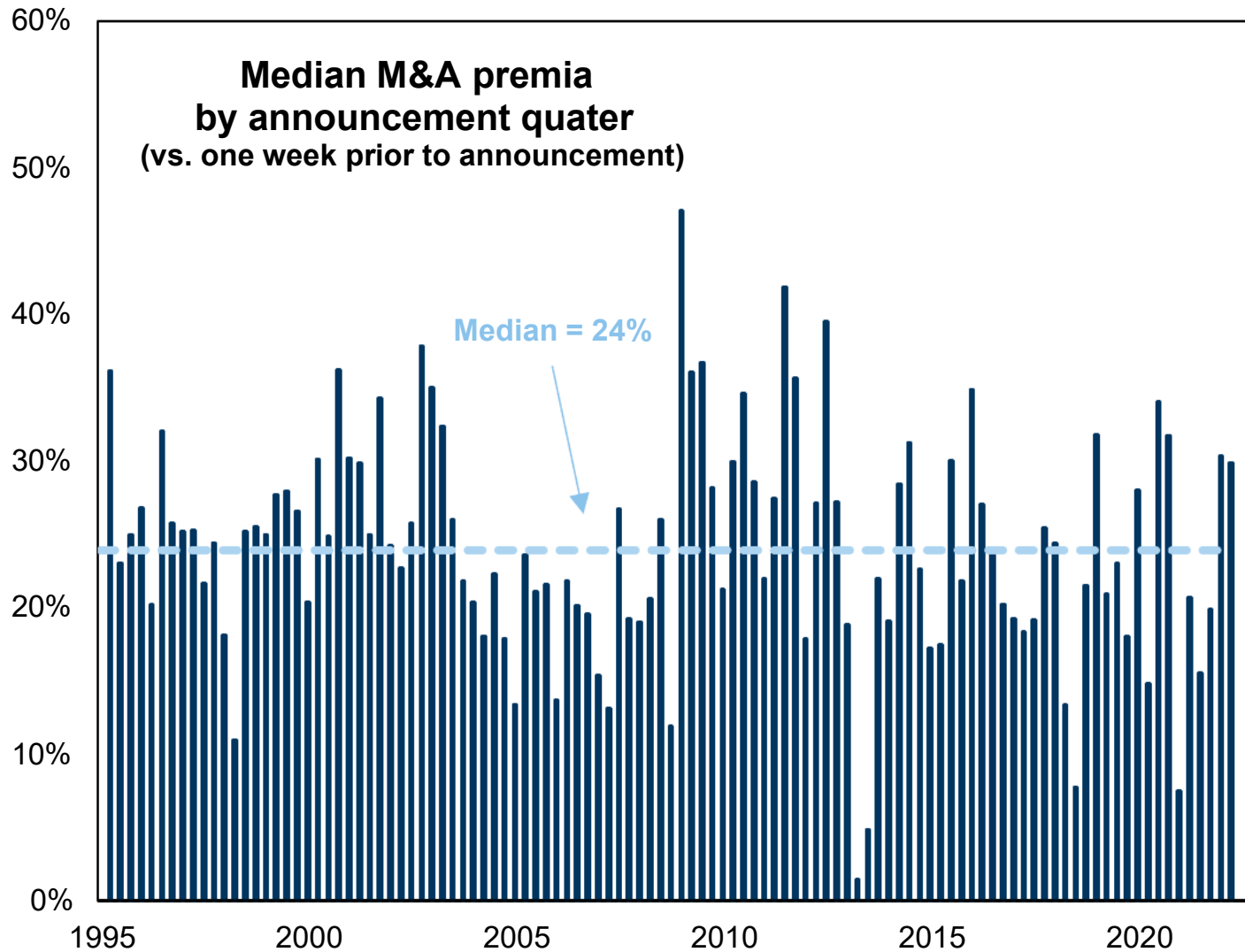
\$10 billion monthly average issuance YTD is down 77% compared with 2021





# M&A deal premium has averaged 24% since 1995

Company sale is possible option vs. dilutive equity offering or expensive debt



# High-growth stocks with near term path to profitability

20%+ forecast sales growth & EV/sales below historical growth stock median (4x)

Ticker	Name	Sector	Mkt cap \$ billion	YTD return	Sales growth		EPS		LTM EV/sales	
					2022	2023	1Q 2022	4Q 2022	Nov '21	Current
LYFT	Lyft, Inc.	Industrials	4.7	(68)%	32 %	25 %	\$0.1	\$0.2	4.5 x	0.9 x
LOVE	Lovesac Company	Consumer Discretionary	0.5	(51)	32	21	0.1	1.9	3.2	1.0
VITL	Vital Farms, Inc.	Consumer Staples	0.4	(41)	31	22	0.0	0.1	2.5	1.1
CANO	Cano Health, Inc.	Health Care	1.4	(27)	78	29	0.0	0.0	1.8	1.3
VERI	Veritone, Inc.	Information Technology	0.3	(69)	55	21	(0.2)	0.3	10.3	1.3
RIOT	Riot Blockchain Inc	Information Technology	1.0	(68)	71	58	0.3	0.3	12.3	1.5
CARG	CarGurus, Inc.	Communication Services	2.8	(29)	119	36	0.4	0.4	4.8	1.7
SNCY	Sun Country Airlines Holdings, Inc.	Industrials	1.2	(27)	44	21	0.2	0.1	3.4	1.9
ZYXI	Zynex, Inc.	Health Care	0.3	(15)	22	25	0.0	0.2	3.5	2.1
ACMR	ACM Research, Inc.	Information Technology	0.9	(44)	46	32	(0.0)	0.3	11.1	2.2
ROVR	Rover Group, Inc.	Consumer Discretionary	0.8	(57)	59	44	(0.1)	0.0	5.5	2.4
JYNT	Joint Corp	Health Care	0.2	(75)	22	24	(0.0)	0.1	17.1	2.7
PUBM	PubMatic, Inc.	Communication Services	0.8	(54)	24	22	0.1	0.4	7.4	2.9
APPS	Digital Turbine, Inc.	Information Technology	1.9	(68)	27	20	0.4	0.5	10.9	3.1
GDYN	Grid Dynamics Holdings, Inc.	Information Technology	1.2	(54)	41	24	0.1	0.1	7.8	3.6
NGMS	NeoGames SA	Consumer Discretionary	0.4	(45)	44	27	(0.0)	0.1	13.1	3.6
RNG	RingCentral, Inc.	Information Technology	5.2	(71)	26	24	0.4	0.6	16.2	3.7
OPRX	OptimizeRx Corporation	Health Care	0.4	(67)	33	31	(0.0)	0.4	27.0	3.9

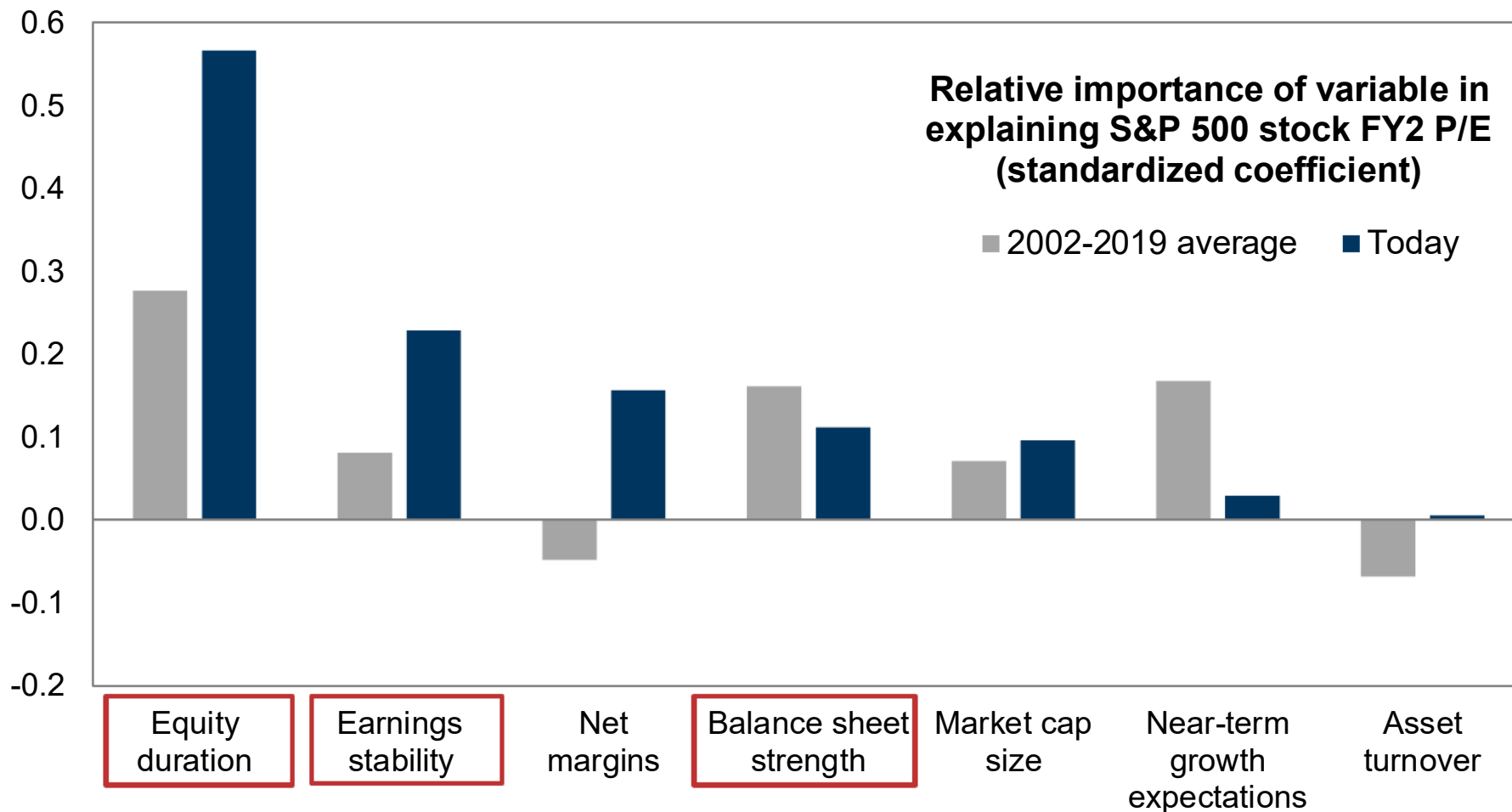
# Stocks burning cash may need to raise capital soon

Stocks with high cash burn rates, EV/sales above 5x, and 20%+ sales growth

Ticker	Name	Industry	Mkt cap (\$ mn)	LTM EV/sales			2023E sales growth	Trailing EPS	LTM cash flow from inv. (\$ mn)	LTM cash flow from op. (\$ mn)	Implied monthly cash burn (\$ mn)	Current cash balance (\$ mn)
				Nov-21	Jul-22	Change						
PHAT	Phathom Pharmaceuticals, Inc.	Pharmaceuticals	381	NA	<b>118 x</b>	NA	1235 %	\$(4)	\$(0)	\$(144)	\$ 12	\$ 138
TGTX	TG Therapeutics, Inc.	Biotechnology	901	423	<b>65</b>	(85)	538	(2)	(43)	(281)	27	233
PRVB	Provention Bio, Inc.	Pharmaceuticals	256	79	<b>48</b>	(40)	1711	(2)	(14)	(94)	9	85
AXSM	Axsome Therapeutics, Inc.	Pharmaceuticals	1569	3596	<b>47</b>	(99)	278	(4)	(0)	(114)	10	85
NKLA	Nikola Corporation	Machinery	2481	1112	<b>33</b>	(97)	442	(1)	(216)	(379)	50	360
AGIO	Agios Pharmaceuticals, Inc.	Biotechnology	1123	54	<b>31</b>	(42)	274	(6)	(652)	(376)	86	924
APPH	AppHarvest, Inc.	Food Products	423	48	<b>24</b>	(50)	283	(2)	(220)	(95)	26	135
NOVA	Sunnova Energy International Inc	Ind. Power & Renewable Elec. Producers	2181	34	<b>20</b>	(42)	40	(1)	(1011)	(251)	105	243
BILL	Bill.com Holdings, Inc.	Software	13510	78	<b>18</b>	(77)	37	(0)	(1940)	15	160	2811
BLUE	bluebird bio, Inc.	Biotechnology	327	10	<b>18</b>	79	173	(9)	311	(529)	18	213
RADI	Radius Global Infrastructure, Inc.	Diversified Telecom Services	1289	20	<b>18</b>	(14)	27	(1)	(439)	(20)	38	568
RIDE	Lordstown Motors Corp.	Automobiles	427	96	<b>16</b>	(83)	372	(2)	(253)	(386)	53	204
RVNC	Revance Therapeutics, Inc.	Pharmaceuticals	1139	15	<b>13</b>	(16)	83	(3)	53	(292)	20	263
BPMC	Blueprint Medicines Corp.	Biotechnology	3091	22	<b>13</b>	(41)	45	(11)	(399)	(298)	58	587
INSM	Insmed Incorporated	Biotechnology	2668	17	<b>12</b>	(29)	39	(4)	(165)	(340)	42	635
CHPT	ChargePoint Holdings, Inc.	Electrical Equip	4667	26	<b>12</b>	(53)	59	(1)	(224)	(194)	35	541
FUV	Arcimoto, Inc.	Automobiles	112	65	<b>12</b>	(82)	634	(1)	(18)	(47)	5	5
NCNO	nCino Inc	Software	3592	27	<b>10</b>	(64)	27	(0)	(283)	(22)	25	79
PCOR	Procore Technologies Inc	Software	6568	NA	<b>10</b>	NA	23	(0)	(553)	32	43	587
GBT	Global Blood Therapeutics Inc	Biotechnology	2191	12	<b>9</b>	(22)	58	(5)	(238)	(244)	40	553
AKTS	Akoustis Technologies, Inc.	Electronic Equip	231	27	<b>9</b>	(65)	133	(1)	(28)	(40)	6	56
U	Unity Software, Inc.	Software	10796	40	<b>8</b>	(79)	30	(0)	(1783)	79	142	1809
FNA	Paragon 28, Inc.	Health Care Equip & Supplies	1378	NA	<b>8</b>	NA	21	(0)	(74)	(17)	8	94
RXST	RxSight, Inc.	Health Care Equip & Supplies	402	NA	<b>8</b>	NA	86	(5)	(82)	(49)	11	144
ESPR	Esperion Therapeutics, Inc.	Pharmaceuticals	391	7	<b>7</b>	(1)	150	(7)	(69)	(214)	24	219
DNMR	Danimer Scientific, Inc.	Chemicals	466	25	<b>7</b>	(74)	72	0	(371)	(67)	36	210
XXII	22nd Century Group, Inc.	Tobacco	326	11	<b>6</b>	(41)	60	(0)	(10)	(27)	3	39
PACB	Pacific Biosciences of California, Inc.	Life Sciences Tools & Services	1003	45	<b>6</b>	(86)	50	(1)	(645)	(161)	67	963
GTHX	G1 Therapeutics, Inc.	Biotechnology	350	13	<b>6</b>	(52)	86	(4)	0	(143)	12	183
QTNT	Quotient Ltd.	Health Care Equip & Supplies	35	11	<b>6</b>	(41)	33	(1)	44	(119)	6	68
NCMI	National CineMedia, Inc.	Media	92	11	<b>6</b>	(43)	30	(1)	(4)	(94)	8	114
EOSE	Eos Energy Enterprises, Inc.	Electrical Equip	137	141	<b>6</b>	(96)	279	(3)	(17)	(149)	14	57
BYND	Beyond Meat, Inc.	Food Products	2306	14	<b>6</b>	(59)	24	(4)	(146)	(432)	48	548
RCL	Royal Caribbean Group	Hotels Restaurants & Leisure	8890	23	<b>5</b>	(77)	43	(19)	(2620)	(1597)	351	2147
NCLH	Norwegian Cruise Line Holdings Ltd.	Hotels Restaurants & Leisure	5017	21	<b>5</b>	(76)	51	(8)	(786)	(1987)	231	2137
XMTR	Xometry, Inc.	Internet & Direct Marketing Retail	1733	NA	<b>5</b>	NA	37	(3)	(494)	(81)	48	369
BTRS	BTRS Holdings, Inc.	Software	904	7	<b>5</b>	(32)	22	(0)	(138)	(19)	13	153
UPWK	Upwork, Inc.	Professional Services	2933	13	<b>5</b>	(60)	24	(0)	(492)	(0)	41	673

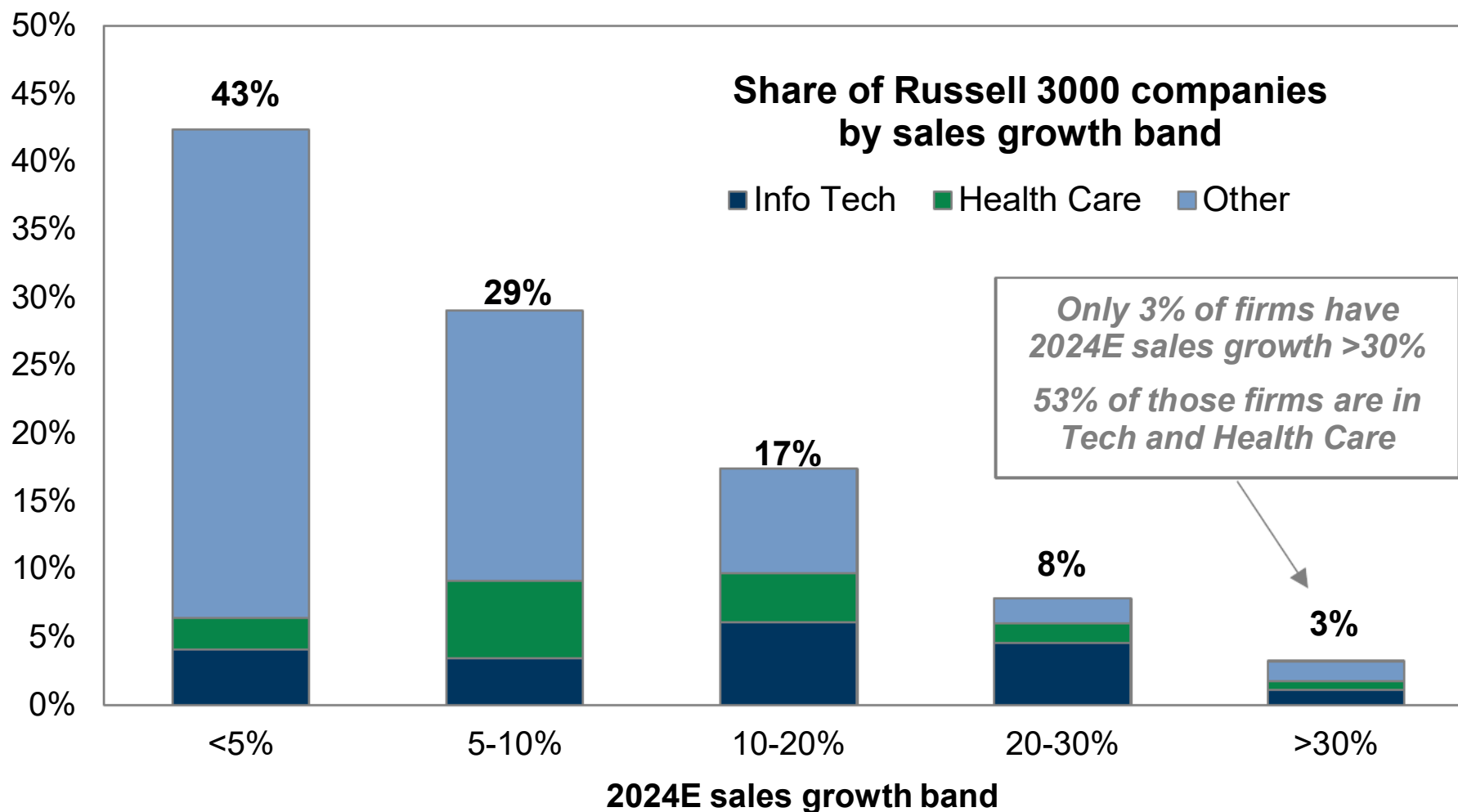
# What investors pay for

Relative importance of variable in explaining current S&P 500 stock P/E multiples



# Distribution of 2024E sales growth for R3000 stocks

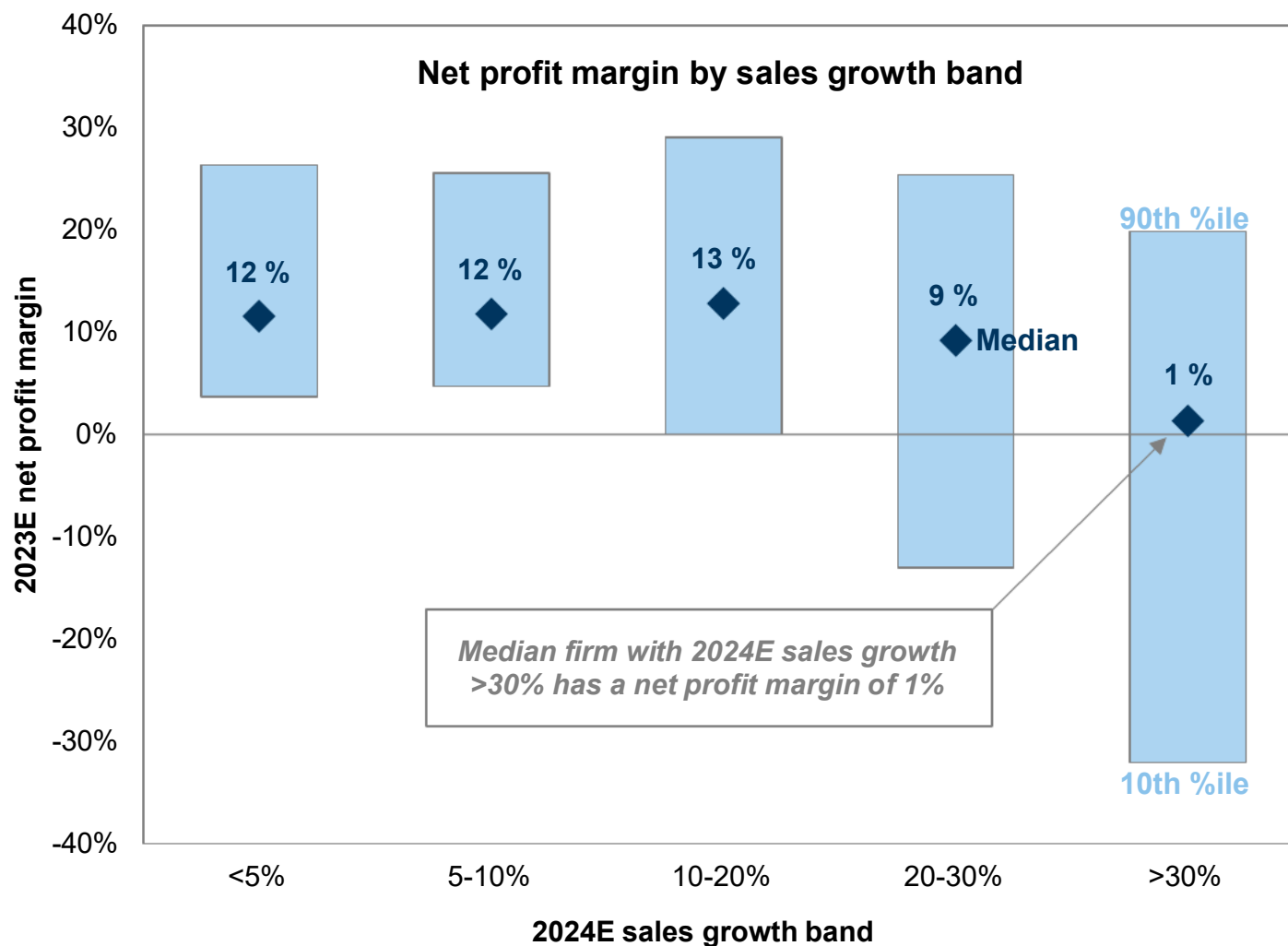
70% of Russell 3000 companies expected to grow sales by less than 10%



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

# Russell 3000 margins by sales growth band

Stocks with high expected sales growth generally have lower margins



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

# Valuation of sales growth vs. margins

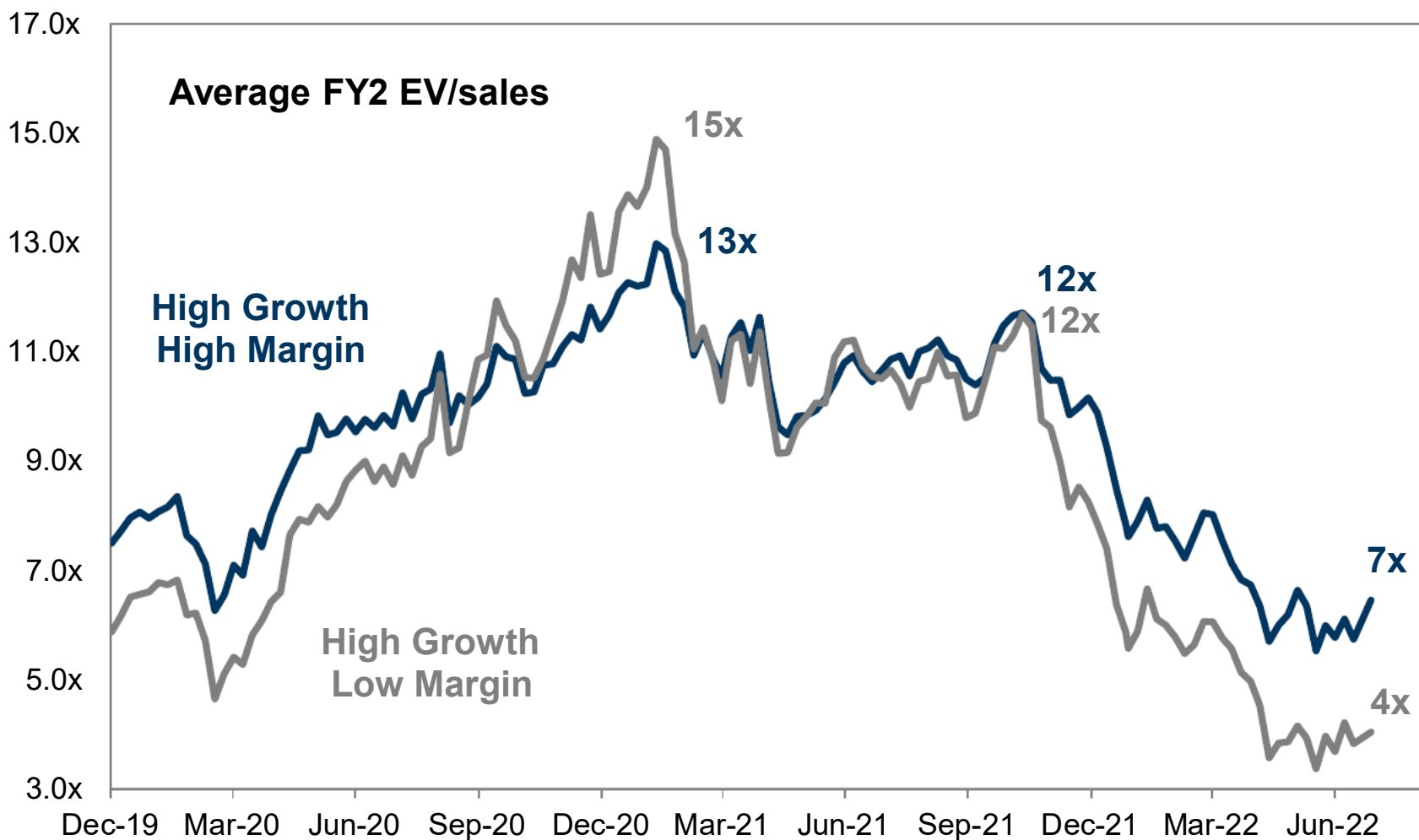
Firms with modest sales growth can boost valuations by improving margins

## Average FY2 EV/sales multiple

		Sales growth (2024E)			
		<5%	5-10%	10-20%	>20%
Margin (2024E)	<5%	1.1 x	1.0 x	3.5 x	4.5 x
	5-10%	1.4	1.5	2.5	4.9
	10-20%	2.9	3.0	3.4	6.2
	>20%	3.9	5.8	6.6	6.6

# Valuation of high- and low-margin growth stocks

High growth, low margin stocks have de-rated by 75% since November

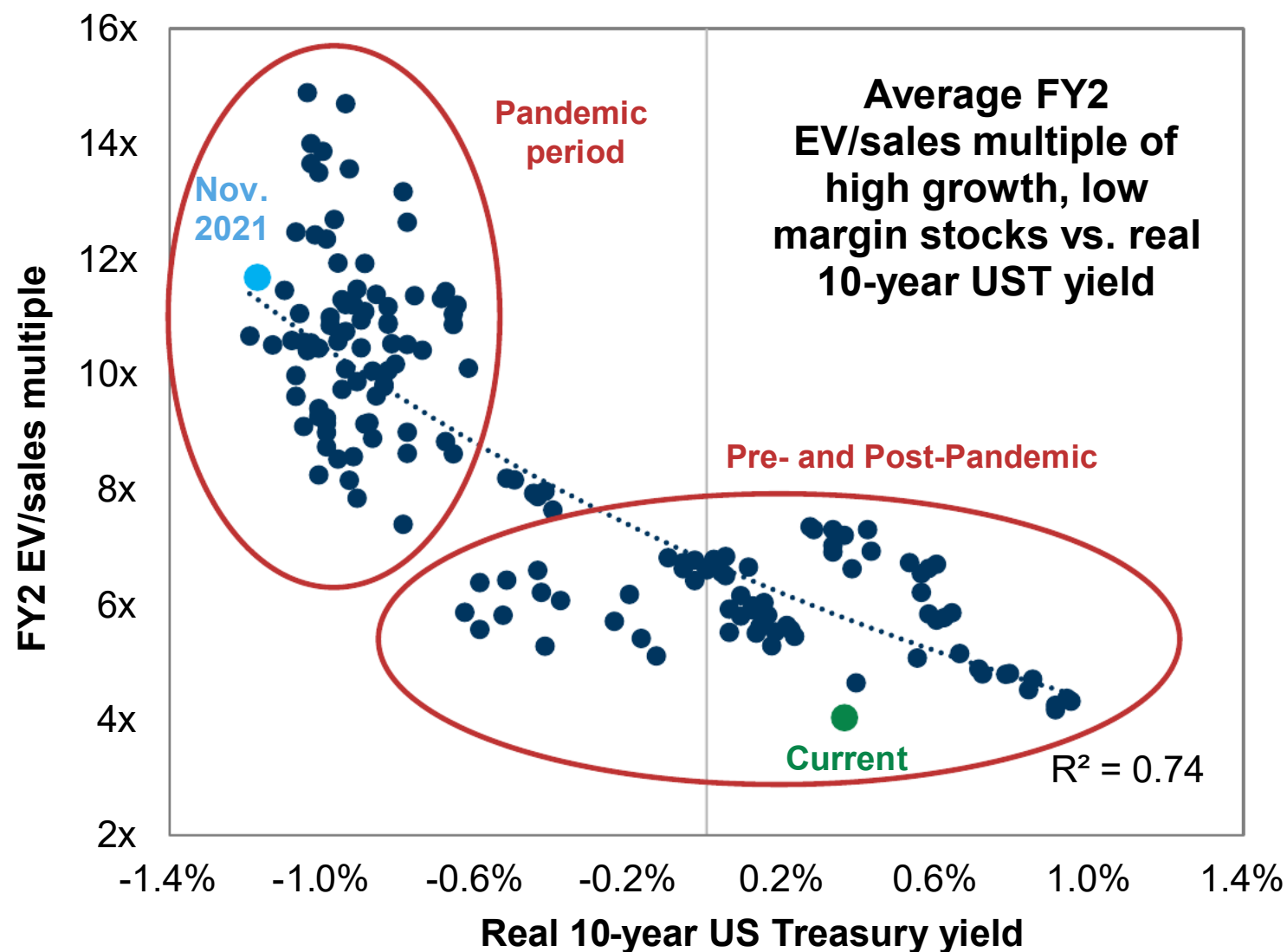


Note: "High Growth High Margin" uses >15% sales growth as a cutoff.



# Valuation of high-growth, low-margin stocks vs. rates

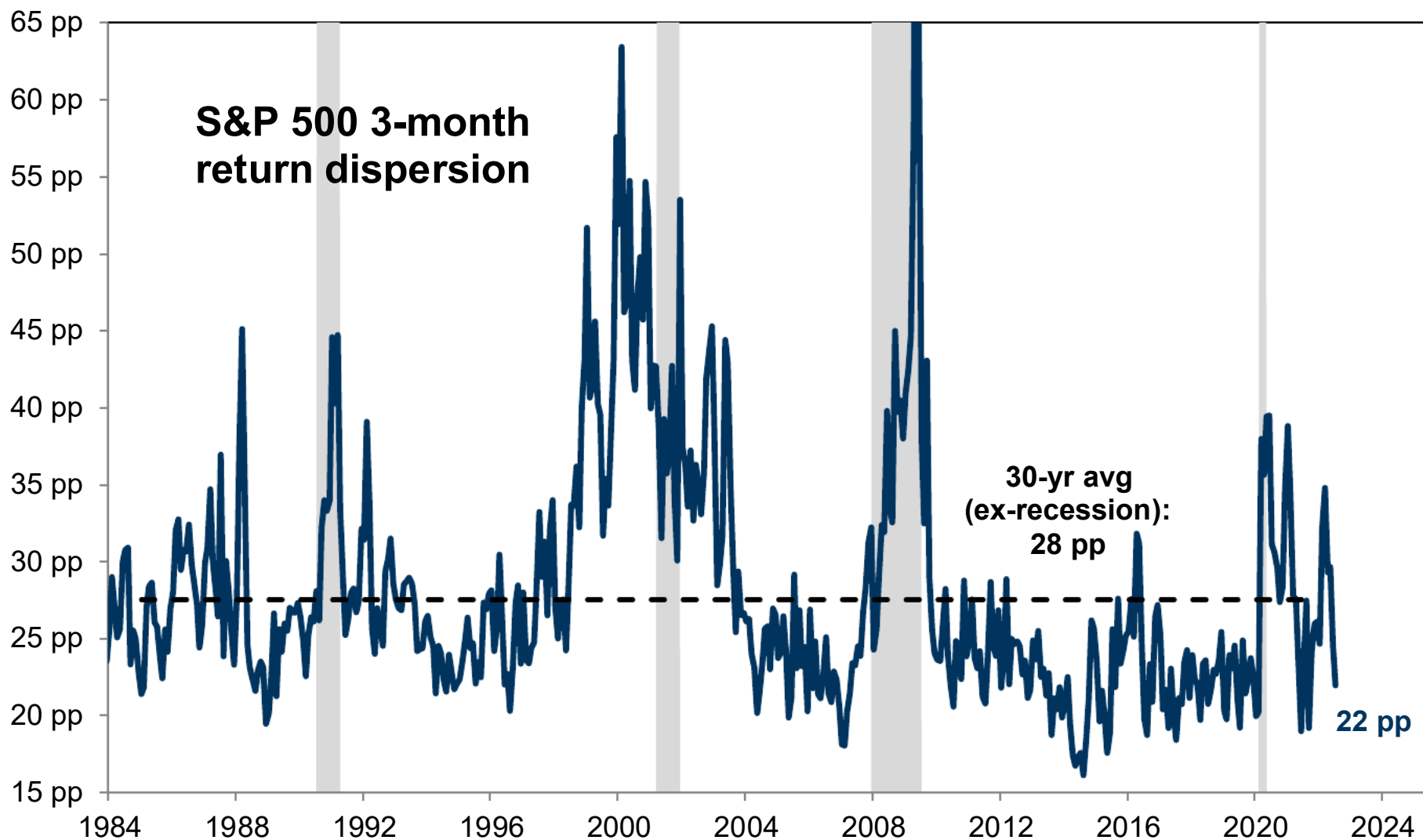
Jump in real Treasury yield corresponded with dramatic valuation contraction



# Return dispersion

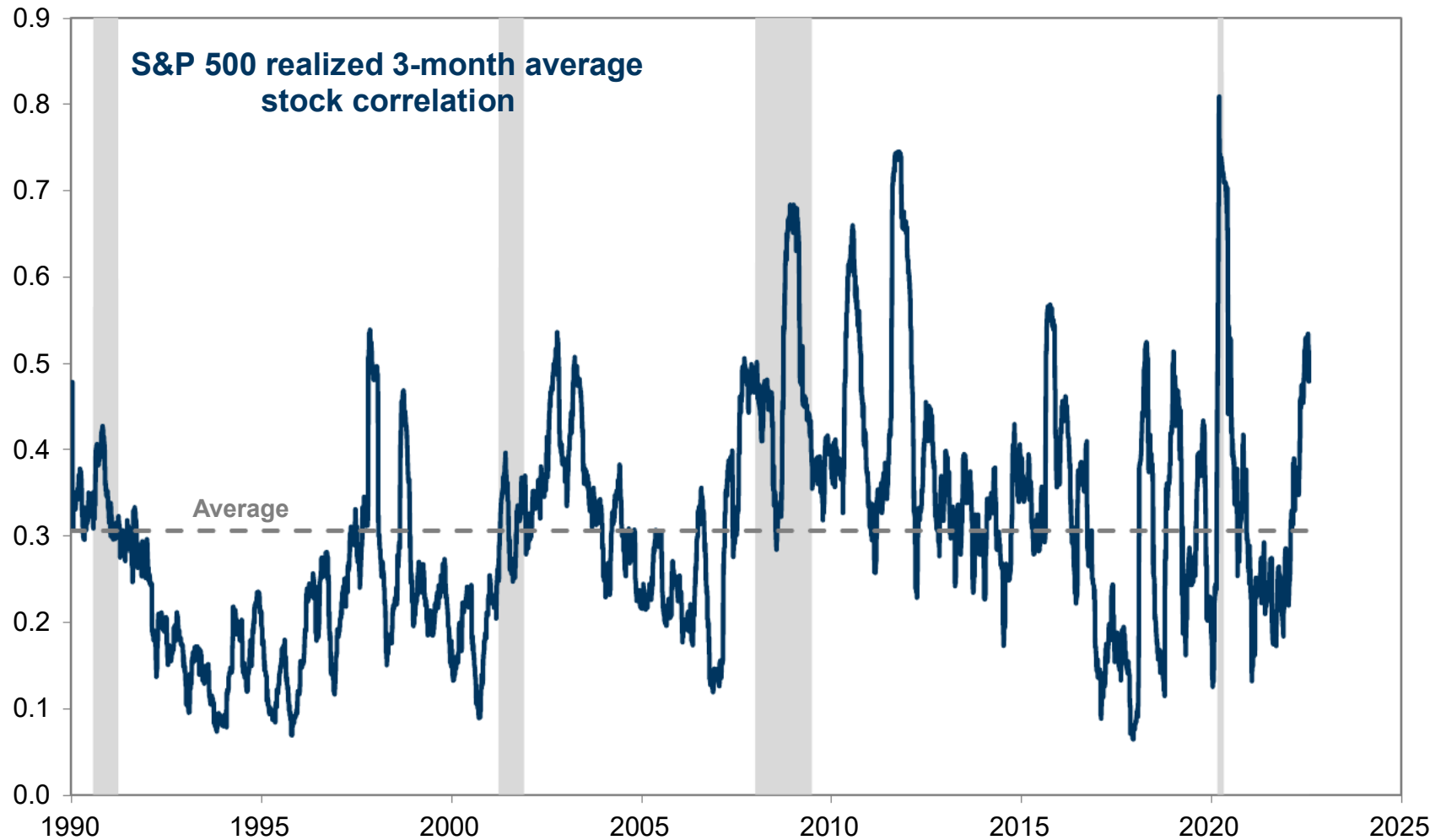
# S&P 500 3-month return dispersion (+/- 1 std. dev.)

Return dispersion has dropped back below the historical average



# High correlation & falling volatility imply low dispersion

Average stock correlation has risen well above the long-term average



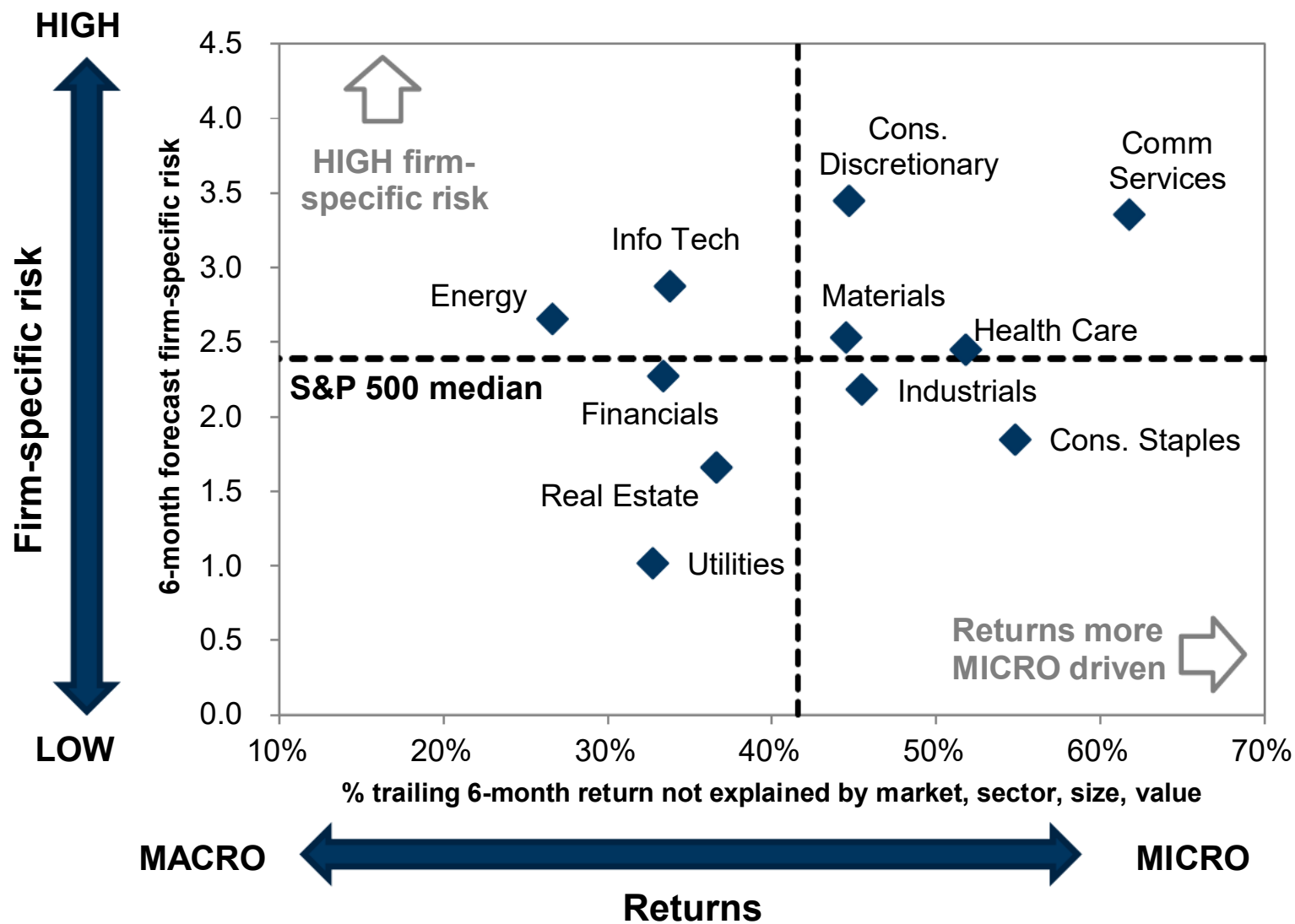
# Current and historical sector dispersion & correlation

Return dispersion has dropped back below the historical average

Sector	3-month dispersion		3-month correlation	
	Current	Percentile vs. history	Current	Percentile vs. history
Consumer Discretionary	31 pp	71 %	0.5	93 %
Real Estate	17	68	0.6	62
Communication Services	24	52	0.5	86
Materials	23	52	0.5	77
Industrials	20	41	0.5	82
Financials	16	31	0.6	77
Information Technology	25	25	0.7	95
Consumer Staples	17	24	0.4	86
Health Care	19	19	0.5	85
Energy	17	15	0.8	98
Utilities	10	14	0.7	88
<b>S&amp;P 500</b>	<b>22 pp</b>	<b>20 %</b>	<b>0.5</b>	<b>91 %</b>

# Which sectors are more macro vs. micro driven

Comm Services and Discretionary offer best stock-picking opportunities



# 25 stocks with the highest dispersion scores

Median stock has a dispersion score of 6.6 vs. 1.5 for median S&P 500 stock

Company	Ticker	Sector	Market cap (\$ bn)	YTD return	NTM P/E	2023 sales growth	2023 EPS growth	6-month return	% of trailing 6m returns micro-driven	Dispersion score
Moderna Inc.	MRNA	Health Care	\$63	(38)%	7 x	(53)%	(68)%	(1)%	58 %	17.9
Enphase Energy Inc.	ENPH	Information Technology	37	50	64	33	22	121	44	16.6
SolarEdge Technologies	SEDG	Information Technology	19	22	46	26	45	61	55	9.7
Bath & Body Works	BBWI	Consumer Discretionary	8	(49)	12	5	22	(35)	47	9.4
Mosaic Co.	MOS	Materials	18	30	4	(17)	(26)	28	77	9.0
United Airlines Holdings	UAL	Industrials	12	(16)	7	13	NM	(10)	44	8.1
Netflix Inc.	NFLX	Communication Services	100	(62)	24	8	6	(41)	51	8.0
Twitter Inc.	TWTR	Communication Services	31	(5)	83	14	(58)	16	80	8.0
Etsy Inc.	ETSY	Consumer Discretionary	13	(52)	44	14	18	(28)	36	7.3
Newmont Corp.	NEM	Materials	36	(25)	15	(0)	1	(22)	90	7.0
EPAM Systems Inc.	EPAM	Information Technology	20	(49)	39	23	43	(24)	78	7.0
Align Technology	ALGN	Health Care	22	(57)	28	13	21	(39)	49	6.9
Carnival Corp.	CCL	Consumer Discretionary	10	(55)	NM	55	NM	(52)	37	6.6
Royal Caribbean Group	RCL	Consumer Discretionary	10	(51)	23	42	NM	(49)	42	6.2
CF Industries Holdings	CF	Materials	20	34	5	(21)	(34)	33	84	6.2
American Airlines Group	AAL	Industrials	9	(23)	10	5	NM	(12)	39	6.0
DXC Technology	DXC	Information Technology	8	(2)	8	(1)	22	7	50	5.7
Las Vegas Sands	LVS	Consumer Discretionary	29	2	109	98	NM	(11)	49	5.7
Dollar Tree Inc.	DLTR	Consumer Discretionary	37	16	20	6	16	27	74	5.7
SVB Financial Group	SIVB	Financials	23	(42)	11	NM	27	(30)	43	5.6
Constellation Energy	CEG	Utilities	21	NM	30	NM	43	39	73	5.5
Norwegian Cruise Line Hldgs	NCLH	Consumer Discretionary	5	(42)	NM	50	NM	(38)	36	5.4
DexCom Inc.	DXCM	Health Care	34	(35)	85	21	42	(16)	36	5.3
Lumen Technologies	LUMN	Communication Services	11	(10)	8	(11)	(36)	(7)	78	5.3
Caesars Entertainment	CZR	Consumer Discretionary	10	(52)	NM	8	NM	(38)	30	5.2
<b>Top 25 Median:</b>			\$20	(30)%	22 x	13 %	20 %	(12)%	49 %	6.6
<b>S&amp;P 500 Median:</b>			30	(12)	18	5	9	(6)	42	1.5

Micro-driven return is defined as the proportion of stock returns that cannot be explained by market, sector, size, or value factors

Firm-specific risk is defined as the forecast 6M volatility of the proportion of returns driven by micro factors

Dispersion score is a product of 6-month firm-specific risk forecasts and the square root of training 6-month % micro-driven returns

# Use of cash



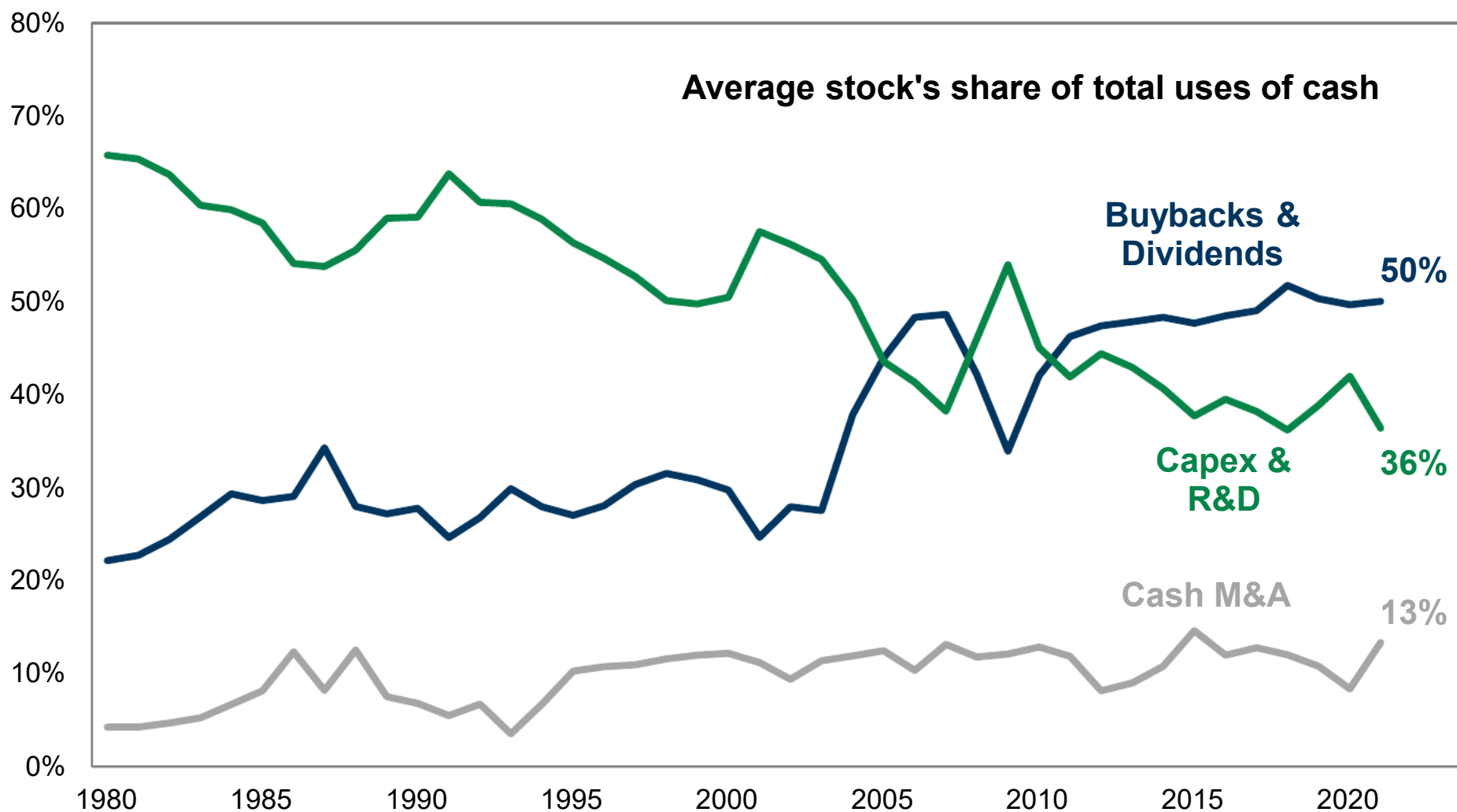
# How S&P 500 companies spend cash

We expect buybacks will account for 30% of corporate cash use in 2022

Cash Use (\$ billion)	2018	2019	2020	2021	2022E	2023E
Share Buybacks	\$840	\$749	\$538	\$919	\$1,030	\$1,133
Capital Expenditures	719	731	667	738	805	845
Dividends	483	514	520	548	605	660
R&D	337	358	401	455	496	536
Cash Acquisitions	431	264	224	349	349	383
<b>Total Cash Use</b>	<b>\$2,810</b>	<b>\$2,616</b>	<b>\$2,351</b>	<b>\$3,009</b>	<b>\$3,284</b>	<b>\$3,557</b>
<b>% year/year growth</b>						
Share Buybacks	55 %	(11)%	(28)%	71 %	12 %	10 %
Capital Expenditures	15	2	(9)	11	9	5
Dividends	7	6	1	5	10	9
R&D	11	6	12	13	9	8
Cash Acquisitions	34	(39)	(15)	56	0	10
<b>Total Cash Use</b>	<b>25 %</b>	<b>(7)%</b>	<b>(10)%</b>	<b>28 %</b>	<b>9 %</b>	<b>8 %</b>

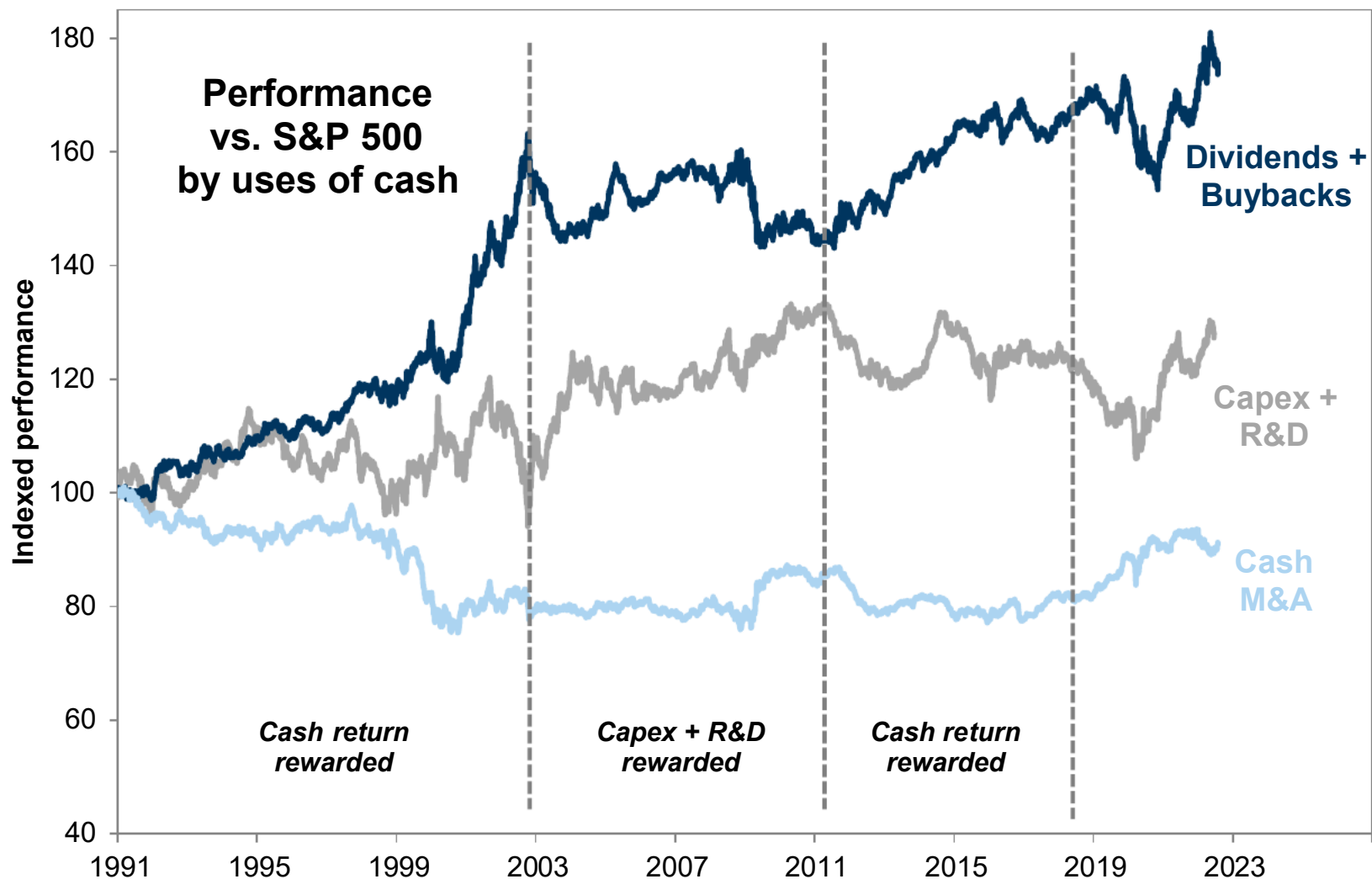
# Buybacks & dividends comprise 50% of cash spend

Capex and R&D represented 36% of total spending for average firm in 2021



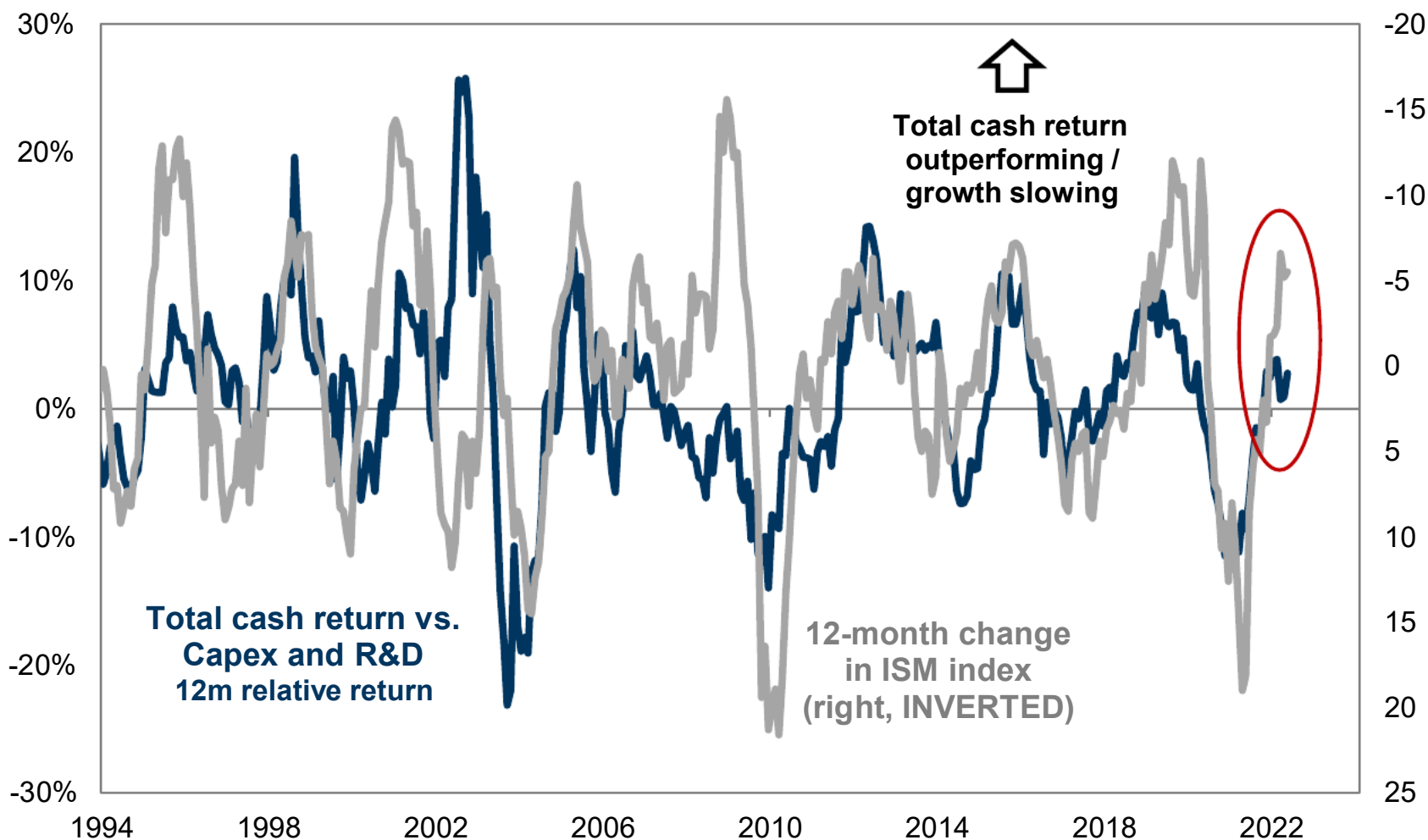
# How investors reward various uses of cash

Stocks spending the most on buybacks and dividends have outperformed



# Stocks returning cash outperform as growth slows

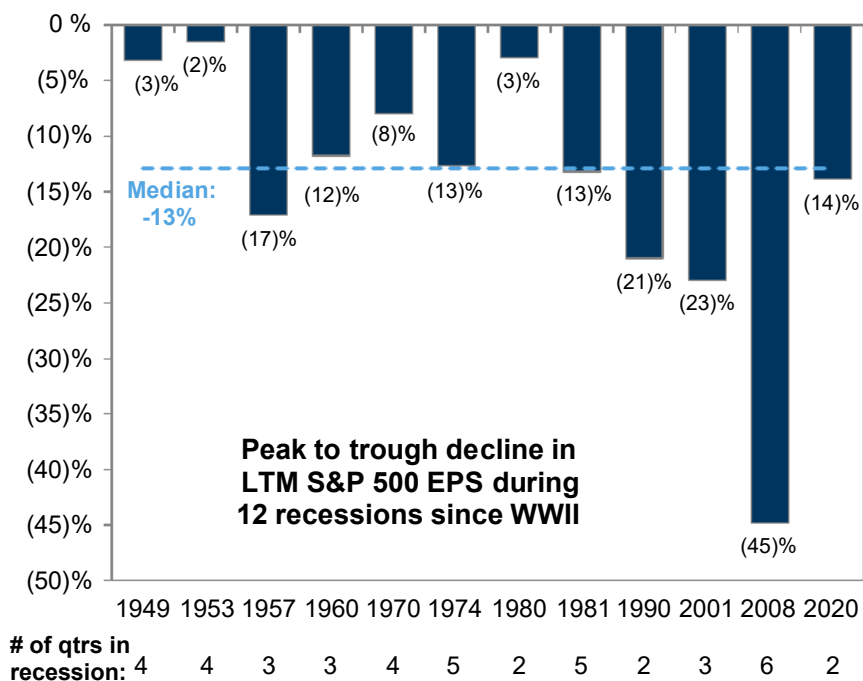
ISM Manufacturing Index has slowed since October but remains above 50



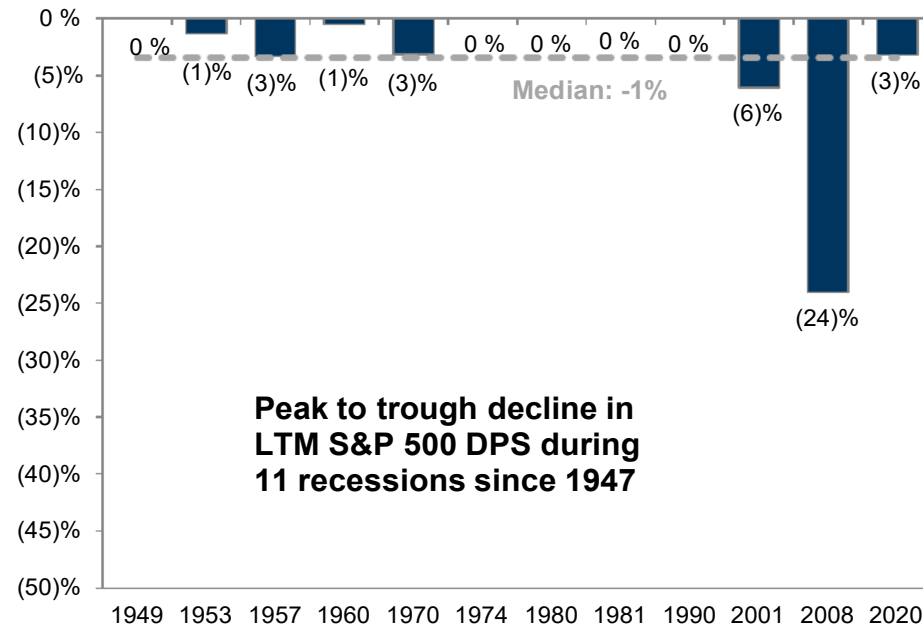
# S&P 500 DPS historically fell by 1% during recessions

Sharp decline in 2008 recession was driven primarily by Banks

**S&P 500 EPS during recessions**

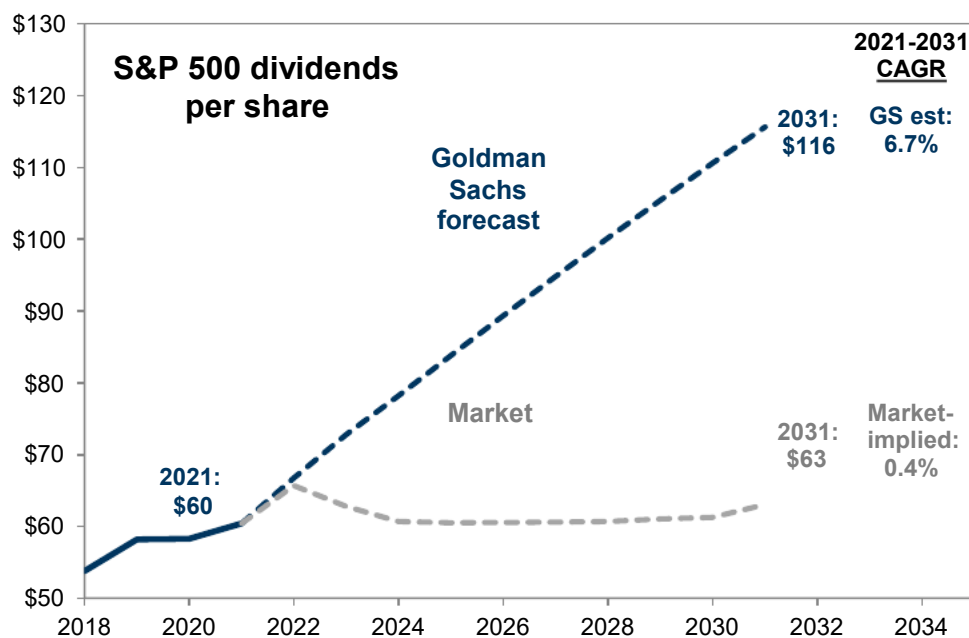


**S&P 500 DPS during recessions**



# Investors are overly pessimistic about dividends

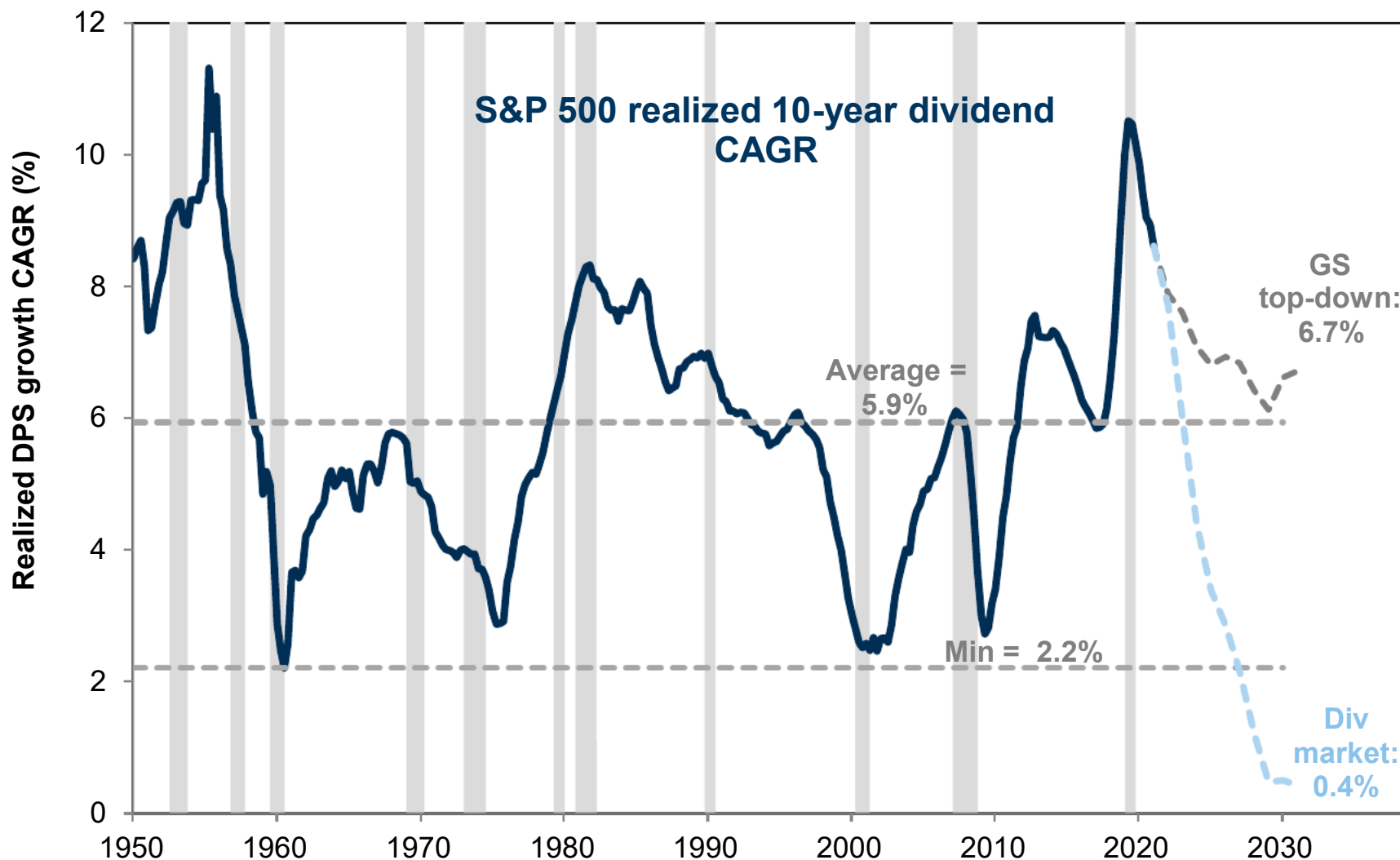
We forecast 10-year CAGR dividend growth of 6.7%; market implies just 0.4%



	Goldman Sachs top-down forecast		Dividend futures		GS vs. market
	Level	Growth	Level	Growth	
2021A	\$60.4	3.6 %	\$60.4	3.6 %	
2022	66.7	10.5	65.7	8.8	2 %
2023	72.8	9.1	62.8	(4.4)	16
2024	78.2	7.4	60.7	(3.3)	29
2025	83.8	7.2	60.5	(0.3)	39
2026	89.3	6.6	60.5	0.1	48
2027	94.8	6.1	60.6	0.1	56
2028	100.2	5.7	60.7	0.2	65
2029	105.5	5.3	61.0	0.6	73
2030	110.6	4.9	61.3	0.3	81
2031	115.7	4.6	63.0	2.9	83
<b>2021-2031 CAGR</b>		<b>6.7 %</b>		<b>0.4 %</b>	

# 10-year DPS growth has never realized below 2%

Since 1950, 10-year S&P 500 DPS CAGR has averaged 6%



# Dividend Yield & Growth basket (GSTHDIVG)

Higher yield (3.4% vs 1.8%), faster growth (11% vs 6%), lower P/E (11x vs 17x)

Company	Ticker	Equity cap (\$ bil)	YTD Return	NTM P/E	Payout Ratio	2022E Dividend Yield	2021-2023 Dividend CAGR	2023E DPS/ current price
<b>COMMUNICATION SERVICES</b>								
Lumen Technologies	LUMN	\$12	(6)%	8 x	73 %	8.9 %	0 %	8.9 %
Verizon Communications	VZ	212	(1)	9	47	5.1	2	5.2
Omnicom Group Inc.	OMC	13	(11)	10	43	4.5	4	4.7
Interpublic Grp of Cos.	IPG	11	(25)	10	43	4.2	7	4.5
Comcast Corp.	CMCSA	175	(21)	11	30	2.7	8	2.9
<b>CONSUMER DISCRETIONARY</b>								
Best Buy Inc.	BBY	\$15	(31)%	8 x	39 %	5.1 %	20 %	5.9 %
Whirlpool Corp.	WHR	9	(30)	6	28	4.3	24	5.2
Darden Restaurants	DRI	14	(22)	15	58	4.0	19	4.3
Tapestry Inc.	TPR	8	(20)	9	26	3.1	55	3.7
Advance Auto Parts	AAP	11	(24)	13	42	3.4	38	3.5
Ford Motor Co.	F	47	(42)	6	20	3.4	100	3.4
<b>CONSUMER STAPLES</b>								
Conagra Brands Inc.	CAG	\$16	1 %	14 x	50 %	3.8 %	7 %	4.0 %
Molson Coors Beverage	TAP	12	22	14	38	2.9	57	3.0
PepsiCo Inc.	PEP	227	(4)	24	68	2.8	7	2.9
<b>ENERGY</b>								
Pioneer Natural Resources	PXD	\$57	35 %	7 x	53 %	11.5 %	108%	12.5 %
Devon Energy Corp.	DVN	39	40	6	37	9.0	84	11.3
<b>FINANCIALS</b>								
Huntington Bancshares	HBAN	\$18	(18)%	8 x	43 %	5.2 %	7 %	5.6 %
Invesco Ltd.	IVZ	8	(24)	7	30	4.3	9	4.6
T. Rowe Price Group	TROW	27	(39)	12	47	4.1	11	4.5
Morgan Stanley	MS	137	(19)	10	37	3.7	21	4.0
Regions Financial	RF	18	(9)	9	30	3.7	9	4.0
JPMorgan Chase	JPM	340	(26)	10	33	3.5	10	3.9
<b>HEALTH CARE</b>								
Gilead Sciences	GILD	\$78	(12)%	10 x	48 %	4.7 %	4 %	5.0 %
Viatris Inc.	VTRS	13	(18)	3	14	4.4	26	4.8
AbbVie Inc.	ABBV	269	15	11	40	3.7	8	4.0
Organon & Co.	OGN	9	16	7	22	3.3	45	3.4
Amgen Inc.	AMGN	130	10	14	44	3.2	8	3.4
Merck & Co. Inc.	MRK	232	22	13	40	3.1	8	3.3
Bristol-Myers Squibb	BMJ	168	28	10	28	2.1	7	2.9

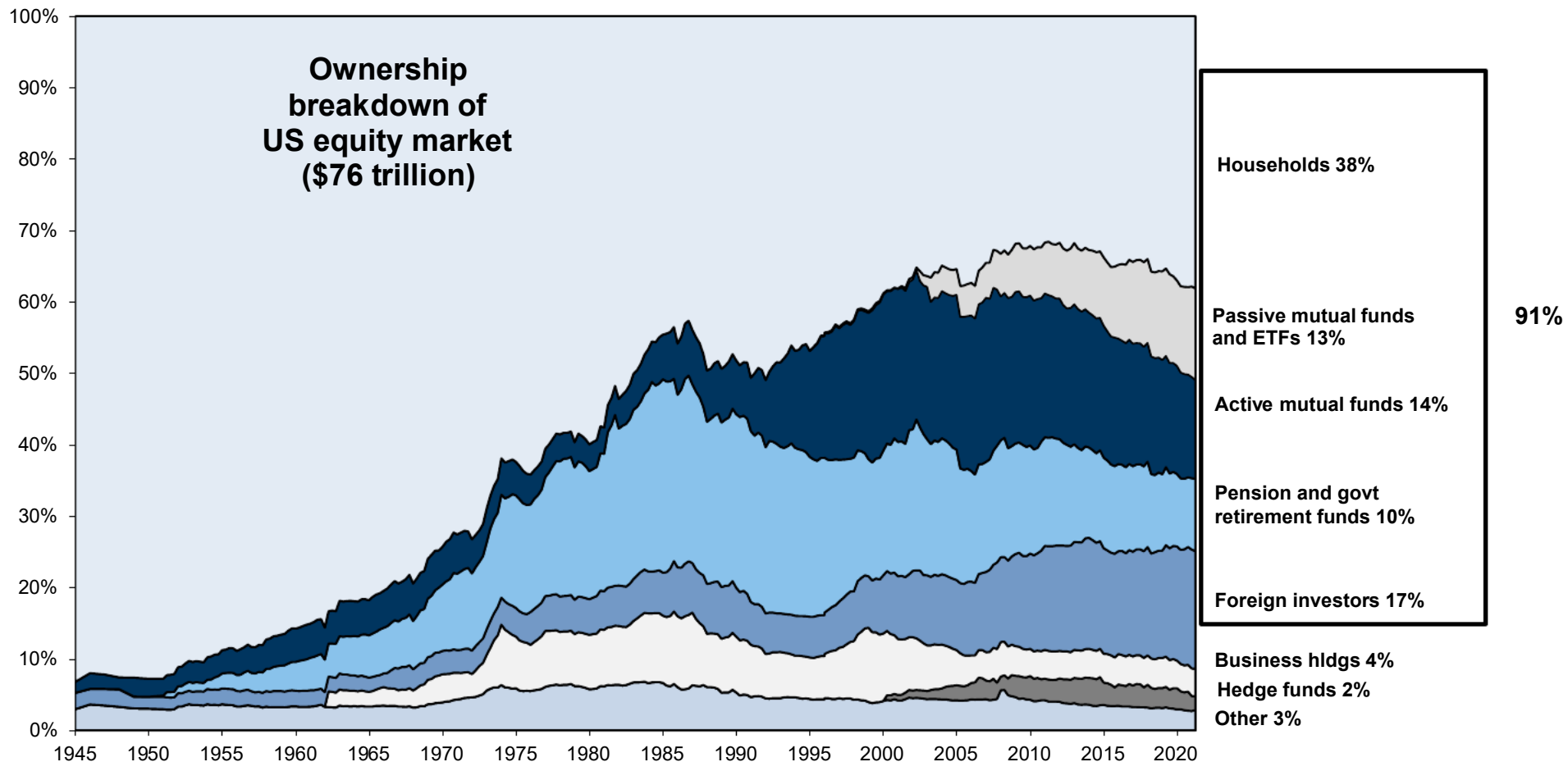
Company	Ticker	Equity cap (\$ bil)	YTD Return	NTM P/E	Payout Ratio	2022E Dividend Yield	2021-2023 Dividend CAGR	2023E DPS/ current price
<b>INDUSTRIALS</b>								
Johnson Controls Intl	JCI	\$34	(40)%	15 x	43 %	3.2 %	23 %	3.6 %
United Parcel Service	UPS	132	(15)	14	48	3.4	25	3.6
Snap-on Inc.	SNA	11	(5)	13	36	2.9	14	3.3
Fastenal Co.	FAST	28	(22)	26	64	2.5	12	2.8
<b>INFORMATION TECHNOLOGY</b>								
International Bus. Machines	IBM	\$128	9 %	14 x	65 %	4.6 %	1 %	4.7 %
Seagate Tech Holdings	STX	16	(34)	8	30	3.9	4	4.0
Intel Corp.	INTC	154	(25)	11	42	3.9	5	4.0
Broadcom Inc.	AVGO	204	(24)	13	42	3.4	11	3.7
Corning Inc.	GLW	27	(11)	14	45	3.3	10	3.6
Texas Instruments	TXN	142	(17)	18	54	3.1	12	3.4
HP Inc.	HPQ	36	(7)	8	24	3.0	17	3.3
NXP Semiconductors	NXPI	40	(32)	11	24	2.2	41	2.9
Paychex Inc.	PAYX	43	(11)	30	80	2.5	13	2.8
Skyworks Solutions	SWKS	15	(37)	8	19	2.5	10	2.7
Microchip Technology	MCHP	33	(31)	11	20	1.9	31	2.5
Analog Devices Inc.	ADI	78	(15)	15	31	2.0	11	2.3
Fidelity National Info Svc.	FIS	58	(13)	13	25	2.0	14	2.2
Automatic Data Processing	ADP	89	(12)	29	55	2.0	9	2.1
<b>MATERIALS</b>								
Packaging of America	PKG	\$13	4 %	12 x	43 %	3.4 %	13 %	3.7 %
<b>REAL ESTATE</b>								
Simon Property Group	SPG	\$33	(36)%	8 x	57 %	6.9 %	11 %	7.3 %
<b>UTILITIES</b>								
NRG Energy Inc.	NRG	\$9	(11)%	4 x	14 %	3.7 %	7 %	4.0 %
<b>Dividend Growth &lt;GSTHDIVG&gt; Median</b>		<b>\$33</b>	<b>(15)%</b>	<b>11 x</b>	<b>41 %</b>	<b>3.4 %</b>	<b>11 %</b>	<b>3.7 %</b>
<b>S&amp;P 500 Median</b>		<b>28</b>	<b>(18)</b>	<b>17</b>	<b>26</b>	<b>1.8</b>	<b>6</b>	<b>2.1</b>



# **Demand for equities**

# Ownership of US equity market since 1945

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



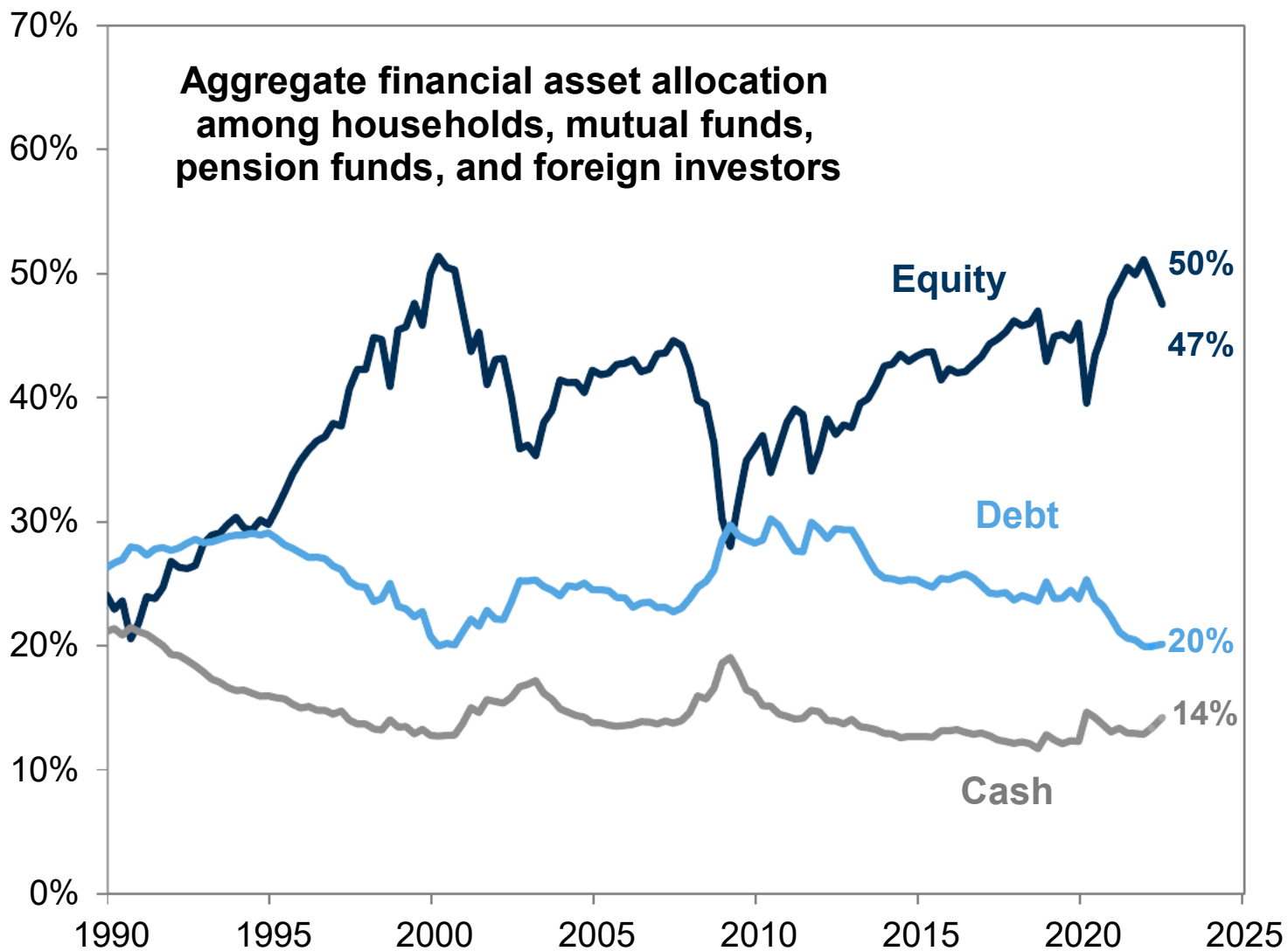
# Corporations will be key source of US equity demand

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

Category	Net US equity demand (\$ billions)			
	2019	2020	2021	2022E
Corporations	\$ 583	\$ 29	\$ 593	<b>\$ 700</b>
Households	57	458	532	<b>150</b>
Foreign Investors	(205)	638	5	<b>50</b>
Pension Funds	(198)	(160)	(320)	<b>(400)</b>
Mutual Funds	(219)	(481)	(317)	<b>(500)</b>
Life Insurance	1	1	(30)	-
Other	(26)	(1)	(53)	-
<i>less</i>				
Credit ETFs	157	242	202	<b>(100)</b>
Purchases of foreign stocks	(163)	242	207	<b>100</b>

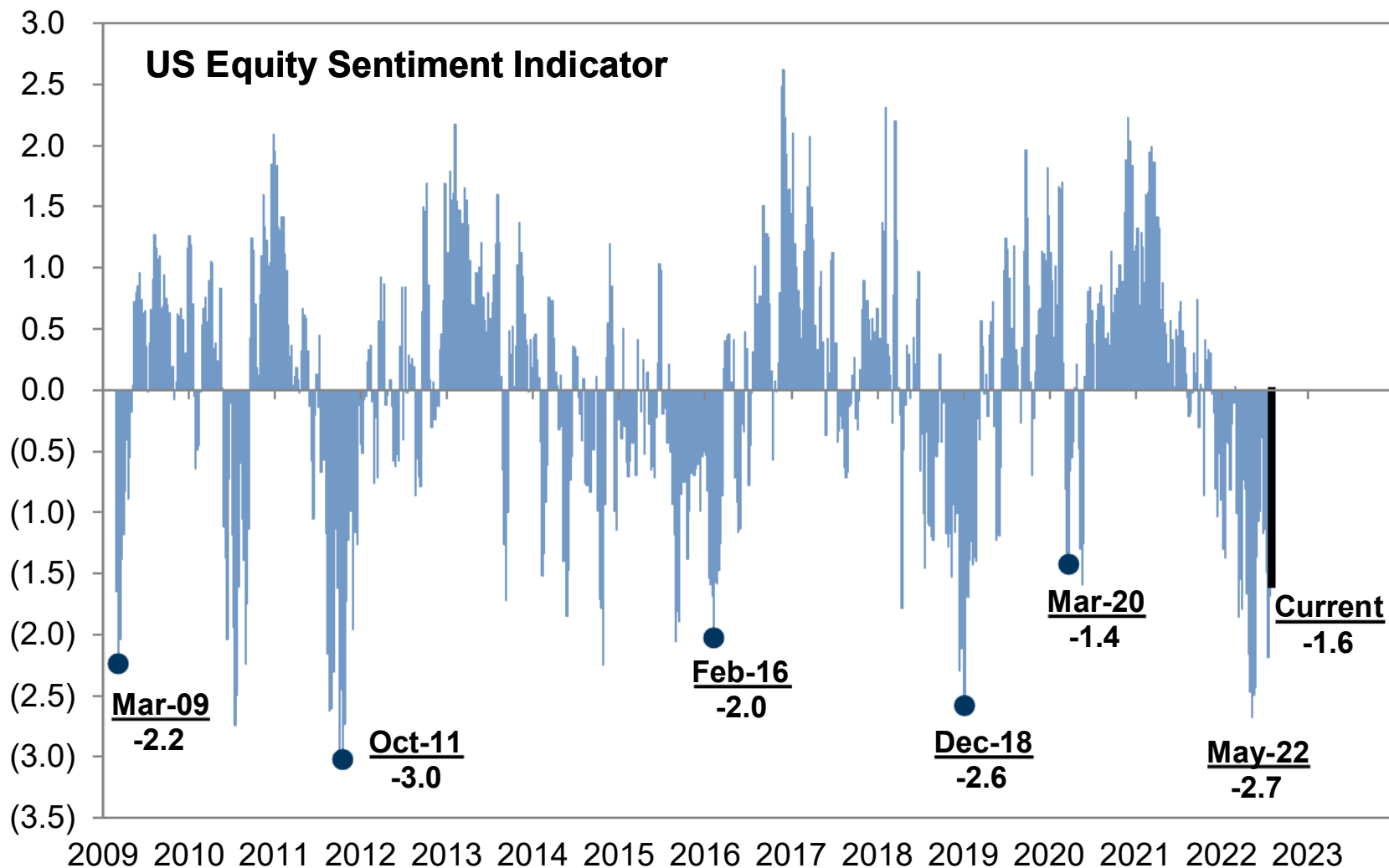
# Equity allocations close to Tech Bubble peak

Investors allocated 47% of financial assets to equities



# Sentiment Indicator is below average

Investor positioning remains 1.7 standard deviation below average



# Sectors

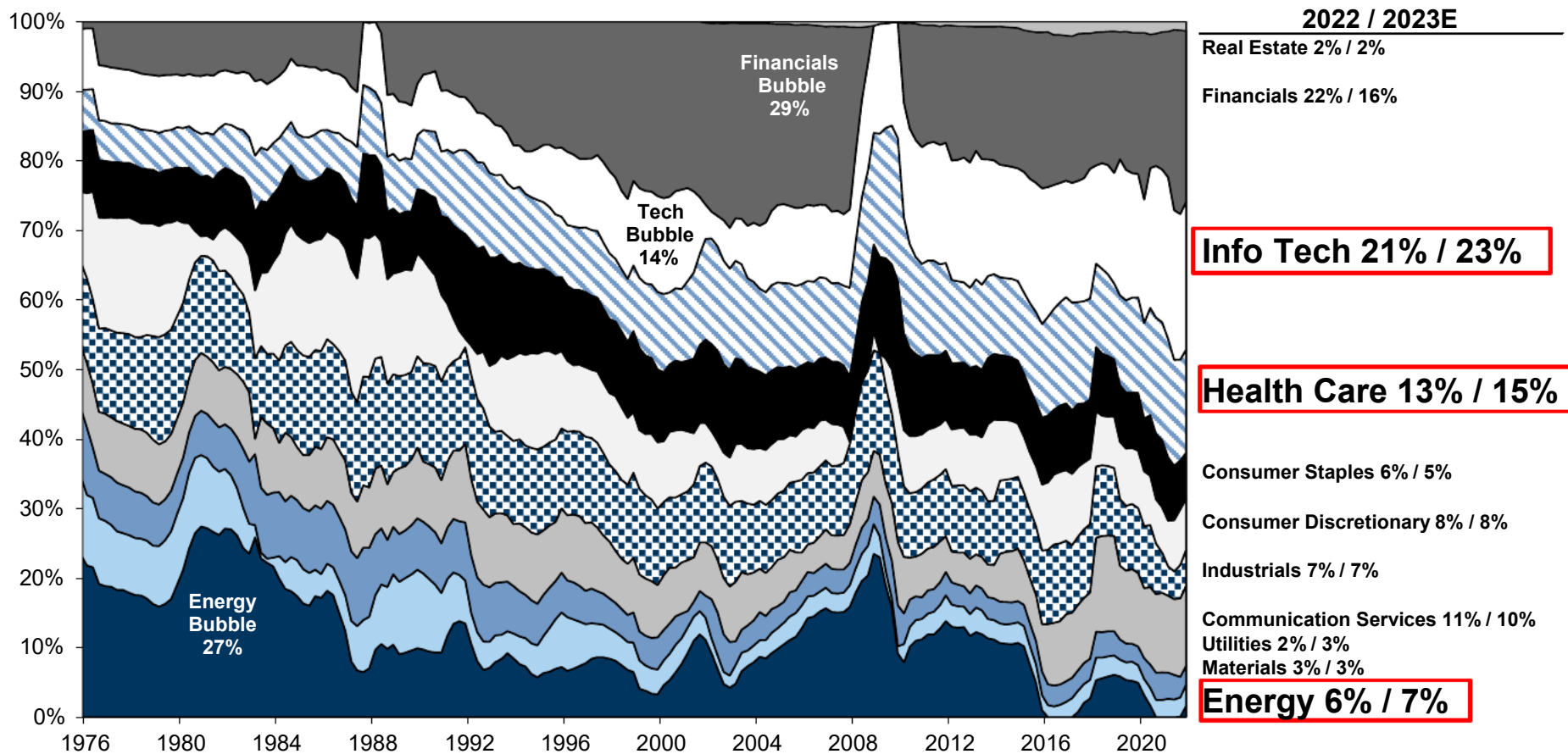
# GS US Portfolio Strategy Sector Recommendations

Overweight Energy, Information Technology, and Health Care

<b>Recommended Sector Positioning</b>			
<b>Sectors</b>	<b>Goldman Sachs Weighting</b>	<b>S&amp;P 500 Wgt</b>	<b>YTD</b>
Energy	<b>Overweight</b>	4%	38 %
Health Care		15	(6)
Info Tech		28	(19)
Industrials	<b>Neutral</b>	8	(12)
Financials		11	(15)
Materials		3	(15)
Real Estate		3	(17)
Cons. Services		2	(19)
Retailing		6	(25)
Media & Ent.		7	(31)
Cons. Durables		1	(31)
Utilities	<b>Underweight</b>	3	0
Telecom Svcs.		1	(1)
Consumer Staples		7	(3)
Autos & Comp.		2	(25)
<b>S&amp;P 500</b>		<b>100%</b>	<b>(15)%</b>

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

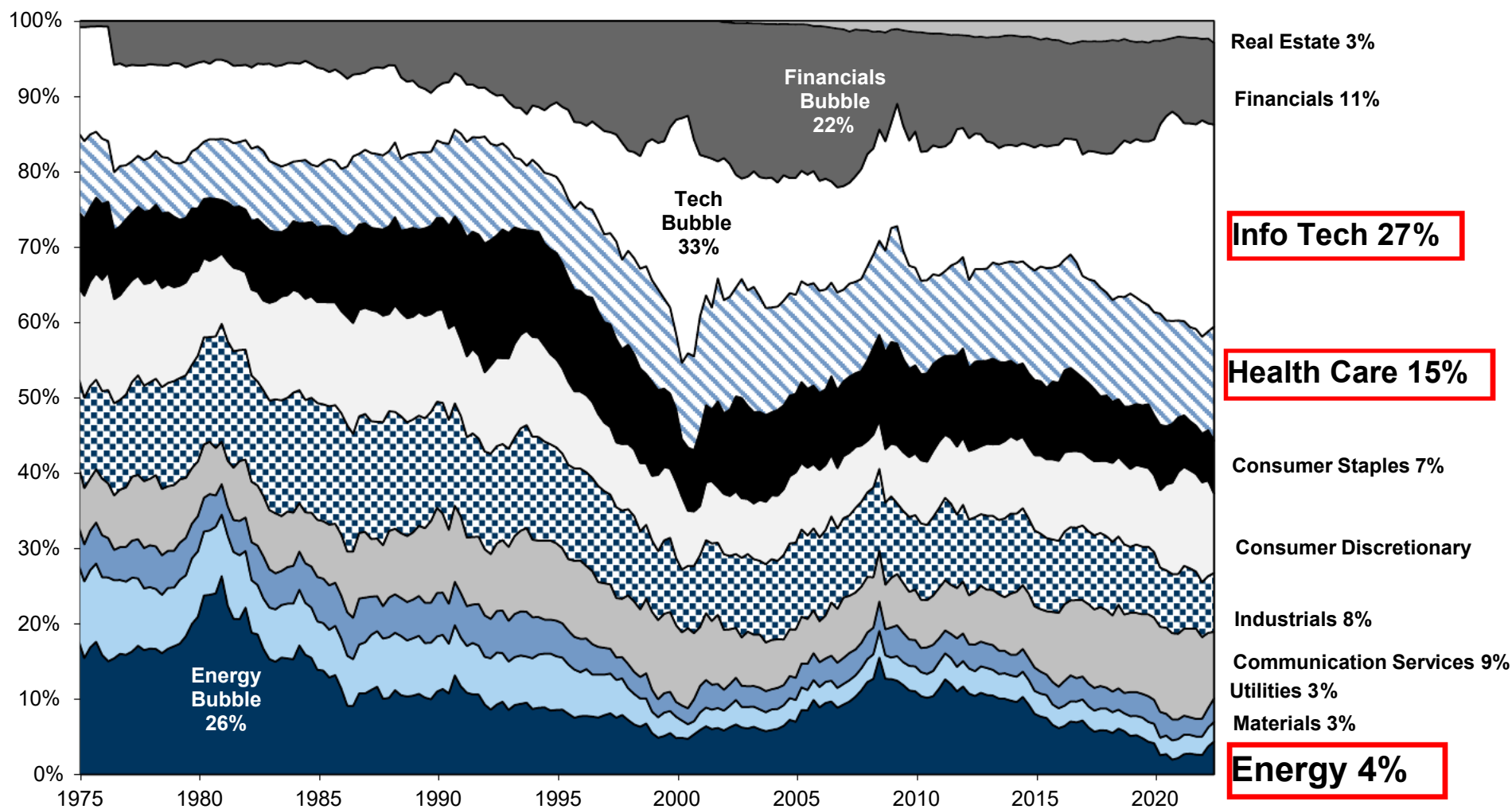
Energy share rising to 7% by 2023 while Financials share declining to 15%





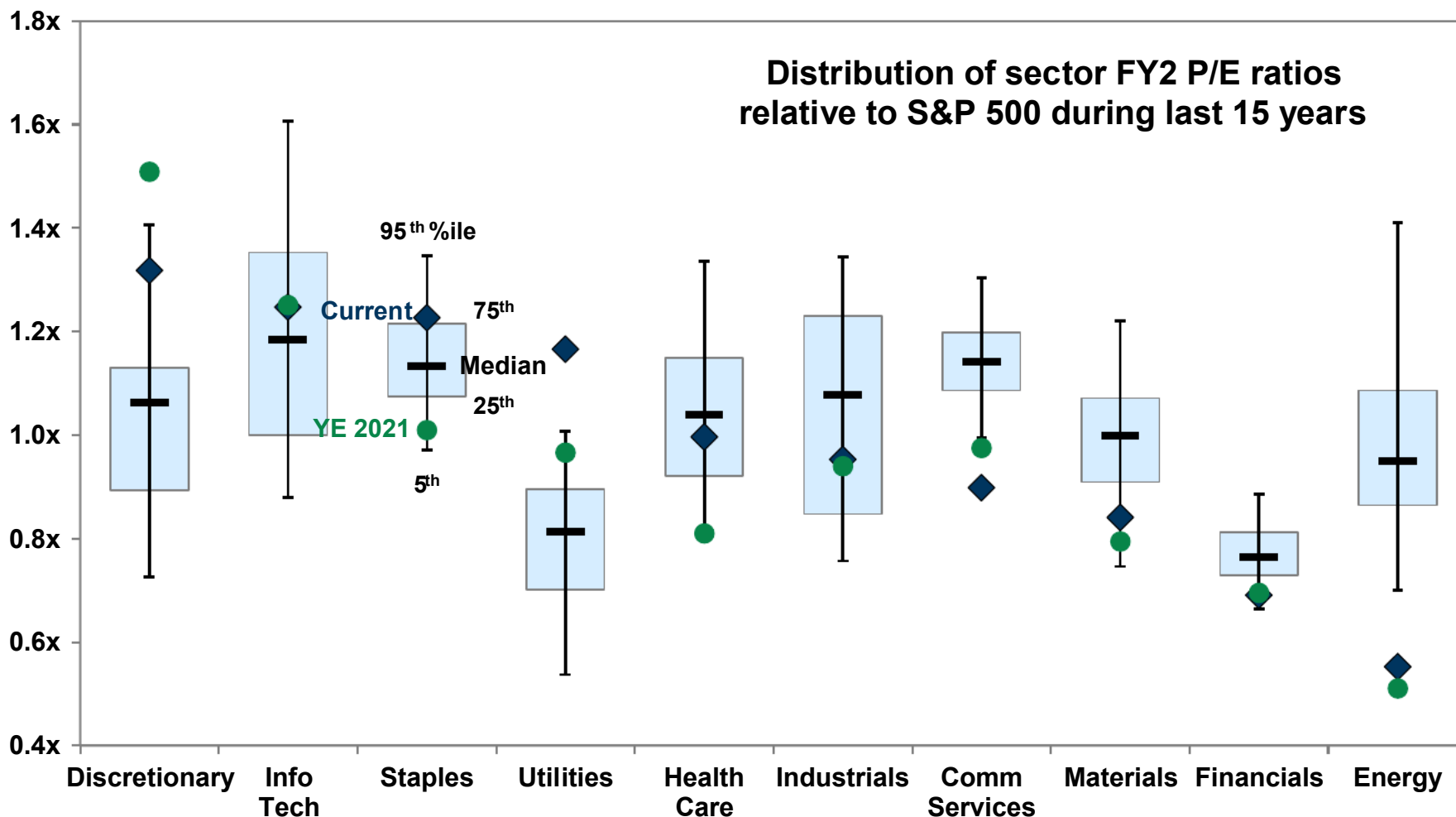
# Sector share of S&P 500 equity cap since 1975

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



# Distribution of sector historical relative P/E multiples

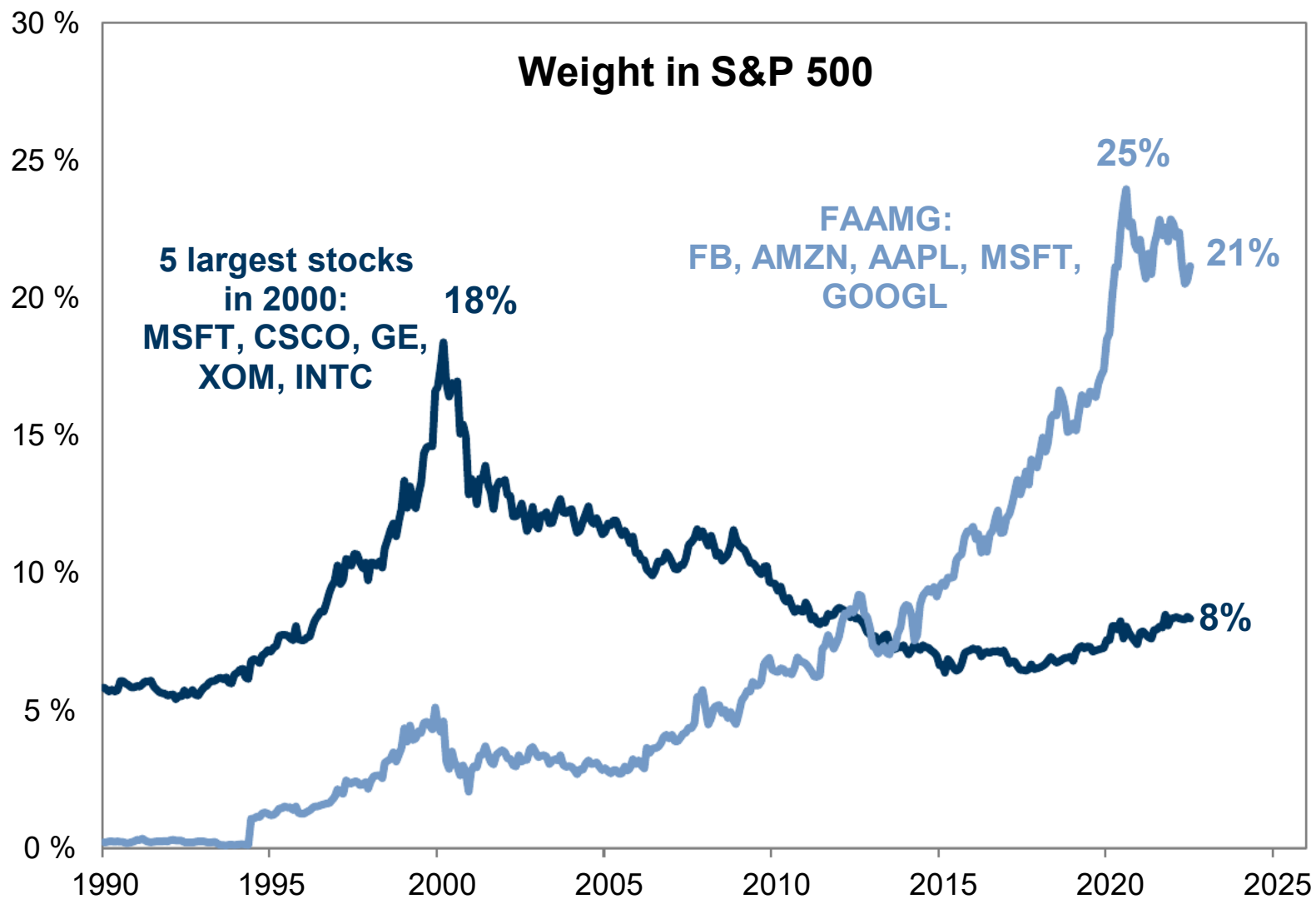
Index-relative valuations vary across sectors



# Concentration

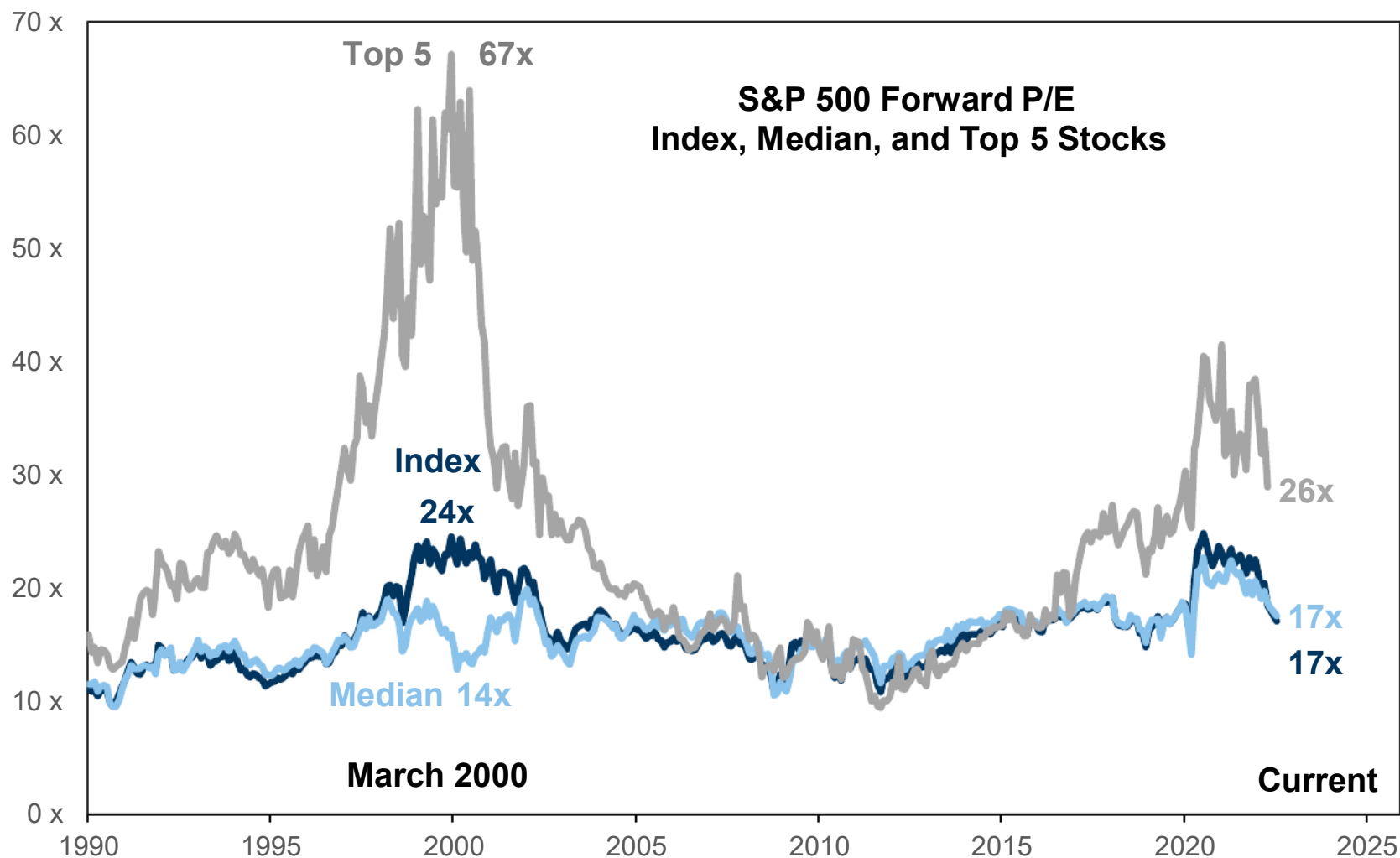
# Equity market leadership is difficult to maintain

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



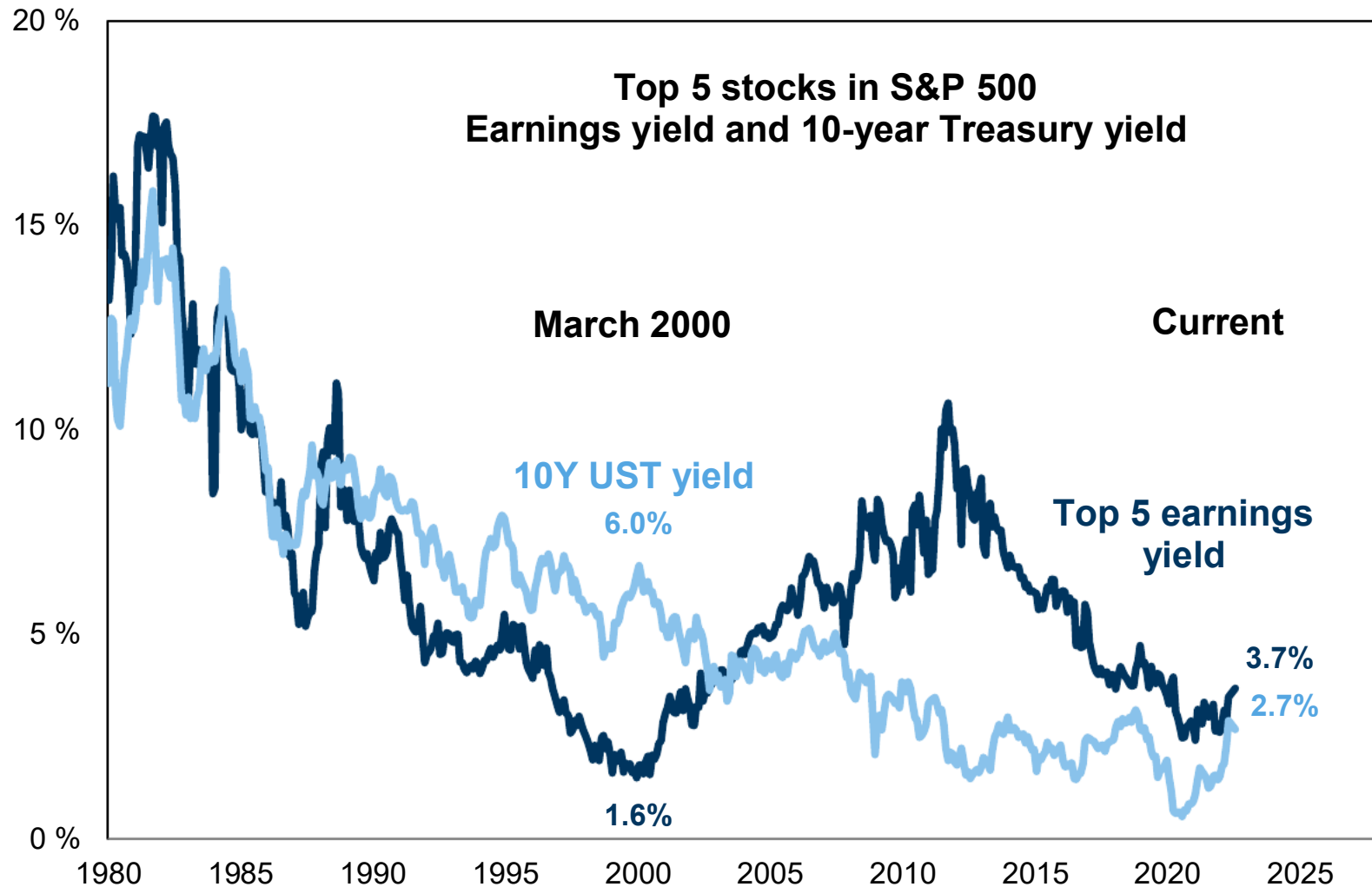
# S&P 500 P/E multiple: Index, median, top 5 stocks

Top 5 stocks trade at 28x forward P/E vs. 17x for median and 17x for index



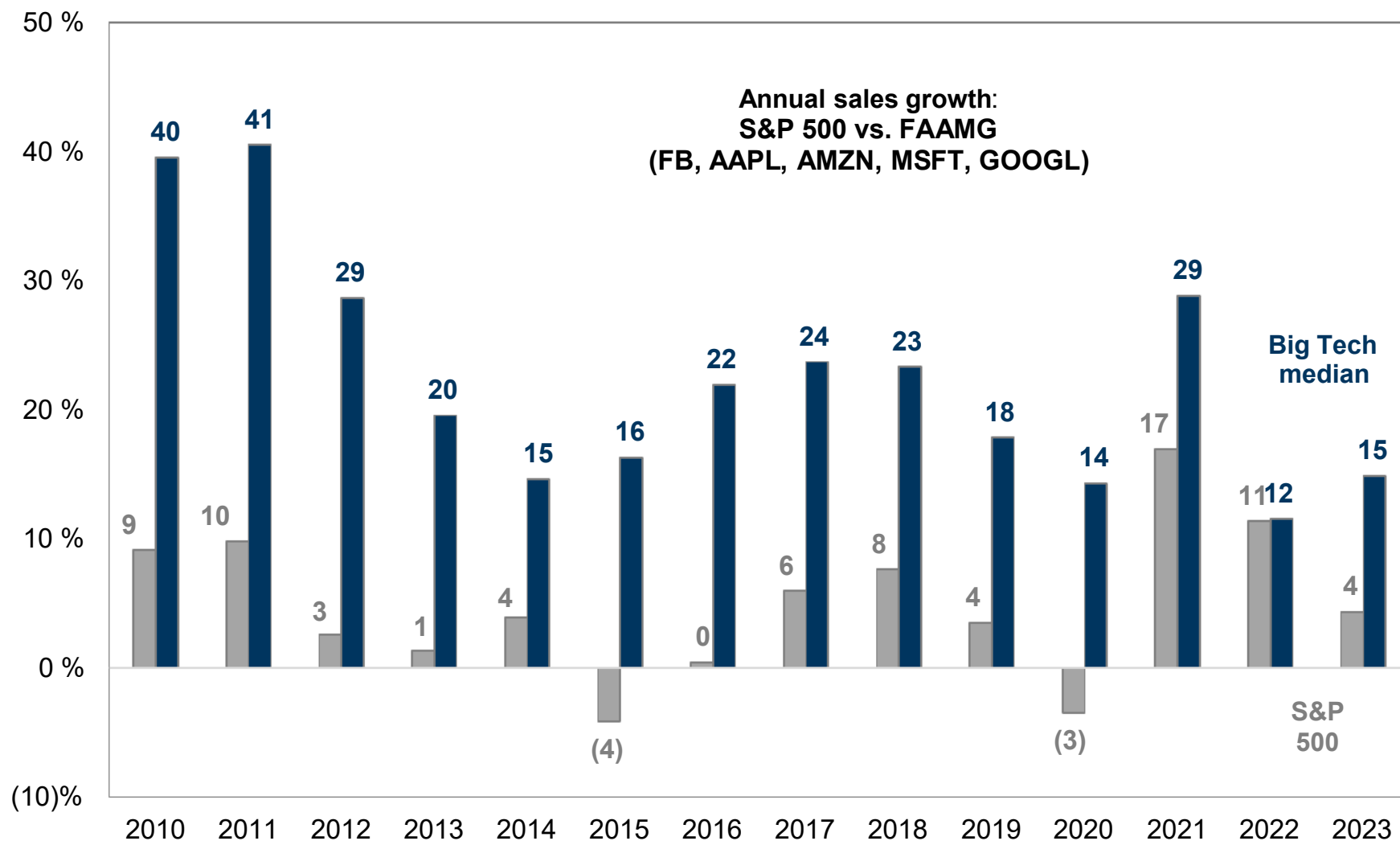
# Top 5 earnings yield in 2000 was *below* Treasuries

Bond yield was 6% in 2000 (vs. 2.7% today); earnings yield was 1.6% (vs. 3.7%)



# Decade of sustained rapid sales growth by FAAMG

The gap between FAAMG and S&P 500 sales growth expected to narrow in 2022



# S&P 500 index concentration in 2000 and 2022

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)
<b>Top 5 aggregate</b>		<b>\$2,316</b>	<b>59 %</b>	<b>(37)%</b>	<b>16 %</b>	<b>8 %</b>	<b>26 %</b>	<b>11 x</b>	<b>44 x</b>	<b>2.3 %</b>	<b>(373)bp</b>
S&P 500 ex. Top 5		10,370	16	(4)	(6)	8	34	2	22	4.6	(140)
<b>S&amp;P 500</b>		<b>\$12,686</b>	<b>21 %</b>	<b>(9)%</b>	<b>(7)%</b>	<b>8 %</b>	<b>33 %</b>	<b>3 x</b>	<b>24 x</b>	<b>4.2 %</b>	<b>(183)bp</b>

## Five largest stocks today

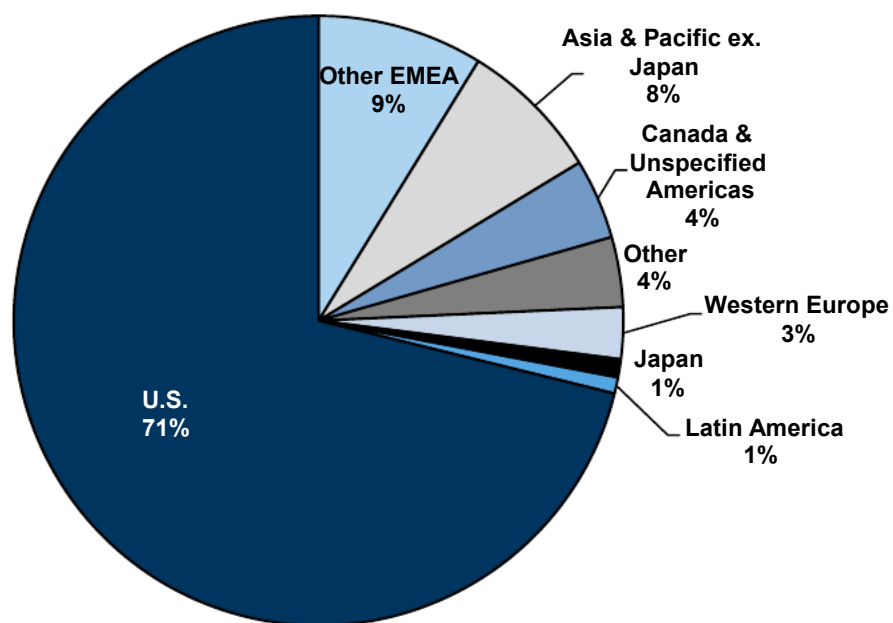
Company	Ticker	Market cap (\$ bn)	Total return		Consensus 2021-23E Sales CAGR		3-yr Growth Investment Ratio	EV/ 2022E Sales	Price/ 2022E EPS	Earnings yield	Earnings yield gap (bp) (10Y = 2.7%)
			2021	YTD	Dec. 2021	Current					
			2021	YTD	Dec. 2021	Current					
Microsoft	MSFT	\$2,067	52 %	(20)%	13%	13%	38 %	10x	29x	3.5 %	77 bp
Apple	AAPL	2,547	35	(11)	8	5	19	7	25	3.9	122
Amazon	AMZN	1,244	2	(27)	17	13	114	3	205	0.5	(224)
Alphabet	GOOGL	1,403	65	(22)	16	13	56	4	22	4.6	186
Meta Platforms	META	369	23	(50)	18	7	64	3	16	6.3	357
<b>Top 5 aggregate</b>		<b>\$7,630</b>	<b>35 %</b>	<b>(21)%</b>	<b>14%</b>	<b>10%</b>	<b>52 %</b>	<b>5x</b>	<b>29x</b>	<b>3.5 %</b>	<b>76 bp</b>
S&P 500 ex. Top 5		27,180	28	(13)	5	7	13	3	16	6.1	340
<b>S&amp;P 500</b>		<b>\$34,810</b>	<b>29 %</b>	<b>(15)%</b>	<b>6%</b>	<b>8%</b>	<b>20 %</b>	<b>3x</b>	<b>18x</b>	<b>5.6 %</b>	<b>282 bp</b>



**Global**

# Foreign revenues by region for S&P 500 firms

71% of aggregate sales to US, 12% to EMEA, and 9% to Asia-Pacific



Region	Revenues		
	2021 (\$ Billions)	% of	
		2021	2020
<b>Americas</b>	<b>\$10,700</b>	<b>76 %</b>	<b>76 %</b>
North America	10,226	73	74
United States	9,983	71	72
Latin America	120	1	1
<b>EMEA</b>	<b>\$1,617</b>	<b>12 %</b>	<b>11 %</b>
Europe	846	6	6
Western Europe ex. UK	227	2	1
United Kingdom	157	1	1
Eastern Europe	12	0	0
Africa & Middle East	32	0	0
<b>Asia Pacific</b>	<b>\$1,193</b>	<b>9 %</b>	<b>8 %</b>
Japan	135	1	1
Greater China	370	3	2
Other / Unclassified	\$520	4 %	4 %
<b>Total S&amp;P 500</b>	<b>\$14,031</b>	<b>100 %</b>	<b>100 %</b>
<b>Non-US Sales as % of Total</b>	<b>\$4,047</b>	<b>29 %</b>	<b>28 %</b>

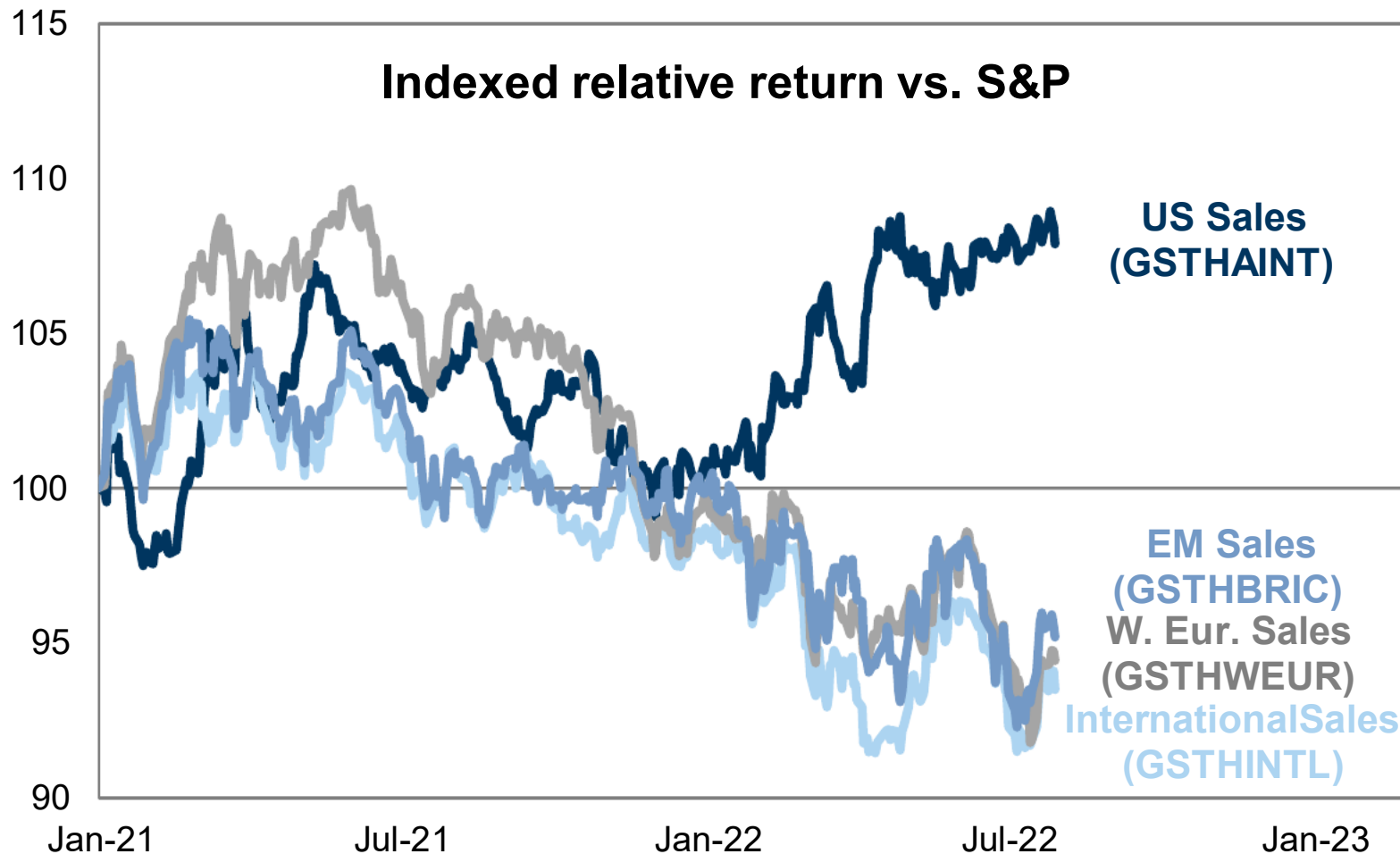
# S&P 500 foreign revenues by sector

Information Technology (59%) and Materials (50%) have highest non-US sales

Sector	Revenues (\$bn)		Sales Exposure	
	Total	Foreign	Foreign	Explicit EM
Information Technology	\$1,548	\$919	59 %	17 %
Materials	451	225	50	11
Energy	1,032	379	37	3
Industrials	1,361	461	34	6
Communication Services	1,182	326	28	1
Consumer Staples	1,713	464	27	3
Consumer Discretionary	1,865	453	24	3
Real Estate	122	28	23	3
Financials	1,694	328	19	1
Health Care	2,696	455	17	2
Utilities	364	9	3	2
<b>S&amp;P 500</b>	<b>\$14,031</b>	<b>\$4,047</b>	<b>29 %</b>	<b>4 %</b>

# Performance of geographic sales baskets

High US sales (GSTHAINT) beating International (GSTHINTL) by 12 pp YTD



# Domestic Sales basket (GSTHAINT)

Constituents of our Domestic Sales basket (median stock has 100% US sales)

Company	Ticker	Market Cap (\$bn)	Non-U.S. Sales
<b>COMMUNICATION SERVICES</b>			
Charter Communications	CHTR	\$81	0 %
Fox Corp.	FOXA	15	0
T-Mobile US Inc.	TMUS	172	0
Verizon Communications	VZ	216	0
DISH Network Corp.	DISH	5	0
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>37</b>
<b>CONSUMER DISCRETIONARY</b>			
Dollar General	DG	\$57	0 %
Chipotle Mexican Grill	CMG	38	0
Ross Stores Inc.	ROST	26	0
Target Corp.	TGT	67	0
D.R. Horton Inc.	DHI	26	0
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>21</b>
<b>CONSUMER STAPLES</b>			
Altria Group Inc.	MO	\$76	0 %
Kroger Co.	KR	34	0
Constellation Brands	STZ	39	3
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>27</b>
<b>ENERGY</b>			
Devon Energy Corp.	DVN	\$34	0 %
Pioneer Natural Resources	PXD	52	0
Marathon Petroleum	MPC	44	0
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>16</b>

Company	Ticker	Market Cap (\$bn)	Non-U.S. Sales
<b>FINANCIALS</b>			
Truist Financial	TFC	\$65	0 %
CME Group Inc.	CME	73	0
Charles Schwab	SCHW	115	0
PNC Financial Svc. Grp	PNC	67	0
Capital One Financial	COF	42	0
Wells Fargo & Co.	WFC	152	0
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>7</b>
<b>HEALTH CARE</b>			
Elevance Health	ELV	\$115	0 %
Centene Corp.	CNC	50	0
AmerisourceBergen	ABC	29	0
Quest Diagnostics	DGX	16	0
CVS Health Corp.	CVS	121	0
Humana Inc.	HUM	60	0
DaVita Inc.	DVA	8	6
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>39</b>
<b>INDUSTRIALS</b>			
Southwest Airlines	LUV	\$22	0 %
Norfolk Southern	NSC	53	0
Republic Services	RSG	41	0
CSX Corp.	CSX	62	0
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>31</b>

Company	Ticker	Market Cap (\$bn)	Non-U.S. Sales
<b>INFORMATION TECHNOLOGY</b>			
Paycom Software	PAYC	\$18	0 %
Tyler Technologies	TYL	14	0
Jack Henry & Associates	JKHY	13	0
Paychex Inc.	PAYX	42	1
Intuit Inc.	INTU	113	5
CDW Corp.	CDW	21	12
Broadridge Financial Solutions	BR	17	12
Automatic Data Processing	ADP	89	13
Fiserv Inc.	FISV	61	14
Enphase Energy Inc.	ENPH	26	20
Global Payments	GPN	31	21
Roper Technologies	ROP	43	22
Fidelity National Info Svc.	FIS	58	26
Cognizant Tech Solutions	CTSH	35	26
<b>Median</b>			<b>13 %</b>
<b>Sector median</b>			<b>54</b>
<b>MATERIALS</b>			
Nucor Corp.	NUE	\$28	0 %
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>57</b>
<b>REAL ESTATE</b>			
Public Storage	PSA	\$55	0 %
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>0</b>
<b>UTILITIES</b>			
Southern Co.	SO	\$75	0 %
<b>Median</b>			<b>0 %</b>
<b>Sector median</b>			<b>0</b>
<b>GSTHAINT median</b>			<b>0 %</b>
<b>S&amp;P 500 median</b>			<b>29</b>

# International Sales basket (GSTHINTL)

Constituents of International Sales basket (median stock has 73% non-US sales)

Company	Ticker	Market Cap (\$bn)	Non-U.S. Sales
<b>COMMUNICATION SERVICES</b>			
News Corp.	NWSA	\$9	63 %
Netflix Inc.	NFLX	99	59
Meta Platforms Inc.	META	420	59
Electronic Arts	EA	37	57
Alphabet Inc.	GOOGL	1407	54
<b>Median</b>			<b>59 %</b>
<b>Sector median</b>			<b>37</b>
<b>CONSUMER DISCRETIONARY</b>			
Las Vegas Sands	LVS	\$30	100 %
Booking Holdings	BKNG	74	87
BorgWarner Inc.	BWA	9	83
PVH Corp.	PVH	4	68
Aptiv PLC	APTIV	27	67
<b>Median</b>			<b>83 %</b>
<b>Sector median</b>			<b>21</b>
<b>CONSUMER STAPLES</b>			
Philip Morris Intl	PM	\$145	100 %
Estee Lauder Companies	EL	61	79
Mondelez Intl	MDLZ	85	75
<b>Median</b>			<b>79 %</b>
<b>Sector median</b>			<b>27</b>
<b>ENERGY</b>			
Schlumberger	SLB	\$48	85 %
Baker Hughes	BKR	25	78
Exxon Mobil Corp.	XOM	370	62
<b>Median</b>			<b>78 %</b>
<b>Sector median</b>			<b>16</b>

Company	Ticker	Market Cap (\$bn)	Non-U.S. Sales
<b>FINANCIALS</b>			
Aflac Inc.	AFL	\$35	70 %
MSCI Inc.	MSCI	36	59
Aon Plc	AON	60	55
Everest Re Group	RE	11	54
Marsh & McLennan Cos.	MMC	79	53
Citigroup Inc.	C	102	52
<b>Median</b>			<b>55 %</b>
<b>Sector median</b>			<b>7</b>
<b>HEALTH CARE</b>			
Viatis Inc.	VTRS	\$12	77 %
Waters Corp.	WAT	21	72
Mettler-Toledo Intl	MTD	28	67
Agilent Technologies	A	38	66
DENTSPLY SIRONA	XRAY	8	65
Abbott Laboratories	ABT	194	61
PerkinElmer Inc.	PKI	19	60
<b>Median</b>			<b>66 %</b>
<b>Sector median</b>			<b>39</b>
<b>INDUSTRIALS</b>			
Otis Worldwide	OTIS	\$31	74 %
Expeditors Intl	EXPD	17	74
Caterpillar Inc.	CAT	97	62
3M Co.	MMM	76	58
<b>Median</b>			<b>68 %</b>
<b>Sector median</b>			<b>31</b>

Company	Ticker	Market Cap (\$bn)	Non-U.S. Sales
<b>INFORMATION TECHNOLOGY</b>			
Monolithic Power Systems	MPWR	\$21	97 %
Qualcomm Inc.	QCOM	175	96
Lam Research Corp.	LRCX	66	95
NXP Semiconductors	NXPI	47	91
Applied Materials	AMAT	92	91
Texas Instruments	TXN	154	90
Teradyne Inc.	TER	16	89
KLA Corp.	KLAC	54	89
NVIDIA Corp.	NVDA	452	84
Intel Corp.	INTC	166	82
Broadcom Inc.	AVGO	211	81
IPG Photonics Corp.	IPGP	5	78
Microchip Technology	MCHP	37	78
Analog Devices Inc.	ADI	86	67
<b>Median</b>			<b>89 %</b>
<b>Sector median</b>			<b>54</b>
<b>MATERIALS</b>			
Newmont Corp.	NEM	\$41	99 %
<b>Median</b>			<b>99 %</b>
<b>Sector median</b>			<b>57</b>
<b>REAL ESTATE</b>			
Equinix Inc.	EQIX	\$59	61 %
<b>Median</b>			<b>61 %</b>
<b>Sector median</b>			<b>0</b>
<b>UTILITIES</b>			
AES Corp.	AES	\$13	68 %
<b>Median</b>			<b>68 %</b>
<b>Sector median</b>			<b>0</b>

<b>GSTHINTL median</b>	<b>73 %</b>
<b>S&amp;P 500 median</b>	<b>29</b>

# Sector decomposition of global equity indices

All-Country World dominated by Tech (21%), Financials (14%), Healthcare (13%)

GICS sector	AC	US	Europe	APxJ	Japan
	World				
Info Tech	21 %	27 %	7 %	18 %	13 %
Financials	14	11	16	22	10
Health Care	13	15	17	5	9
Cons Disc	11	11	10	14	18
Industrials	9	8	14	6	24
Comm Services	8	9	4	9	9
Cons Staples	8	7	14	5	7
Materials	5	3	7	8	6
Energy	5	4	6	4	1
Utilities	3	3	4	3	1
Real Estate	3	3	1	4	2
<b>Total</b>	<b>100 %</b>	100 %	100 %	100 %	100 %
<b>Market cap (tn)</b>	<b>\$55.7</b>	<b>\$34.0</b>	<b>\$8.4</b>	<b>\$6.9</b>	<b>\$2.9</b>
<b>Percent of World</b>	<b>100 %</b>	<b>61 %</b>	<b>15 %</b>	<b>12 %</b>	<b>5 %</b>

# Global equity market returns, valuation, and growth

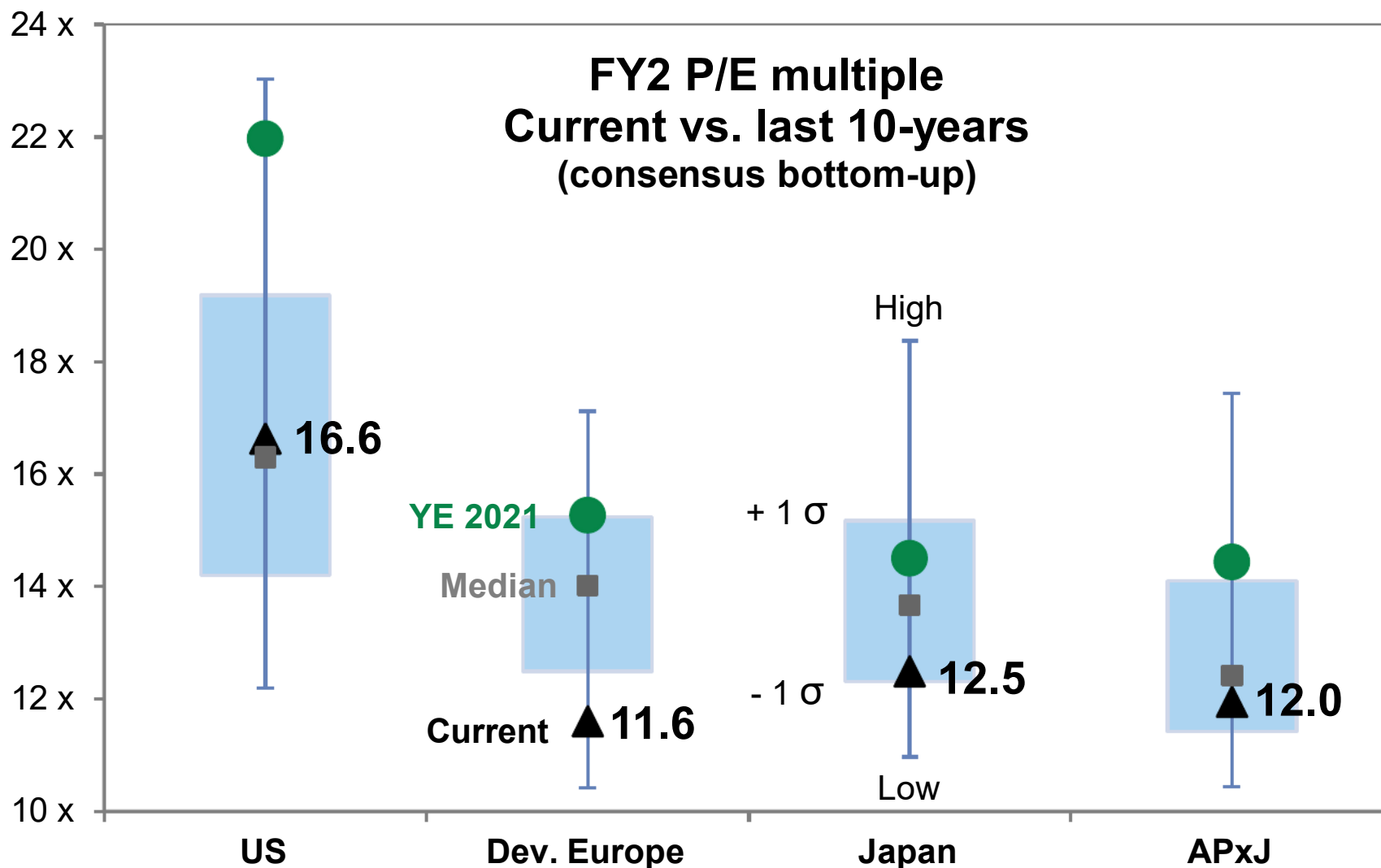
Total return potential through year-end 2022 (six months): Asia, US, Europe

INDEX	INDEX level		EARNINGS		VALUATION			RETURN	
	Current	YE 2022 target	Adjusted		Forward P/E (GS)		Div Yield	6-month Total Return	
			EPS Growth 2022	2023	Current Price/NTM EPS	YE 2022 price target/2023E EPS		Local	USD
MXAPJ	526	550	7 %	8 %	12.4 x	12.5 x	3.2 %	8 %	8 %
TOPIX	1947	2020	10	3	12.5	12.8	2.6	5	13
S&P 500	4145	4300	8	3	18.0	18.4	1.6	5	5
STOXX Europe 600	436	390	7	(0)	13.6	12.2	3.5	(9)	(8)



# Global equity market valuation vs. history

Stock markets currently trade at or below median historical valuations



## Reg AC

We, David J. Kostin, Ben Snider, Ryan Hammond, Cormac Conners, Lily Calcagnini, Jenny Ma and Daniel Chavez, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

## Disclosures

### Basket disclosure

The ability to trade the basket(s) discussed in this research will depend upon market conditions, including liquidity and borrow constraints at the time of trade

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