

Companies are preparing for a recession: How about you?



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Companies are preparing for challenges ahead, equity investors not so much

From an earnings resilience standpoint, the good news is that company managers are preparing for challenging economic conditions ahead. The not so good news is that many equity investors don't appear to have adequately adjusted their portfolios or tolerance for high valuations given the growth risks and alternative opportunities of higher interest rates.

The first earnings season of 2023 is still in its early weeks, but beyond the biggest of banks, companies are meeting and in some notable cases missing lowered earnings expectations. Most companies note the macro challenges they've faced and the expectation for many of the old challenges (costs) to continue and newer (a period of stalled growth) likely to come. Thus, many companies are announcing more aggressive personnel and other cost cutting measures and being more selective and careful with inventories, capex and buyback plans. As investors, we appreciate corporate managers being realistic in their outlooks and taking protective actions and also how S&P 500 companies have proven themselves to be well run repeatedly through the best and worst of times in recent decades. However, we think equity investors are too complacent about the macro risks or too confident in corporate manager abilities to achieve healthy real earnings growth anyhow through micro execution.

We expect the Fed to hike in May and long-term bond yields should grind higher

Despite disinflation from the highest rates last year, inflation is still too high for too long. We expect the Fed to hike in May and perhaps again in June, despite the economic slowing and recently added pressures of a credit crunch. Some argue the Fed is making a mistake by hiking because it will cause a recession. We argue it's not a mistake if it's deliberate. Last FOMC meeting minutes reveal the Fed is willing to risk and tolerate a small recession to restore price stability. We do not think the Fed will cut rates this year. We think it would take a larger recession with rapid labor market damage for the Fed to cut. Thus, we expect 5.25% overnight to linger. If inflation doesn't drop more by autumn, more hikes might be.

In addition to many real economic indicators (see inside) warning of recession with jobless claims on the cusp of joining the bunch, we interpret the yield curve as indicating bond market expectations of at least a small recession looming. This is why we think equity investors are mistaken to be taking refuge among some very high PE stocks on the idea that long-term Treasury yields have peaked and settled around 3.5% nominal and 1.25% real. We see this retreat in yields as being cyclically driven by higher recession risk. The secular outlook for yields is still very uncertain as future inflation and the real yields required to contain it are very uncertain. Moreover, while we expect the debt ceiling to be lifted, the fight should remind bondholders of risks from deficits and upward government debt/ GDP. The deficit is quite high for an economy at 3.5% unemployment. In short, we see arguments for justifying an 18.5 PE on this year's S&P EPS and 21.5 PE ex. Financials & Energy on low yields on shaky ground given downside 2023 EPS risk and upside 2024 yields risk.

Week 2 of 1Q EPS reporting: Low bars, underwhelming beats, cautious tones

Consensus 1Q EPS was cut by 6.2% during the calendar quarter, much more than the 3.2% average cut historically. 1H 2023 continues to be revised down albeit not slashed. S&P EPS will be down 2 quarters in a row y/y after Q1 and likely down again 2Q. Full year 2023 EPS not being down vs. 2022 now depends on a strong 4Q rebound. Bottom-up 1Q EPS is \$50.90, -5% y/y. 67% beat on EPS and 29% missed (the rest is in-line), with an aggregate surprise of +3.3%, +2.9% ex Financials, a little weaker than usual. If the rest of companies beat by 3% then 1Q EPS will finish at our \$52 estimate. Next two weeks are the heaviest of this earnings season with 41% and 22% of the index earnings reporting.

Regulators and investors watching banks & non-banks: Beware tier 1 variants

Common Equity Tier 1 capital is defined by the Basel standards under Bank of International Settlements as the most immediately available loss absorbing capital. But these measures use local financial and regulatory reports and rules to construct. Some smaller US banks can opt to not include Accumulated Other Comprehensive Income in their reported CET1. Our advice, know the footnote details and construct comparable metrics. We often look at bank GAAP reported equity less intangible and deferred tax assets. The Financial Stability Oversight Committee is signaling it might use its power to classify some non-banks as systemically important and subject them to regulation. Inside, bank earnings, balance sheet and lending metrics. Big bank earnings and stocks show strength, concerns linger at small.

S&P sector/industry positioning inside: Tech isn't a defensive, we're underweight

Contributor: Ju Wang, Portfolio Manager Equity

Global Equity Index Forecasts: 12-months

Index	Mar 2024F	NTM EPS Growth	Target PE
S&P 500	4,100	1.3%	18.1
EuroStoxx 50	4,350	0.1%	13.1
Stoxx 600	480	1.7%	13.6
MSCI Japan	1,250	3.2%	13.3
MSCI Asia xJ	670	3.2%	14.1
MSCI EM	1,020	-0.5%	12.5

S&P 500 Outlook at Yearend

	2021	2022	2023F
S&P 500	4766	3840	4000
Dividend Yield	1.3%	1.75%	1.75%
S&P EPS	\$210	\$222	\$222
Trailing PE	22.7	17.3	18.0
DPS	\$61	\$67	\$70

Next 5%+ Price Move
(Up / Balanced Risk / **Down**)
Risk of near-term 10%+ correction
(Low / Moderate / **High**)

Taxable U.S. Investor Asset Allocations

Asset Class	Long-term	Current
Fixed Income/Cash	30-35%	37.5%
Equities	55-60%	54.0%
US Equities	40%	35.5%
S&P 500	35%	33.0%
Small Caps	0-10%	2.5%
Foreign DM	10-15%	11%
Foreign EM	0-10%	7.5%
Alternatives	10%	8.5%

Key CIO Views

Macro signal:	Apr 2023	Mar 2024F
U.S. Fed Funds rate	4.75%-5.00%	5.25%-5.50%
10yr Treasury yield	3.55%	4.30%
US IG Corp Spreads	170bp	110bp
US High Yield Spreads	500bp	450bp
Crude Oil (WTI) \$/bbl	77	100
EUR / USD FX rate	1.10	1.10

GDP Forecasts

Region	2022	2023F	2024F
US	2.0%	0.7%	1.1%
World	3.4%	2.7%	3.1%
Euro area	3.5%	0.8%	1.1%
China	3.0%	5.5%	5.3%
Japan	1.1%	1.0%	0.8%

* Q4/Q4 GDP growth.

EPS = Earnings Per Share

GDP = Gross Domestic Product

FX = Foreign Exchange

TIPS = Treasury Inflation Protected Securities

Source: DWS Investment Management GmbH. All opinions and claims are based upon data on 4/24/2023 and may not come to pass. This information is subject to change at any time, based upon economic, market and other considerations and should not be construed as a recommendation. All foreign asset exposures are not FX hedged unless otherwise noted. For illustrative purposes only.



S&P 500 Sector and Industry views

	Market	Allocated	Sector	2022			2023			2024			Overweight			Equal weight			Underweight				
				2022	2023	2024	2022	2023	2024	2022	2023	2024	2022	2023	2024	2022	2023	2024	2022	2023	2024		
Over-weight	14.6%	20.4%	Health Care	16.3	17.1	16.2	Biotechnology	13.0	15.1	14.5	Health Care Providers & Services	15.6	14.6	13.8									
							Health Care Equipment & Supplies	26.2	22.8	20.9	Life Sciences Tools & Services	25.5	31.3	29.1									
							Pharmaceuticals	13.1	14.8	14.1													
	8.0%	11.8%	Communication Services	19.0	16.9	15.5	Diversified Telecommunication Servi	7.0	8.1	7.8	Wireless Telecommunication Servi	70.8	26.3	23.5									
							Entertainment	51.8	24.1	21.4													
4.7%	6.2%	Energy	8.3	9.8	9.3	Energy Equipment & Services	22.6	15.8	14.6	Oil Gas & Consumable Fuels	7.8	9.5	9.0										
13.2%	14.0%	Financials	15.2	14.1	13.1	Banks	9.7	9.1	8.4					Capital Markets	17.2	17.1	16.0						
						Insurance	16.8	13.4	12.4						Consumer Finance	9.0	9.7	9.2					
2.9%	3.4%	Utilities	20.0	19.7	19.1	Electric Utilities	20.5	20.2	19.6	Gas Utilities	20.3	19.7	19.3	Water Utilities	33.8	32.8	32.1						
Equal-weight	8.6%	8.6%	Industrials				Aerospace & Defense	35.0	22.5	21.4	Industrial Conglomerates	20.8	23.1	22.3	Air Freight & Logistics	14.5	16.9	16.9					
							Passenger Airlines	15.9	8.3	7.4						Building Products	19.6	17.6	16.6				
							Electrical Equipment	20.8	20.5	19.4							Commercial Services & Supplies	32.5	36.1	34.6			
							Ground Transportation	17.7	17.0	16.5							Construction & Engineering	26.4	24.4	22.8			
																	Machinery	17.8	17.8	17.3			
Under-weight	2.5%	2.3%	Real Estate	16.8	17.0	16.6	Industrial REITs	23.9	22.4	21.9	Hotel & Resort REITs	9.0	9.2	9.0	Health Care REITs	17.6	17.3	16.8					
							Specialized REITs	18.4	19.2	18.8	Real Estate Mgmt. & Development	12.7	13.0	12.7	Office REITs	11.2	11.3	11.0					
	7.4%	6.1%	Consumer Staples	21.7	21.7	21.1	Beverages	26.3	25.4	24.5	Consumer Staples Distribution & R	22.9	22.3	21.6	Food Products	17.0	19.0	18.5					
											Household Products	26.7	25.7	25.0	Personal Care Products	42.3	40.1	37.6					
	2.6%	1.1%	Materials	14.5	17.3	16.7									Tobacco	12.9	12.9	12.6					
10.0%	5.5%	Consumer Discretionary	31.2	25.8	24.7	Automobile Components	20	16.8	15.5	Hotels Restaurants & Leisure	60	34.8	31.2	Chemicals	16.3	17.1	16.7						
															Automobiles	18.3	21.3	20.5					
																Distributors	17.7	16.7	16.5				
																Household Durables	8.1	11.7	11.2				
25.4%	20.7%	Information Technology	25.2	25.9	24.0	Communications Equipment	15.9	14.5	13.7					Broadline Retail	-1234.1	64.7	61.7						
						IT Services	18.8	18.1	16.9						Leisure Products	11.5	11.1	10.6					
															Multiline Retail		0.0	0.0					
													Specialty Retail	18.8	19.6	19.1							
														Textiles Apparel & Luxury Goods	28.5	26.9	26.1						
Aggregate PE: DWS View							Overweight	15.9	15.9	14.9	Equalweight	22.8	16.2	15.3	Underweight	22.1	22.8	21.6					
S&P 500								4130				2022, 2023& 2024 EPS	219.79	222.00	235.00	2022, 2023 & 2024 PE	18.8	18.6	17.6				
												Bottom-up Consensus EPS	219.79	221.21	247.09	Bottom-up Cons. PE	18.8	18.7	16.7				
																2022, 2023 & 2024 Ex Energy PE	19.6	19.6	18.5				
																Btm-up Cons. Ex Energy PE	20.1	19.4	17.2				

Sector OW	11.94%
Sector UW	-11.94%
Industry OW	21.73%
Industry UW	-21.73%

Macro tilts:	
Cyclicals	-4.87%
Defensive	4.86%
Value	-4.72%
Growth	4.72%
Consumer Services/experience	-5.79%
Disc. Goods	-0.52%
Retailing	-0.70%
Durables	0.22%
Staples Goods/Retail	-1.52%
Commodity	0.73%
Energy	1.68%
Metals/Chemicals	-0.95%
Capex	2.66%
Capacity additions	0.16%
Productivity	2.50%
Health Care	5.19%
Innovation	2.74%
Marketers	2.30%
Insurers	0.42%
Financials	0.52%
Up rates/low spreads	2.19%
Capital Markets	-2.83%
Insurance	1.16%
Bond Substitutes	1.47%
Weak FX \$ plays	1.13%
High R&D plays	2.51%
Transports	-0.19%
Geopolitical risk	2.49%
Weak oil prices	-0.24%
Inflation shock	7.26%
Domestic GDP	-2.60%
Global GDP	-6.50%
Consumer TMT	1.60%
Trade sensitive	-3.37%

Note: More details on sector earnings forecast and sector intrinsic valuation can be found towards the back of this note.

Price as of 4/20/2023

Source: DWS Investment Management GmbH

The conference board LEI

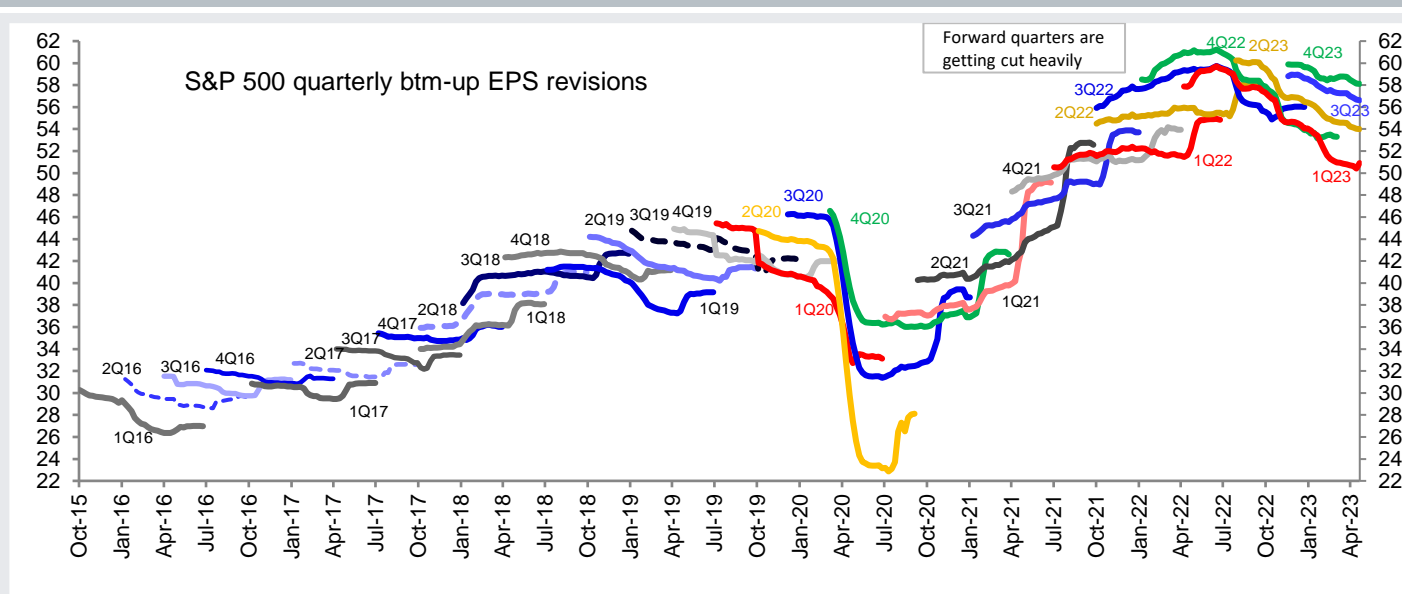
	Mar-23	Feb-23	Jan-23	Dec-22	Nov-22	Oct-22	Sep-22	Aug-22	Jul-22	Jun-22	May-22	Apr-22
Summary of Composite Indexes												
Composite index of 10 leading indicators (2016=100)	108.4	109.7	110.2	110.7	111.5	112.5	113.5	114.1	114.4	115.1	115.9	116.9
Change from previous month (pct.)	-1.2	-0.5	-0.5	-0.7	-0.9	-0.9	-0.5	-0.3	-0.6	-0.7	-0.9	-0.6
Change over 6-month span (AR, pct.)	-	-	-	-8.8	-7.6	-7.2	-7.5	-7.4	-7.4	-6.9	-5.9	-4.7
Diffusion index, 1-mo. span (pct.)	25.0	20.0	50.0	20.0	20.0	20.0	50.0	50.0	50.0	40.0	20.0	15.0
Diffusion index, 6-mo. span (pct.)	-	-	0.0	20.0	20.0	40.0	40.0	20.0	30.0	30.0	40.0	25.0
Composite index of 4 coincident indicators (2016=100)	110.2	110.0	109.8	109.4	109.3	109.4	109.3	109.1	108.7	108.1	108.3	108.4
Change from previous month (pct.)	0.2	0.2	0.4	0.1	-0.1	0.1	0.2	0.4	0.6	-0.2	-0.1	0.2
Change over 6-month span (AR, pct.)	-	-	-	1.7	1.7	2.0	2.4	1.9	1.9	2.0	1.5	1.1
Diffusion index, 1-mo. span (pct.)	100.0	87.5	100.0	75.0	50.0	50.0	100.0	100.0	100.0	25.0	37.5	62.5
Diffusion index, 6-mo. span (pct.)	-	-	0.0	75.0	75.0	75.0	75.0	100.0	100.0	100.0	75.0	75.0
Composite index of 7 lagging indicators (2016=100)	118.3	118.5	118.3	118.3	117.7	117.2	117.0	116.1	115.3	114.9	113.9	112.7
Change from previous month (pct.)	-0.2	0.2	0.0	0.5	0.4	0.2	0.8	0.7	0.3	0.9	1.1	0.5
Change over 6-month span (AR, pct.)	-	-	-	2.2	4.2	5.3	6.0	6.8	8.1	8.9	9.4	8.3
Diffusion index, 1-mo. span (pct.)	35.7	50.0	28.6	50.0	57.1	50.0	92.9	71.4	57.1	85.7	85.7	71.4
Diffusion index, 6-mo. span (pct.)	-	-	0.0	57.1	71.4	71.4	64.3	85.7	100.0	100.0	85.7	85.7
Ratio, coincident index to lagging index (2004=100)	93.2	92.8	92.8	92.5	92.9	93.3	93.4	94.0	94.3	94.1	95.1	96.2
Net Contributions of Index Components												
Leading Index												
Average weekly hours, manufacturing	0.0	-0.1	0.2	-0.1	-0.1	-0.1	0.1	-0.1	0.1	-0.1	0.0	-0.2
Avg weekly claims, unemploy. insurance	-0.1	-0.2	0.1	0.0	-0.1	-0.1	0.2	0.0	-0.1	-0.2	-0.1	-0.1
Mfrs' new orders, consumer gds & mats	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.1	0.2	0.0	-0.1
Index of stock prices	-0.1	0.1	0.1	0.0	0.2	-0.1	-0.3	0.3	0.0	-0.2	-0.4	0.0
Mfrs' new orders, nondefense capital gds excl. aircraft	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
Bldg. permits, new priv. housing unit	-0.3	0.4	0.0	0.0	-0.3	-0.1	0.0	-0.3	0.0	0.0	-0.2	-0.1
ISM new orders index	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2	-0.1	0.0	0.0
Avg. consumer expectations for business & economic conditions	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	-0.3	-0.4	-0.4	-0.3	-0.2
Leading Credit Index	-0.1	-0.1	0.0	-0.1	0.0	-0.1	-0.1	0.0	0.0	-0.1	0.0	0.0
Interest rate spread	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3
Coincident Index												
Employees on nonagricultural payrolls	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Index of industrial production	0.1	0.0	0.2	-0.3	-0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Pers. income less transfer payments	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	-0.1	0.0	0.0
Manufacturing & trade sales	0.0	0.0	0.1	0.3	-0.2	0.0	0.0	0.3	0.1	-0.1	-0.1	0.0
Lagging Index												
Change in labor costs	-0.1	-0.1	-0.1	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Ratio, mfg & trade inven. to sales	0.0	0.0	-0.1	-0.1	0.2	0.1	0.0	-0.1	-0.1	0.1	0.2	0.1
Average duration of unemployment	0.0	0.2	-0.1	0.3	-0.1	-0.1	0.3	0.0	0.0	0.0	0.3	-0.1
Ratio, consumer install. credit to PI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Comm. & industrial loans	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.2
Average prime rate charged by banks	0.0	0.1	0.1	0.1	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.1
Change in CPI for services	-0.2	-0.1	0.1	-0.1	-0.2	-0.1	0.1	0.1	-0.1	0.3	0.2	0.1

Source: The Conference Board, Factset, DWS Investment GmbH as of 4/21/2023.

S&P 500 1Q EPS tracker:

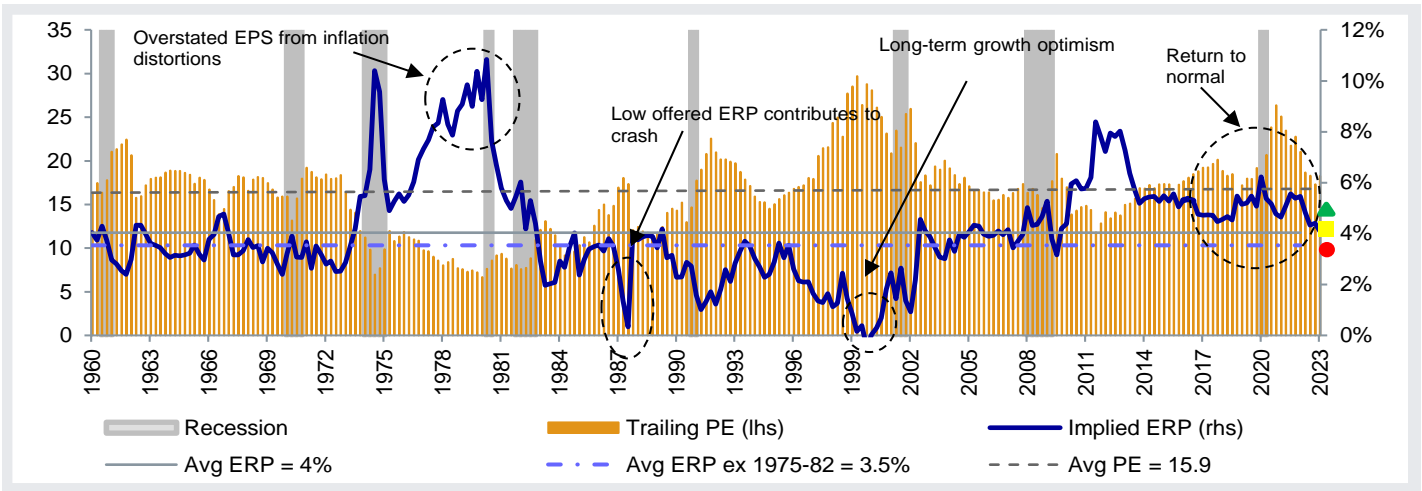
- 83 S&P 500 companies or 24% of index earnings have reported. Next two weeks are the heaviest with 41% and 22% of the index earnings reporting.
- 67% beat on EPS and 29% missed (the rest is in-line), with an aggregate surprise of +3.3%, +2.9% ex Financials. Historic average EPS beat is +3.3% (2011-2019 average). If the rest of companies beat by similar amount then 1Q EPS will finish at our \$52 estimate. 49% beat on sales and 31% missed, with an aggregate surprise of +1.7%, +1.4% ex Financials.
- Bottom-up blended 4Q EPS is \$50.90, -5.1% y/y. Blended sales growth is +2.1% y/y. Blended pro-forma net margin is 12.2%, vs. 11.8% in 4Q22 and 13.0% a year ago.
- Bottom-up consensus 2023 EPS is \$222.21. Our estimate is \$222 (52+55+56+59=\$222).
- Whether the economy slips into recession or not, a profit recession is clearly in progress. Our standing S&P EPS estimates for 1Q and 2Q of 2023 are \$52 and \$55, both down ~5% on y/y basis, we see downside risk to our 3Q and 4Q estimates.
- By sector, 1Q blended EPS y/y growth is strongest at Consumer Discretionary (+35% y/y), Industrials (15%), Energy (13%) and Financials (6.2%). EPS y/y growth is weakest at Materials (-33% y/y), Health Care (-18%), Communication Services (-15%), Tech (-14%) and Utilities (-14%).
- 1Q blended sales y/y growth is strongest at Financials (+9.8% y/y), Consumer Discretionary (5.7%), Industrials (4.6%), Communication Services (4.0%) and Consumer Staples (3.8%). Sales y/y growth is weakest at Materials (-8.3% y/y), Tech (-4.5%), Energy (-4.0%), and Utilities (-1.8%).
- S&P net margins surged to record high of 13.8% in 2021, led by digital firms, banks and consumer goods producers/retailers. We see some usual recessionary set-backs in net margins. S&P 500 net margins are cyclical, but not mean reverting, they have been rising since mid-1990s for structural reasons.
- Valuations at the S&P are very demanding. The S&P is 18.5-19x this year's EPS, EPS with downside risk. And excluding the Financial & Energy sectors, the S&P is trading at about 21.5x this year's earnings which are also with downside risk.

S&P 500 quarterly EPS revision



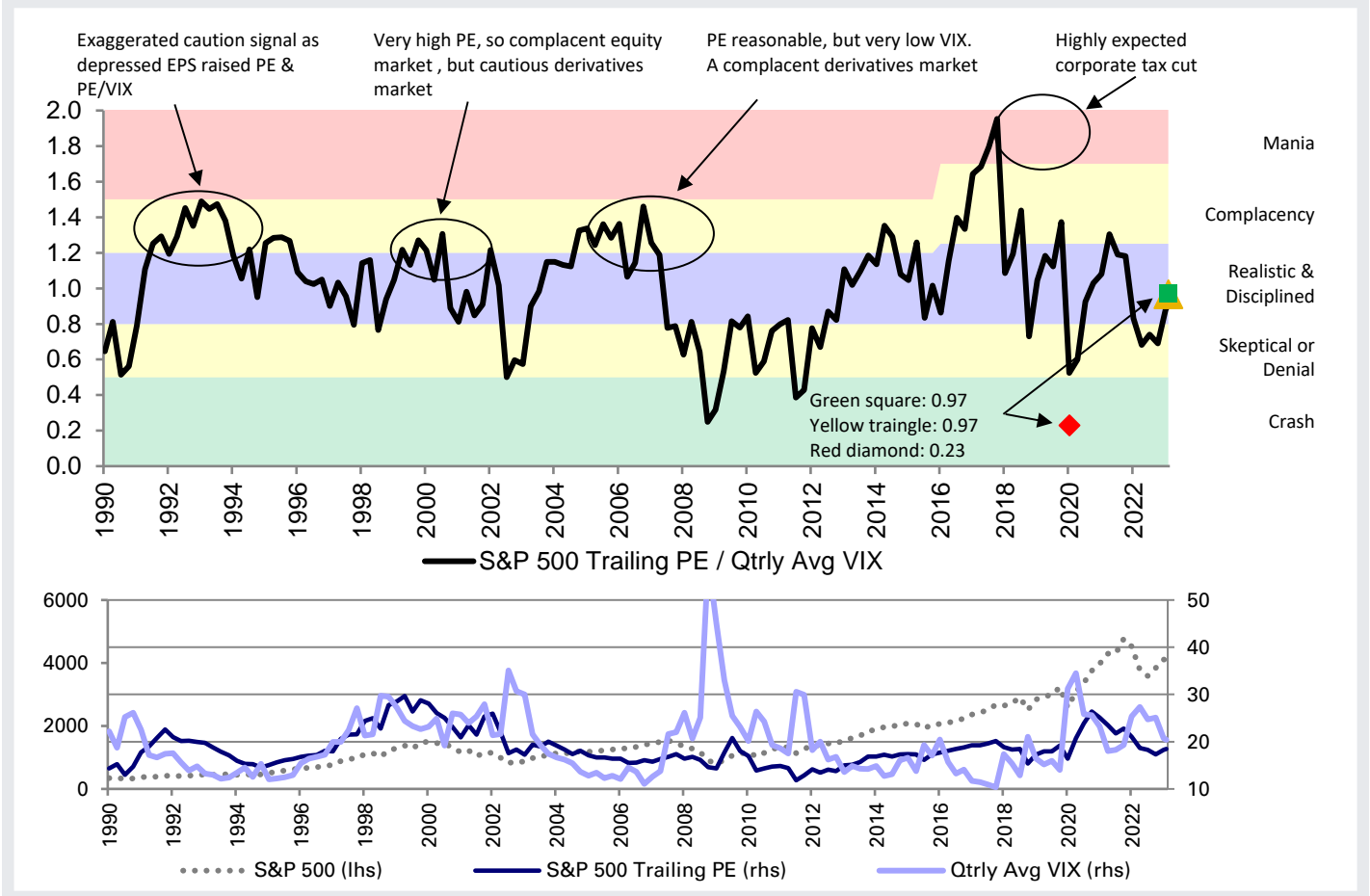
Source: Factset, IBES, DWS Investment GmbH as of 4/20/2023. Past performance may not be indicative of future results.

S&P 500 PE and implied ERP



Red circle: ERP=3.5% implied by PE on our 2023 EPS estimate of \$222 and 2% assumed real 10 year interest rate
 Yellow square: ERP=4.0% implied by PE on our 2023 EPS estimate of \$222 and 1.5% assumed real 10 year interest rate
 Green triangle: ERP=4.5% implied by PE on our 2023 EPS estimate of \$222 and 1% assumed real 10 year interest rate
 Source: IBES, Haver, DWS Investment GmbH as of 4/12/2023. Past performance may not be indicative of future results.

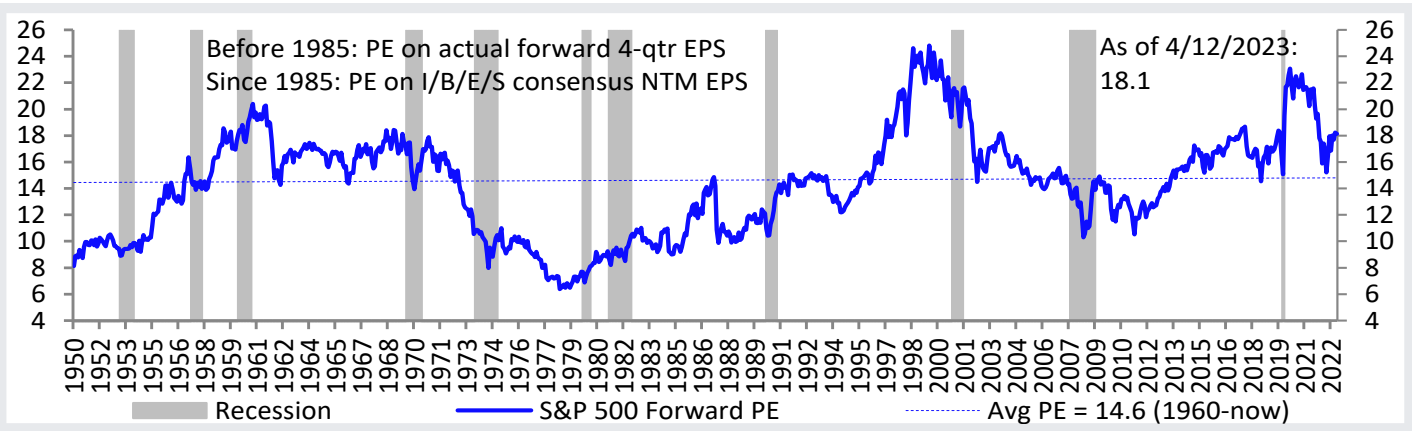
Market emotion: S&P 500 PE / VIX



Green square: PE on our 2023E normalized EPS divided by VIX on Apr 12 2023.
 Yellow triangle: Trailing PE as of Apr 12 2023 divided by VIX on Apr 12 2023.
 Red diamond: Trailing PE as of Mar 23 2020 S&P 500 trough divided by VIX on Mar 23 2020.
 Source: IBES, Haver, DWS Investment GmbH as of 4/12/2023. Past performance may not be indicative of future results.

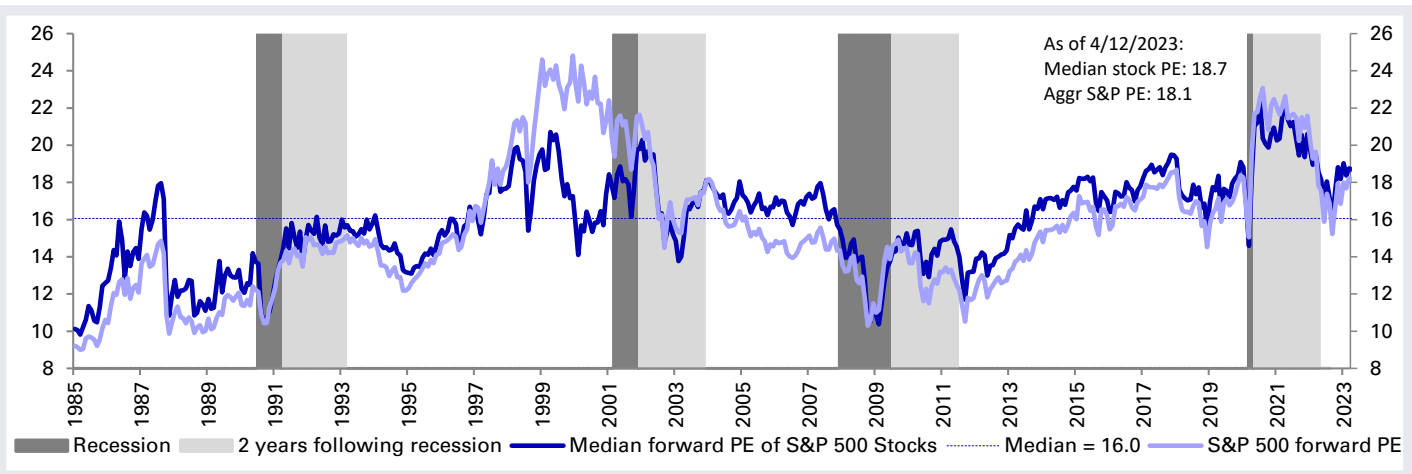
The market is at 15% PE premium to history and 25% ex. Energy and Financials.

S&P 500 forward PE



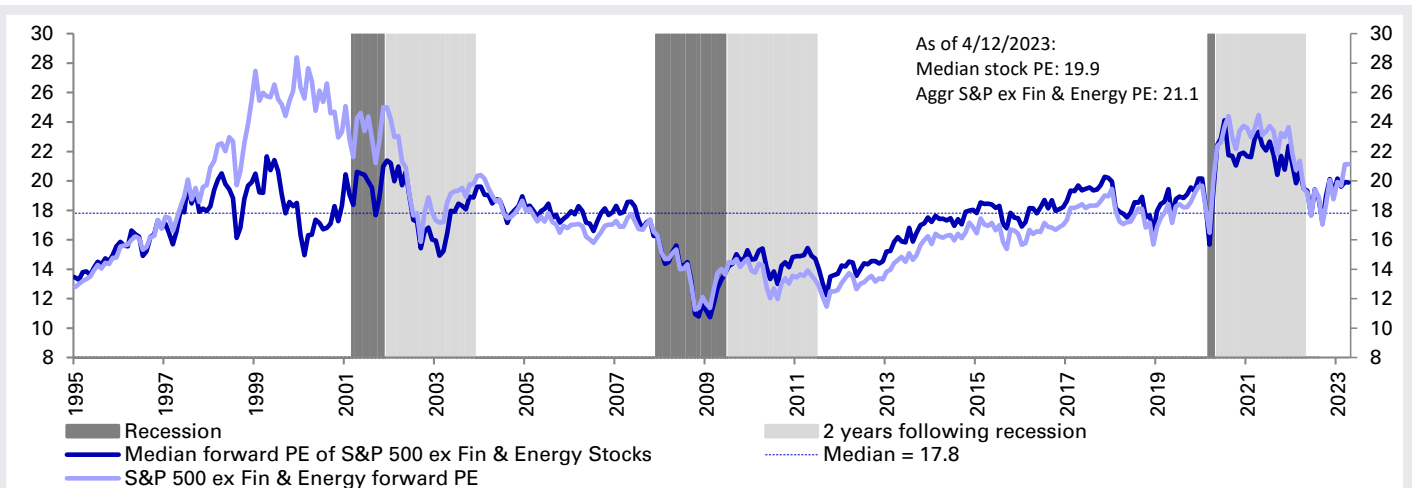
Source: IBES, Haver, DWS Investment GmbH as of 4/12/2023.

Median forward PE of S&P 500 stocks



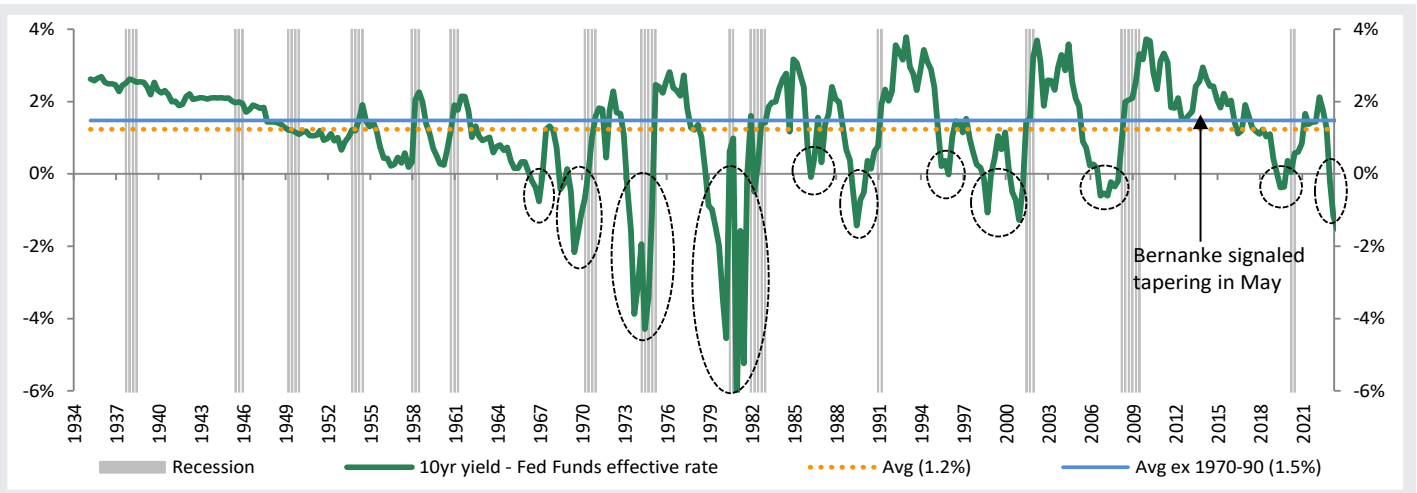
Source: Compustat, Clarifi, DWS Investment GmbH as of 4/12/2023.

Median forward PE of S&P 500 ex Energy and Financial stocks



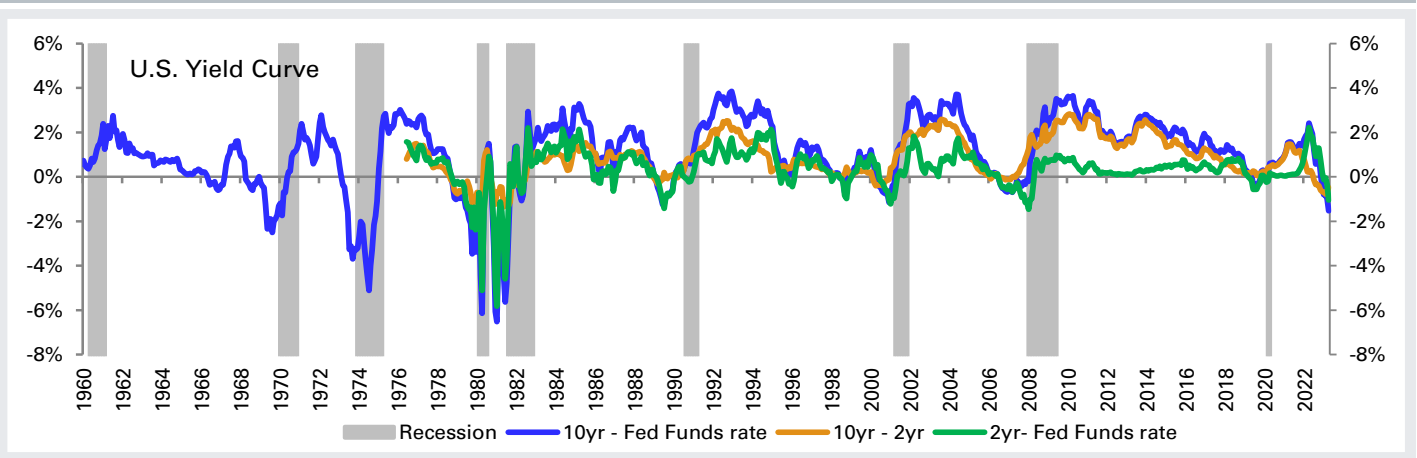
Source: Compustat, Clarifi, DWS Investment GmbH as of 4/12/2023.

U.S. yield curve: 10-year Treasury yield – Fed Funds rate



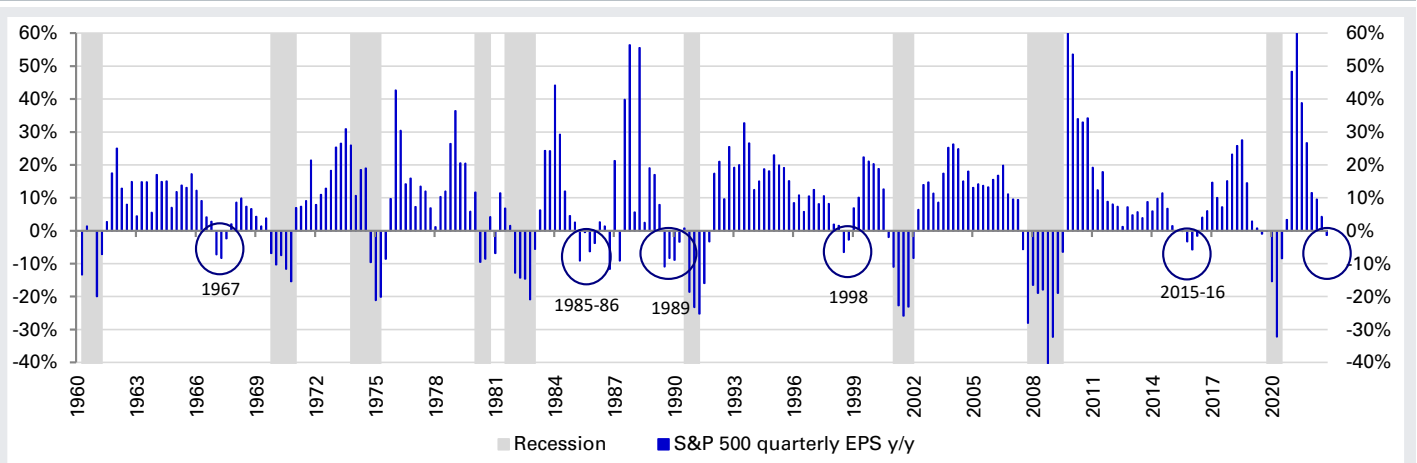
Source: Haver, DWS Investment GmbH as of 4/5/2023.

U.S. yield curve



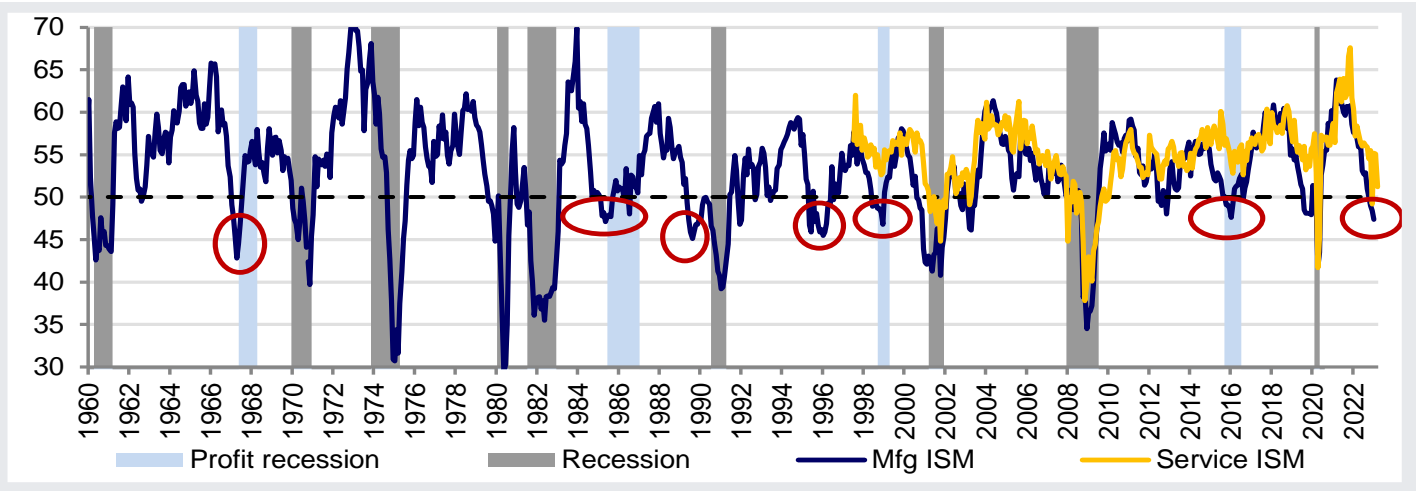
Source: Haver, DWS Investment GmbH as of 4/5/2023.

S&P 500 EPS growth y/y



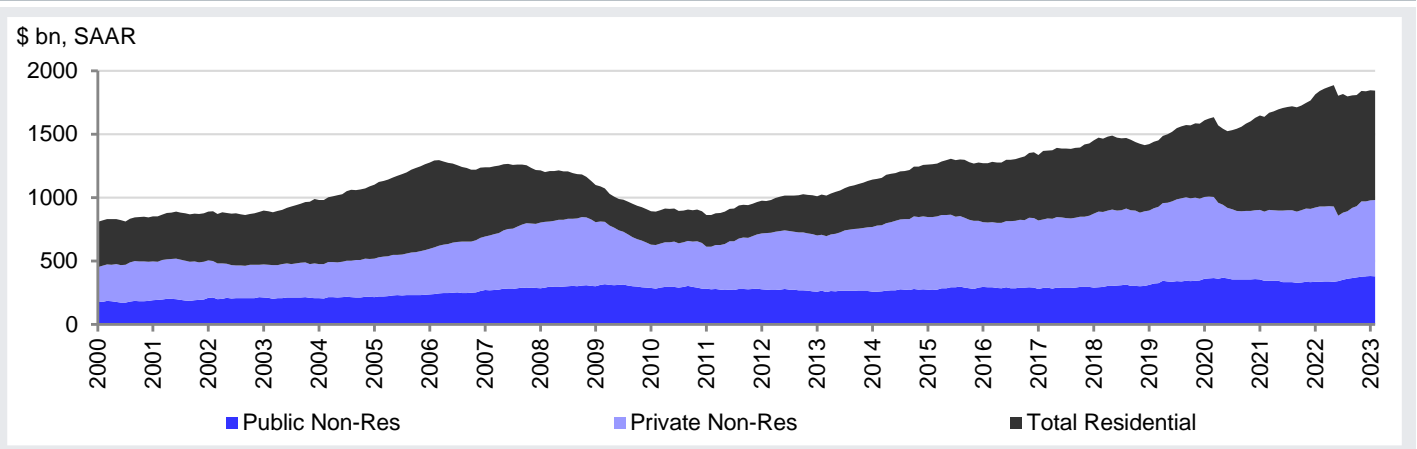
Source: Haver, DWS Investment GmbH as of 4/20/2023.

Manufacturing and Service ISM



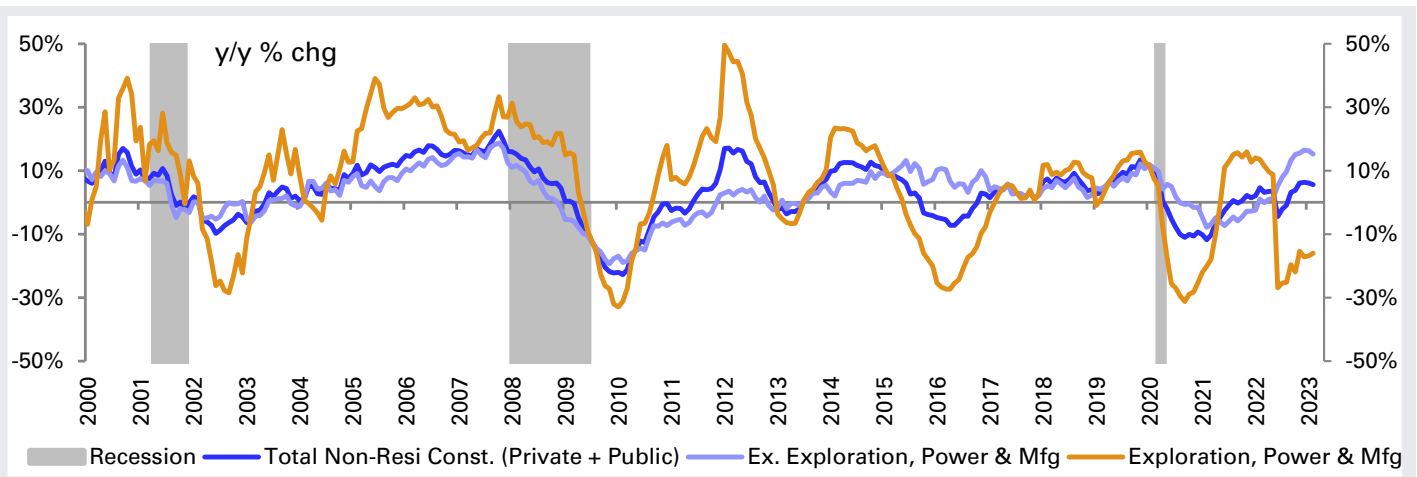
Source: ISM, Haver, DWS Investment GmbH as of March 2023.

U.S. residential and non-residential construction



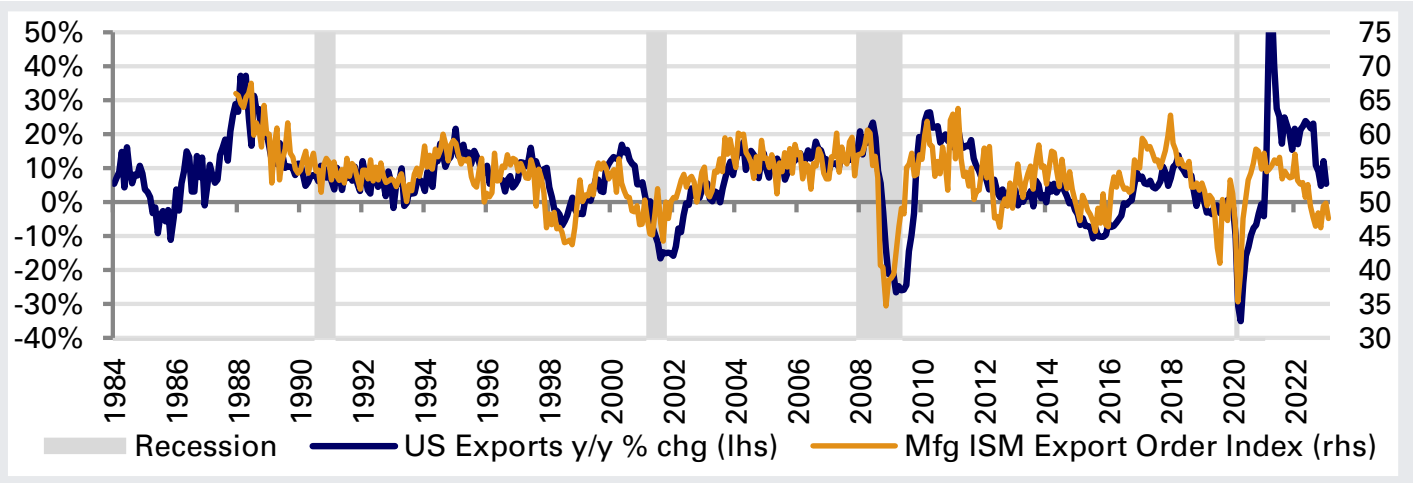
Source: Census Bureau, Haver, DWS Investment GmbH as of February 2023.

U.S. non-residential construction y/y growth



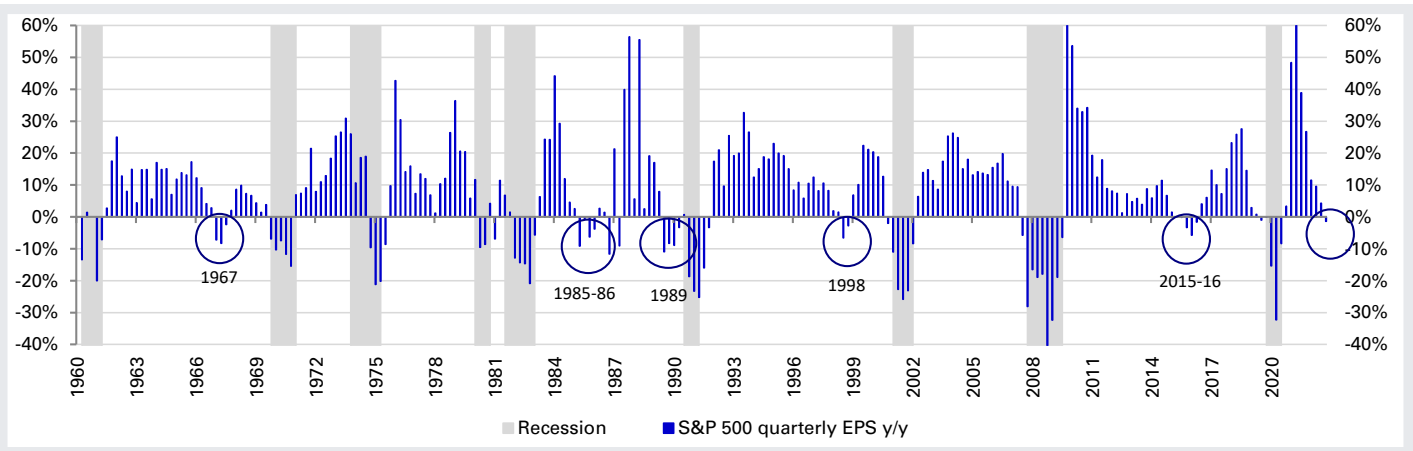
Source: Census Bureau, Haver, DWS Investment GmbH as of February 2023.

U.S. exports vs. manufacturing ISM export order



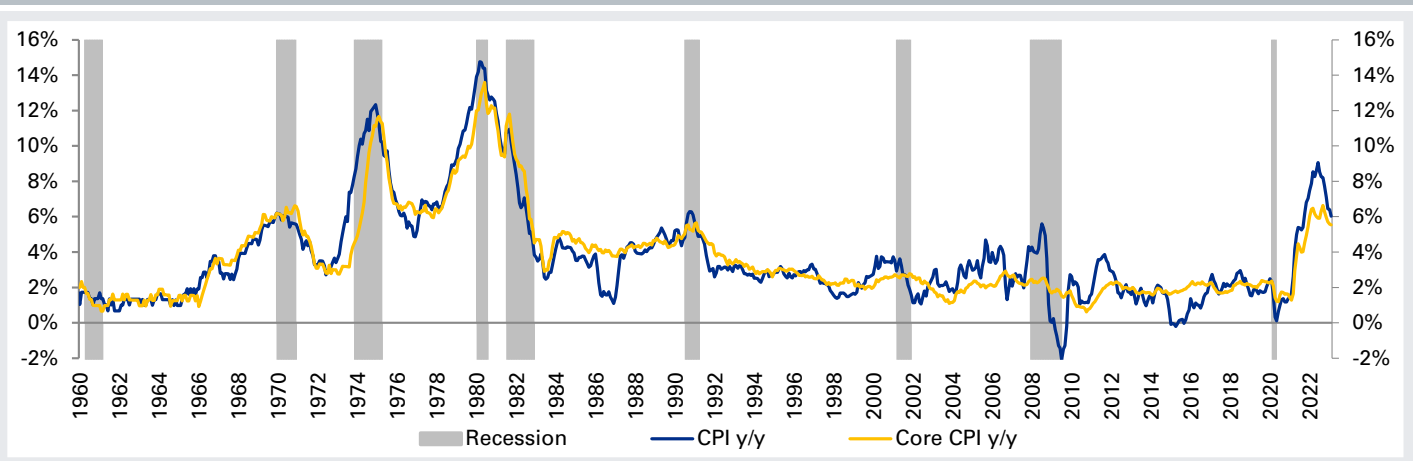
Source: Census Bureau, ISM, Haver, DWS Investment GmbH as of March 2023.

S&P 500 quarterly EPS y/y



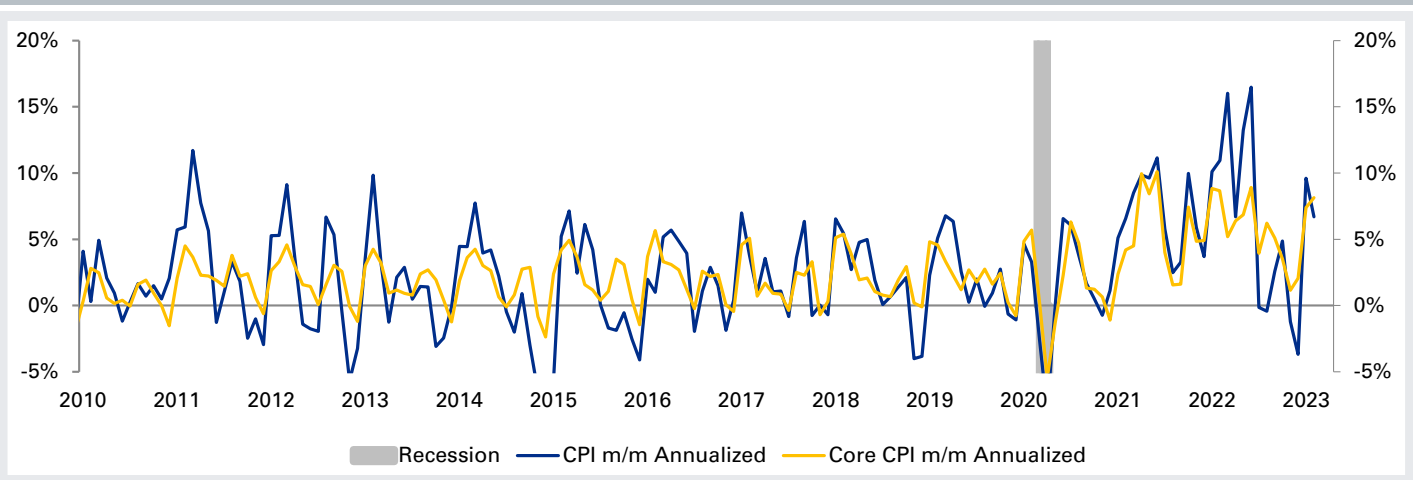
Source: IBES, Haver, DWS Investment GmbH as of 4Q2022.

CPI y/y



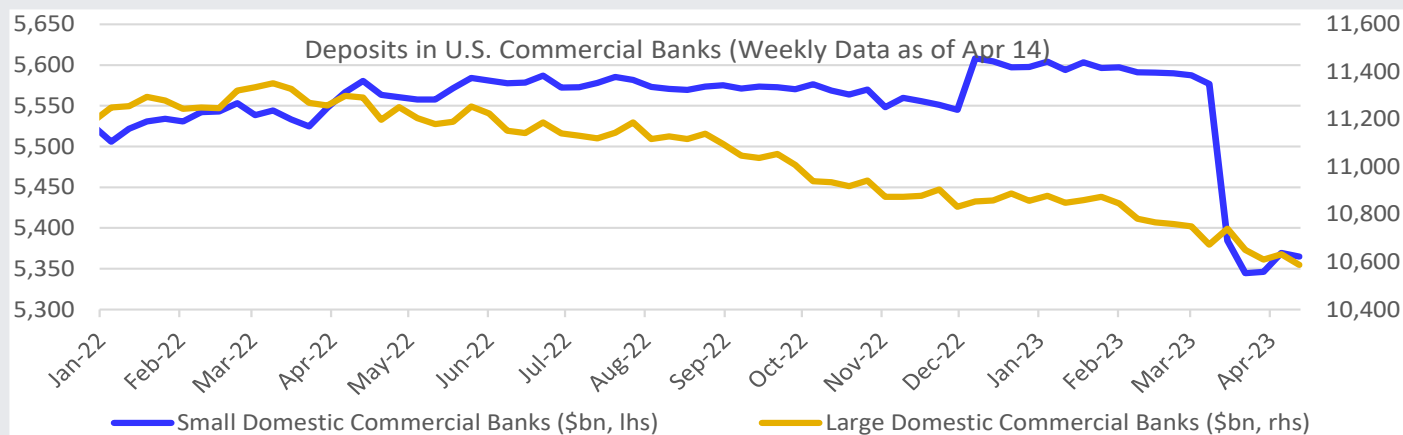
Source: BLS, Haver, DWS Investment GmbH as of February 2023.

CPI m/m annualized



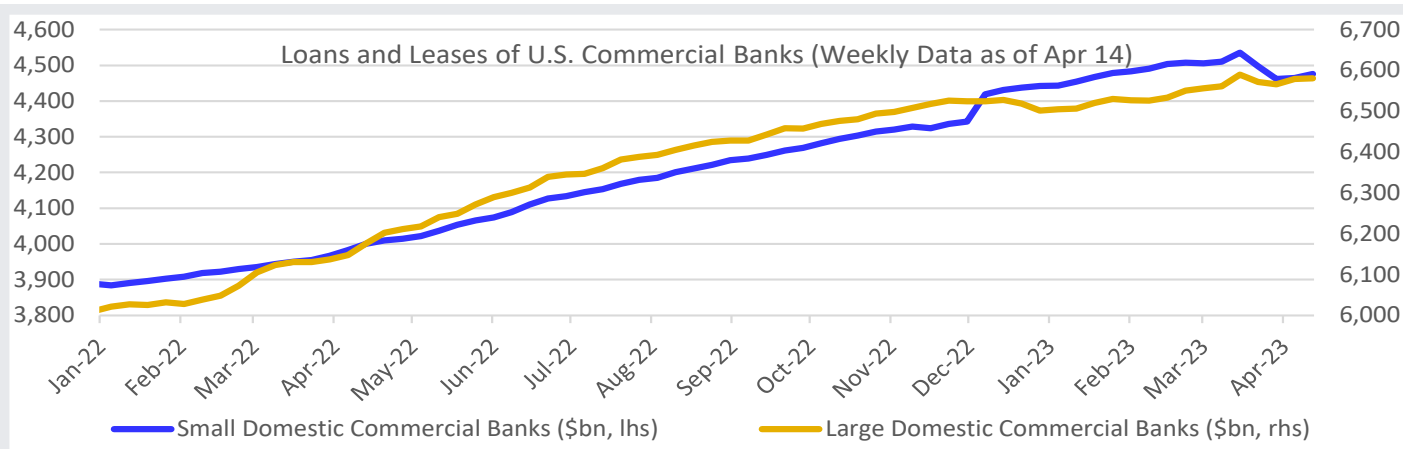
Source: BLS, Haver, DWS Investment GmbH as of February 2023.

Deposits in U.S. commercial banks (Weekly data as of Apr 14)



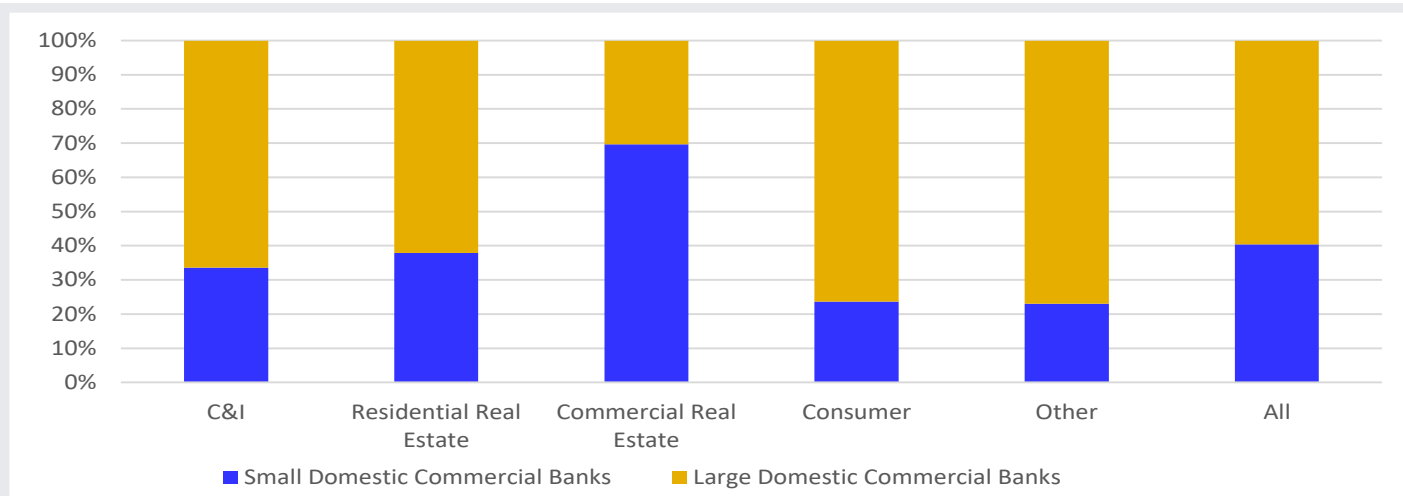
Source: FRB, Haver, DWS Investment GmbH as of 4/21/2023.

Loans of U.S. commercial banks (Weekly data as of Apr 14)



Source: FRB, Haver, DWS Investment GmbH as of 4/21/2023.

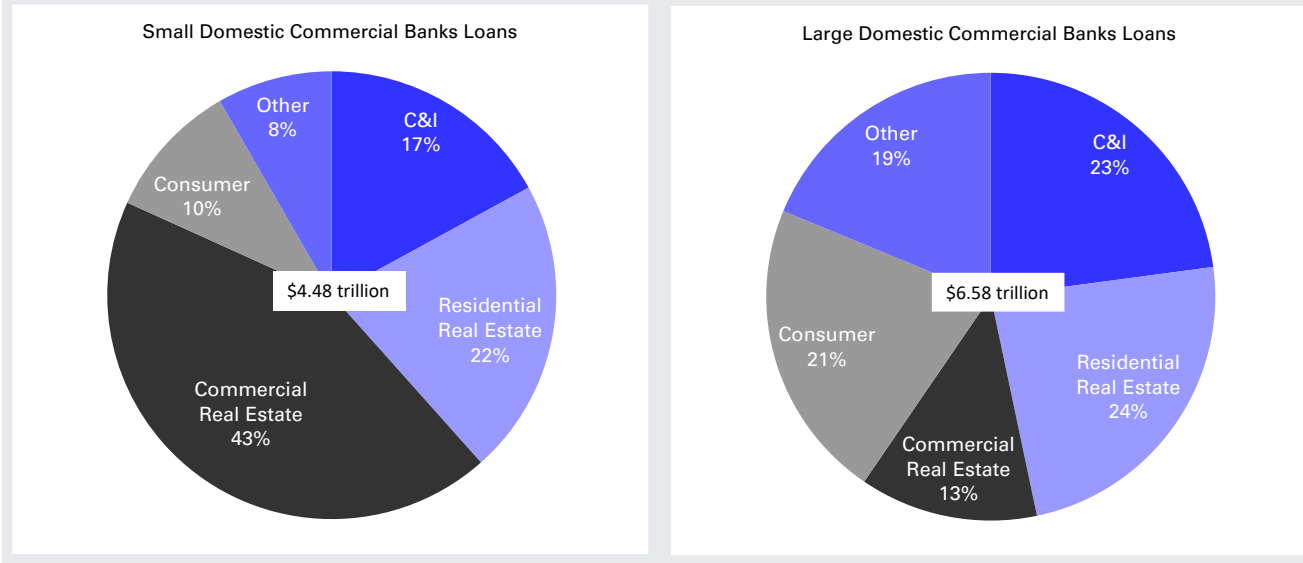
Loans by category of U.S. commercial banks



Source: FRB, Haver, DWS Investment GmbH as of 4/21/2023.

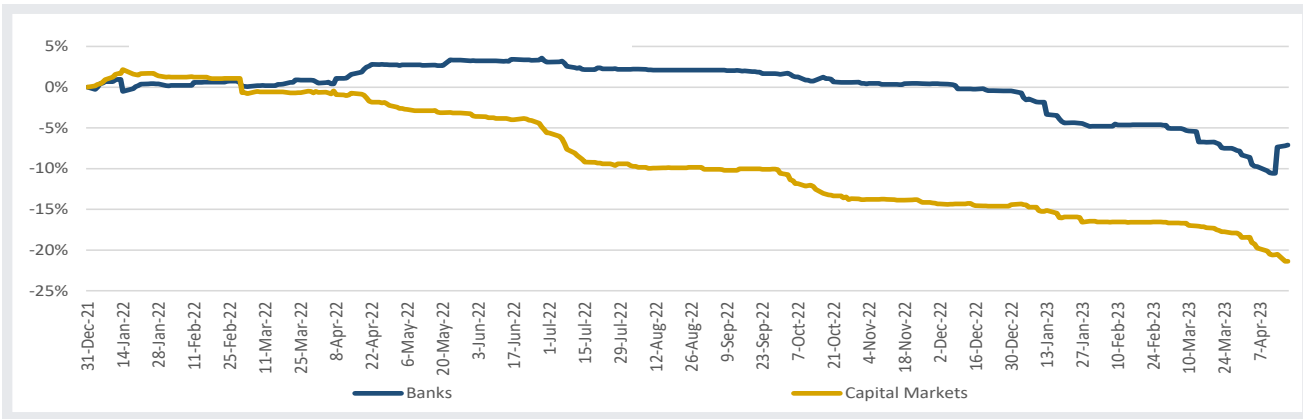
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Loans by category of U.S. commercial banks



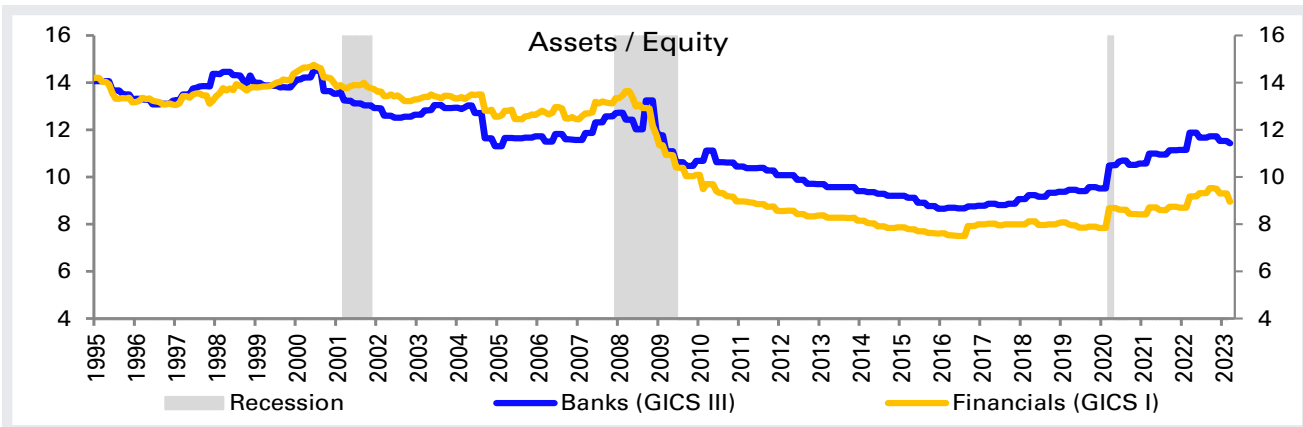
Source: FRB, Haver, DWS Investment GmbH as of 4/21/2023.

S&P 500 Banks and Capital Markets 2023 EPS revision



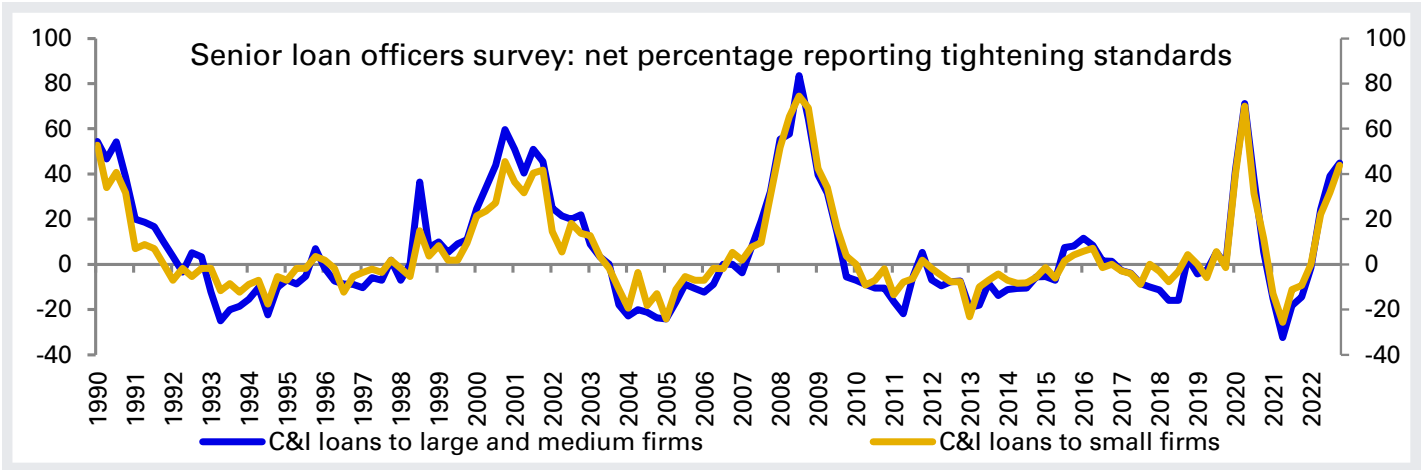
Source: IBES, Factset, DWS Investment GmbH as of 4/18/2023.

S&P 500 Banks Assets / Equity



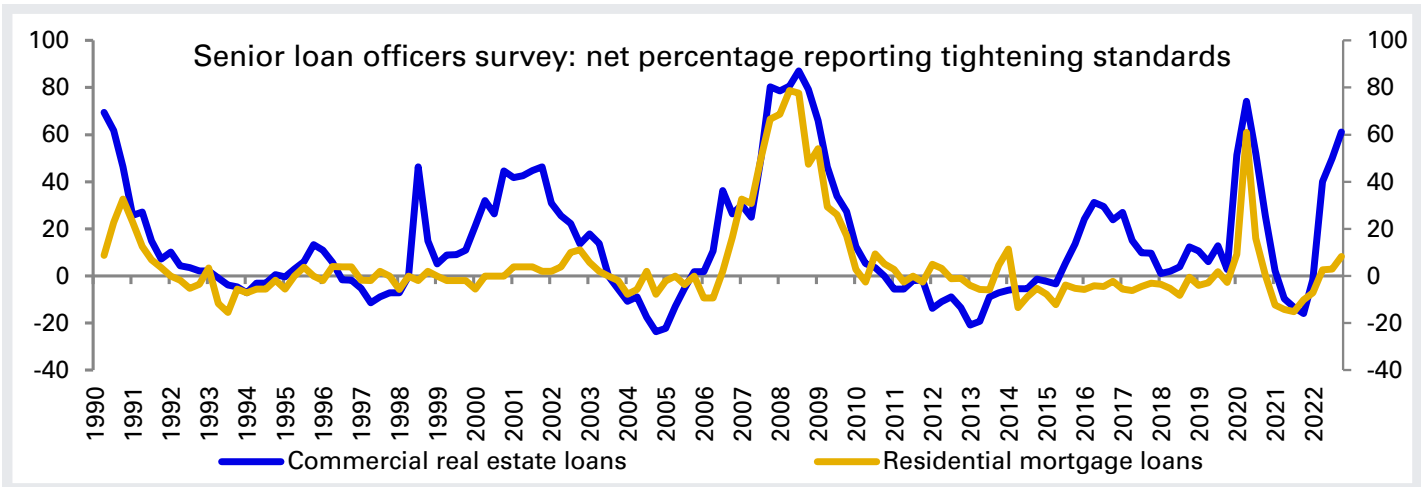
Source: IBES, Factset, DWS Investment GmbH as of 4/20/2023.

Senior loan officers survey: C&I loans



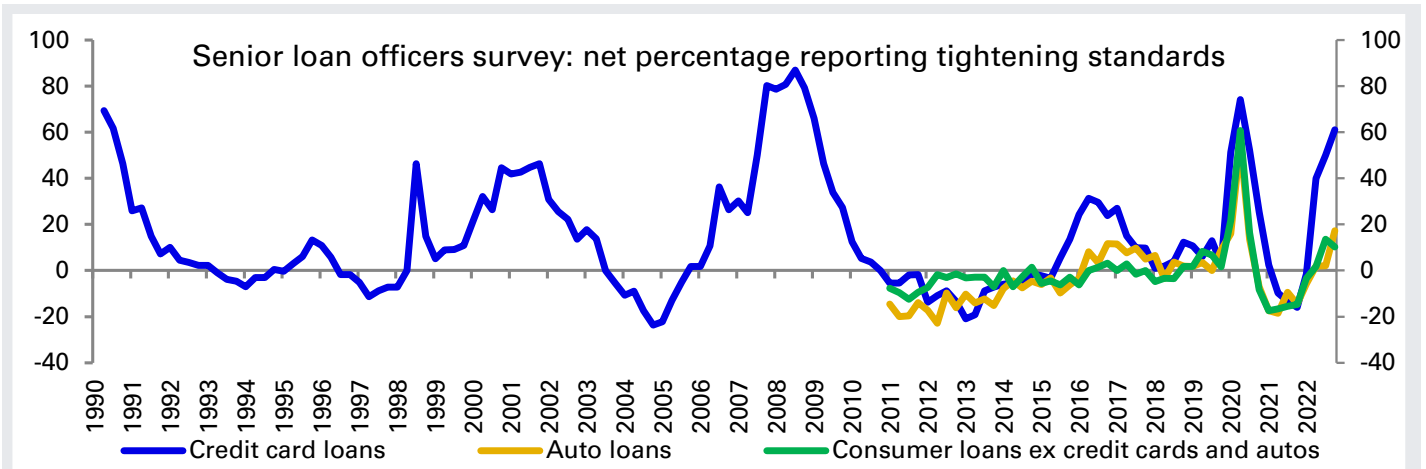
Source: FRB, Haver, DWS Investment GmbH as of 1Q2023. Past performance may not be indicative of future results.

Senior loan officers survey: real estate loans



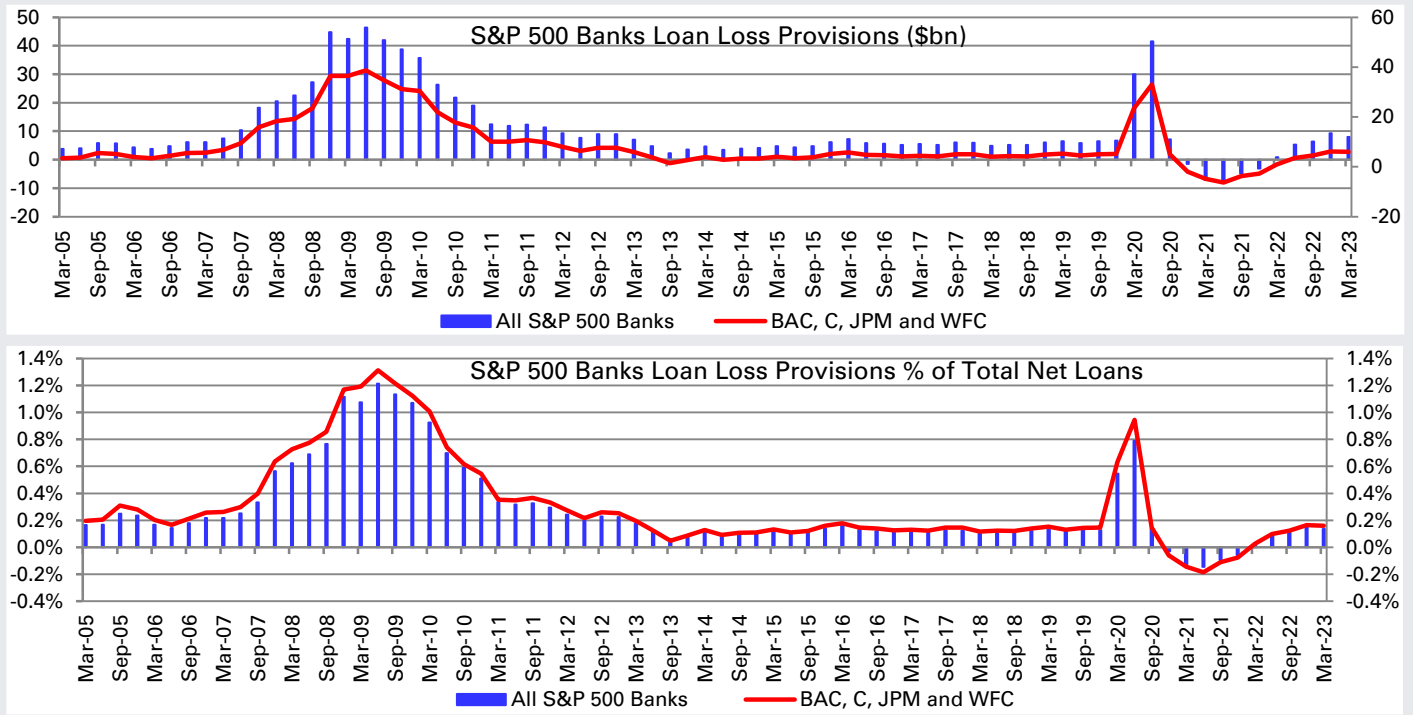
Source: FRB, Haver, DWS Investment GmbH as of 1Q2023. Past performance may not be indicative of future results.

Senior loan officers survey: consumer loans



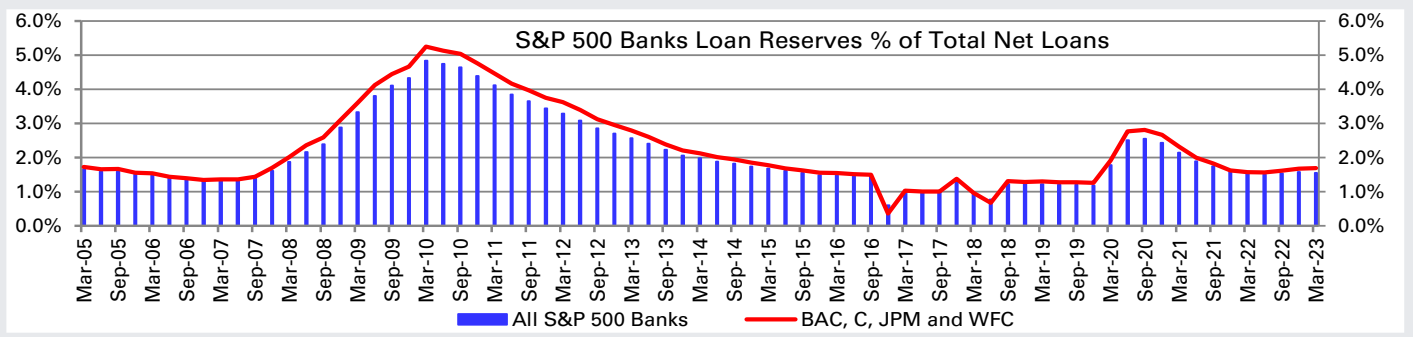
Source: FRB, Haver, DWS Investment GmbH as of 1Q2023. Past performance may not be indicative of future results.

S&P 500 Banks loan loss provisions



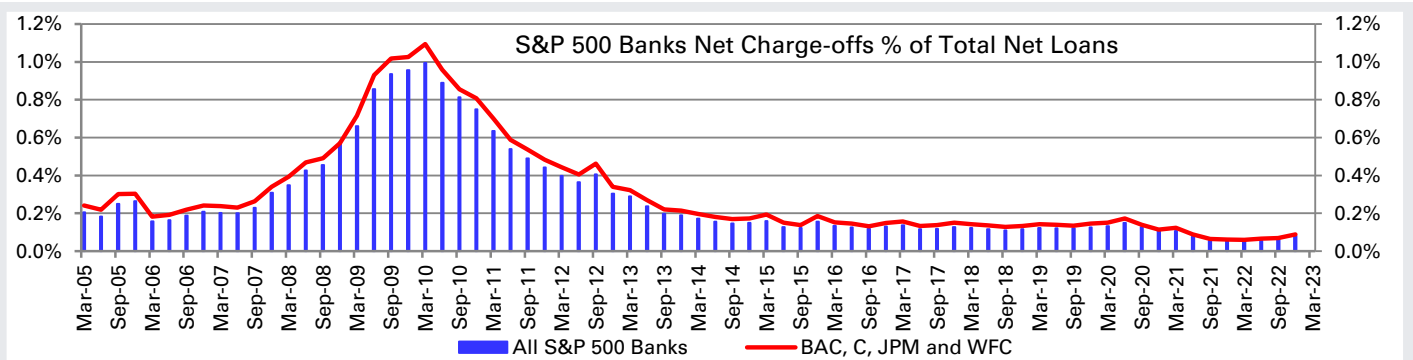
Source: Factset, DWS Investment GmbH as of 4/21/2023.

S&P 500 Banks loan reserves



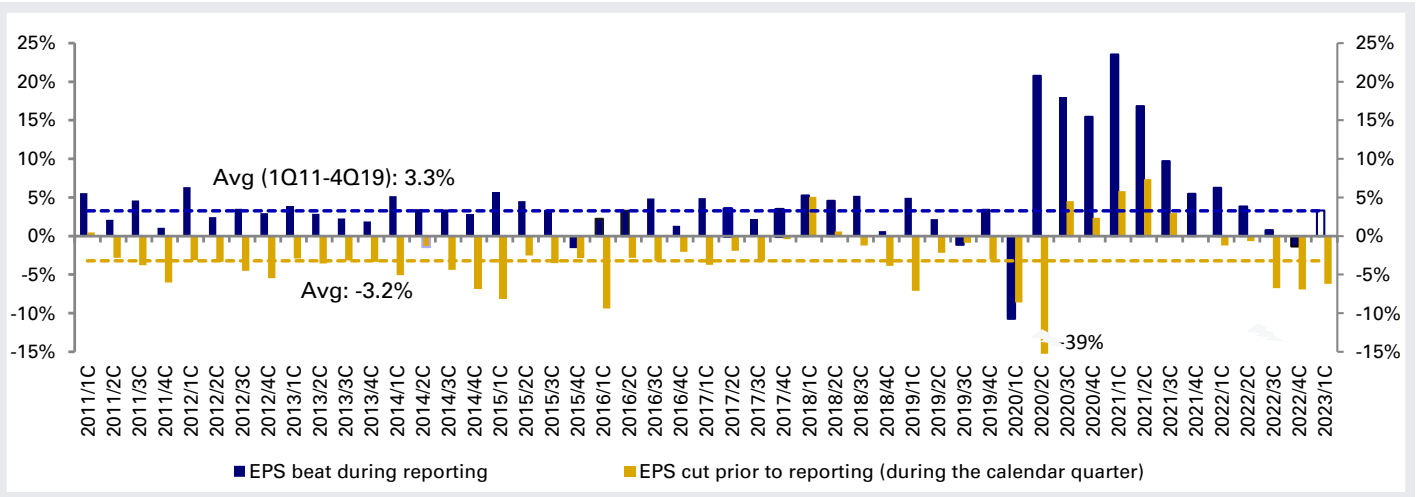
Source: Factset, DWS Investment GmbH as of 4/21/2023.

S&P 500 Banks net charge-offs



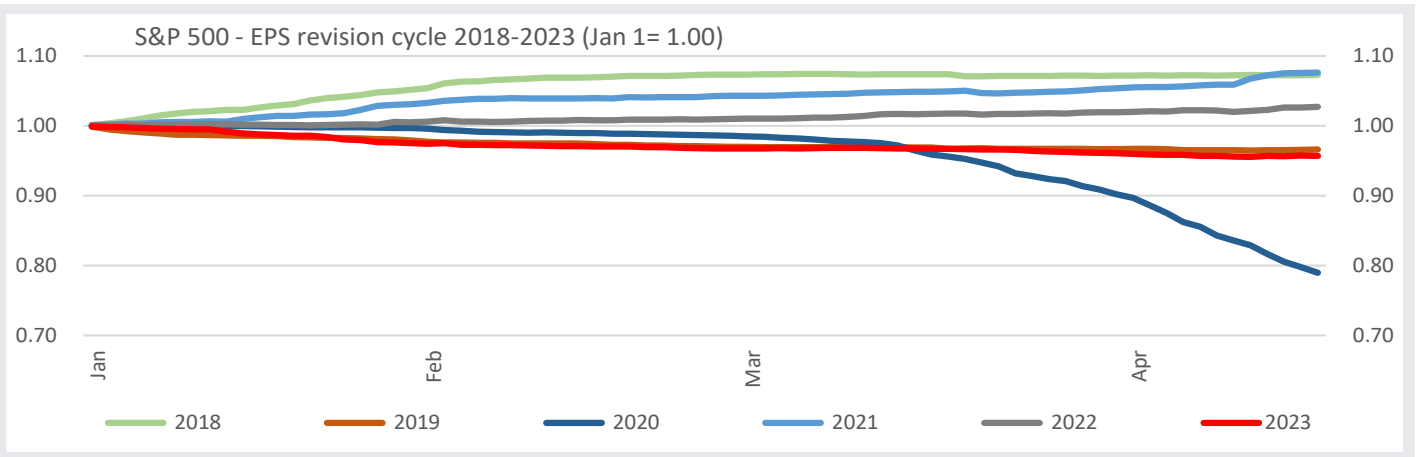
Source: Factset, DWS Investment GmbH as of 4/21/2023.

S&P 500: EPS cut during the calendar quarter vs. EPS beat during earnings season



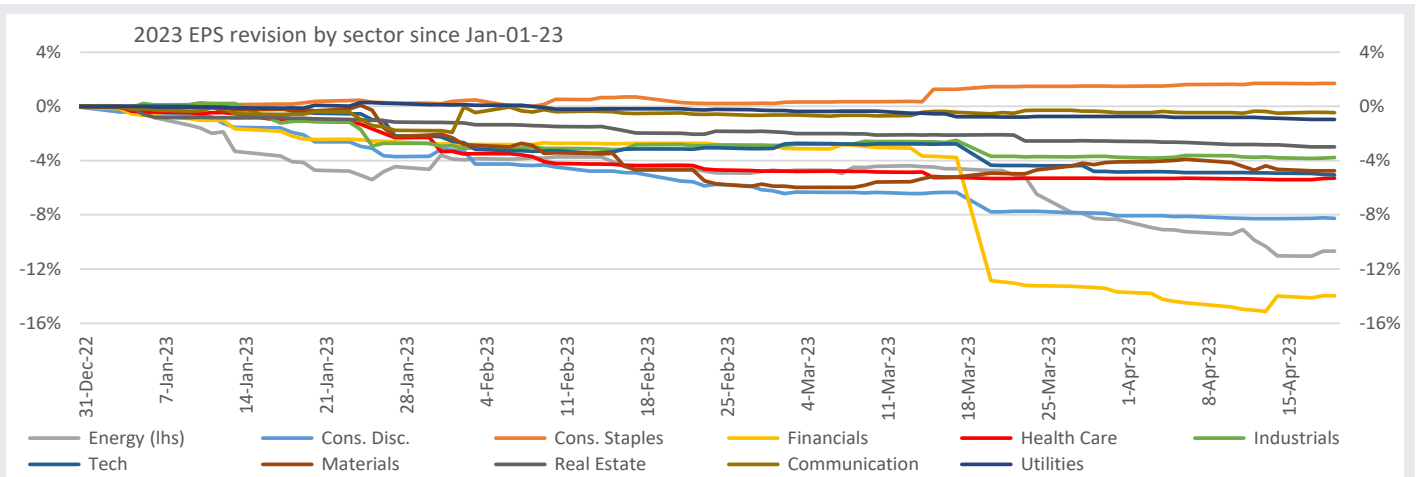
Source: Factset, DWS Investment GmbH as of 4/20/2023. Past performance may not be indicative of future results.

S&P 500 annual EPS revision



Source: Factset, IBES, DWS Investment GmbH as of 4/20/2023. Past performance may not be indicative of future results.

S&P 500 2023 EPS revision by sector



Source: Factset, IBES, DWS Investment GmbH as of 4/20/2023. Past performance may not be indicative of future results.

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S&P 500: 1Q23 earnings season summary statistics

	1Q23 Summary (Based on reported companies)										
	% of EPS reported	# Cos reported	EPS (% of co's)		EPS surprise (%)	EPS y/y (%)	Sales (% of co's)		Sales surprise (%)	Sales y/y (%)	
			% beat	% miss			% beat	% miss			
S&P 500	23.6%	83	67%	29%	3.3%	0.8%	49%	31%	1.7%	8.3%	
S&P 500 ex. Financials & Real Est	14.9%	52	83%	15%	2.9%	-8.6%	52%	33%	1.4%	6.0%	
S&P 500 ex. Energy	25.7%	81	68%	30%	3.3%	0.8%	49%	31%	1.8%	8.3%	
S&P ex. Tech	27.3%	75	67%	29%	4.8%	6.0%	51%	29%	1.9%	9.4%	
S&P ex. Energy, Financials & Real Est	16.6%	50	84%	16%	3.0%	-8.9%	52%	32%	1.5%	6.0%	
Communication Services	16.6%	3	100%	0%	3.4%	-20.0%	33%	33%	-0.3%	1.8%	
Consumer Discretionary	20.3%	11	82%	18%	18.3%	3.4%	73%	27%	4.3%	11.6%	
Consumer Staples	22.1%	8	100%	0%	6.1%	-1.2%	63%	25%	1.5%	5.7%	
Energy	2.9%	2	50%	0%	1.1%	11%	50%	50%	-5.7%	6.1%	
Financials	58.7%	29	41%	55%	3.8%	12.1%	45%	31%	2.6%	14.0%	
Health Care	26.1%	5	100%	0%	3.9%	-0.9%	100%	0%	2.7%	9.6%	
Industrials	20.3%	13	69%	31%	3.9%	50.0%	23%	38%	-0.9%	8.7%	
Information Technology	7.0%	8	75%	25%	-17.8%	-45.8%	38%	50%	-0.1%	-5.3%	
Materials	13.8%	2	100%	0%	19.9%	-31.8%	50%	50%	0.2%	-11.5%	
Real Estate	14.7%	2	50%	0%	1.3%	7.0%	50%	0%	1.3%	14.9%	
Utilities	0.0%	0									

* # Beat, # miss and weighted surprise % is based on EPS and sales estimate as of 3/31/2023 (as of 3/1/2023 for pre-season reporters)

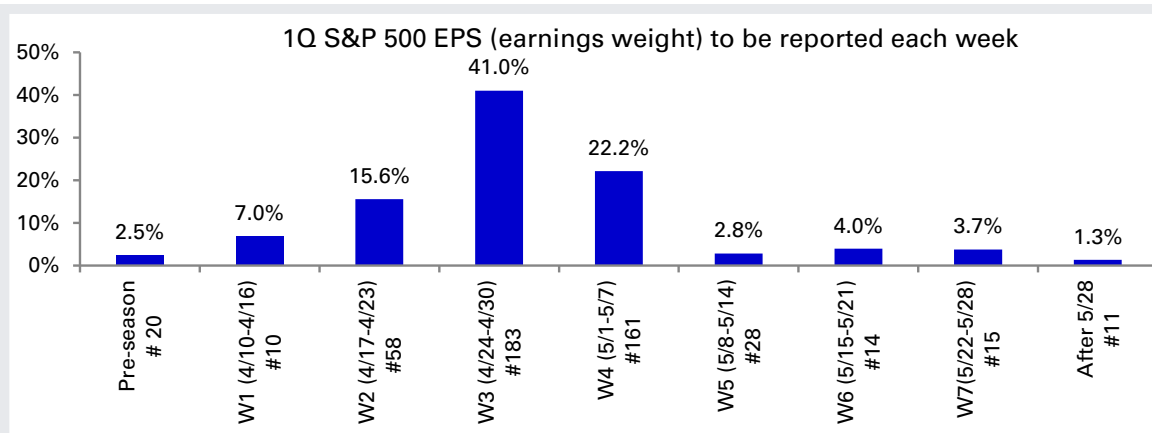
EPS is considered beat or miss when the difference between actual and estimate as of 3/31/2023 is more than \$0.01 (3/1/2023 for pre-season reporters)

Sales is considered beat or miss when the difference between actual and estimate as of 3/31/2023 is more than \$20 million (3/1/2023 for pre-season reporters)

Beats statistics elsewhere often based on estimates the day before.

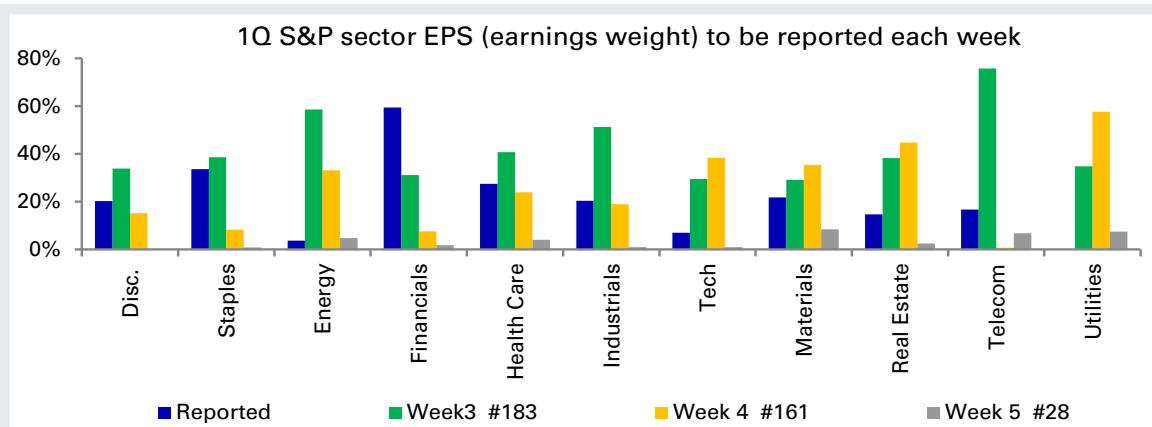
Source: Factset, DWS Investment GmbH as of 4/20/2022. Past performance may not be indicative of future results.

1Q23 S&P 500 earnings to be reported each week



Source: Factset, DWS Investment GmbH as of 4/20/2023. Past performance may not be indicative of future results.

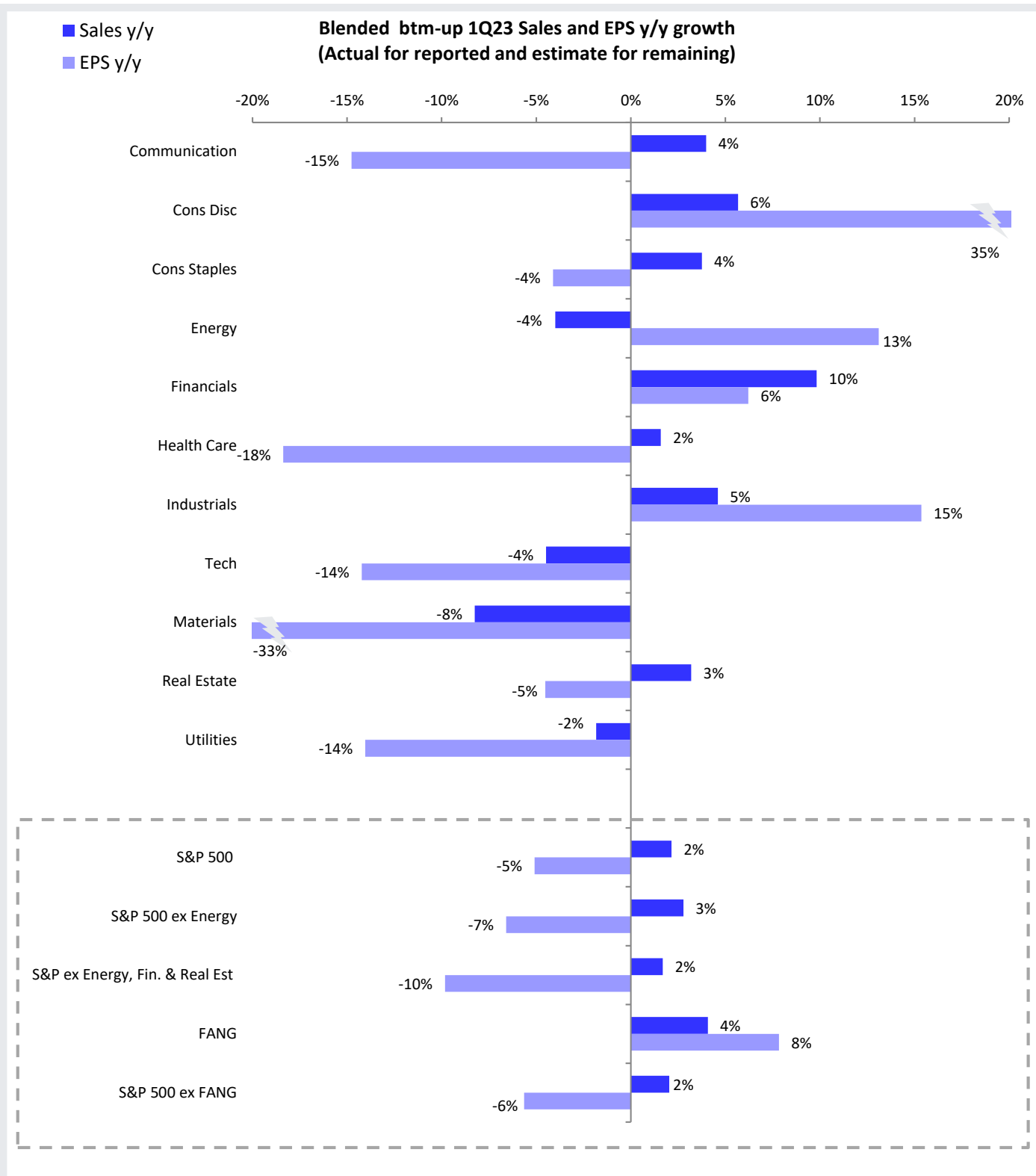
1Q23 S&P 500 earnings to be reported each week by sector



Source: Factset, DWS Investment GmbH as of 4/20/2023. Past performance may not be indicative of future results.

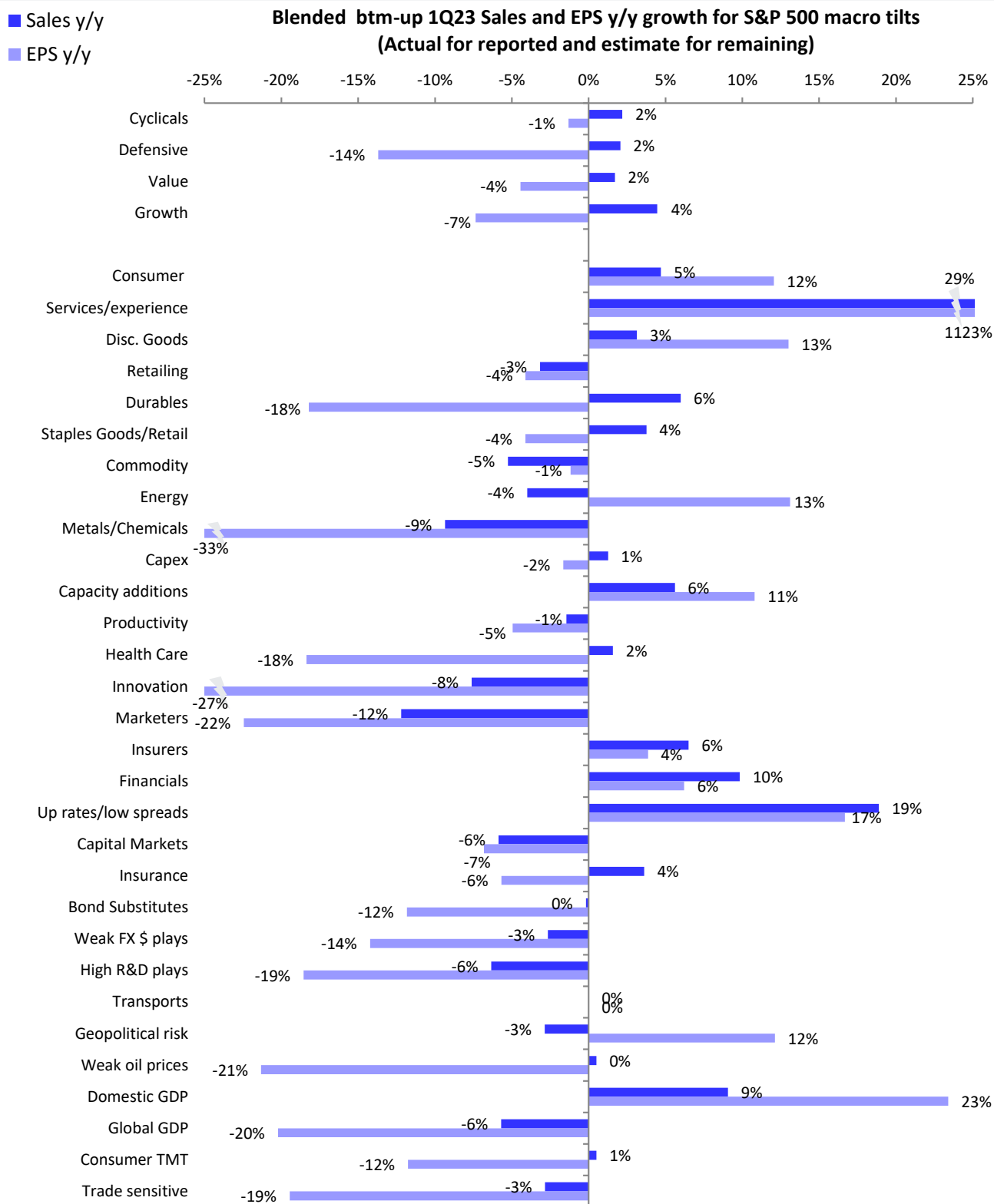
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S&P 500: Blended bottom-up 1Q23 Sales and EPS y/y growth by sector: 1Q23 vs. 1Q22



Source: Factset, DWS Investment GmbH as of 4/20/2022. Past performance may not be indicative of future results.

S&P 500: Blended bottom-up 1Q23 Sales and EPS y/y growth for macro tilts: 1Q23 vs. 1Q22



Source: Factset, DWS Investment GmbH as of 4/20/2023. Past performance may not be indicative of future results.

DWS Investment GmbH S&P 500 Annual EPS Outlook

	2014A	2015A	2016A	2017A	2018A	2019A	2020A	2021A	2022A	y/y	Bottom-up Consensus (IBES)				DWS View				Normalized 2023		
											2023E	y/y	2024E	y/y	2023E	y/y	2024E	y/y	(\$)	% of 2023	
S&P 500 EPS (historical index)	\$118.82	\$117.46	\$118.10	\$132.00	\$161.93	\$162.93	\$139.72	\$208.12	\$218.09	4.8%											
S&P 500 EPS (current constituents)	\$116.65	\$117.27	\$117.34	\$129.30	\$155.67	\$161.41	\$144.04	\$207.87	\$219.79	4.7%	\$221.13	0.6%	\$247.35	11.9%	\$222	0.6%	\$235	6.1%	\$220	94%	
Sector (\$ bn)																					
Communication Services	67.8	78.4	91.3	99.3	124.2	130.6	135.8	188.4	148.9	-21.0%	166.0	11.5%	195.2	17.6%	167.5	12.5%	182.5	9.0%	173.4	95%	
Consumer Discretionary	59.7	70.0	78.4	82.5	97.6	95.2	70.7	114.6	110.1	-4.0%	133.8	21.5%	162.1	21.1%	132.8	20.6%	139.0	4.7%	142.4	102%	
Consumer Staples	83.6	82.4	85.1	89.4	96.4	97.4	104.8	117.2	117.0	-0.1%	121.6	3.9%	132.5	9.0%	117.0	0.0%	120.6	3.1%	120.6	100%	
Energy	94.6	39.6	10.4	37.1	69.8	49.2	-6.7	79.1	201.3	154.6%	157.1	-22.0%	157.8	0.4%	170.5	-15.3%	179.2	5.1%	151.2	84%	
Financials	184.4	200.6	203.1	212.5	262.6	276.5	224.7	362.3	305.0	-15.8%	337.6	10.7%	369.5	9.4%	327.5	7.4%	353.5	7.9%	349.4	99%	
Health Care	137.2	152.1	157.1	171.4	188.2	206.1	226.2	293.3	308.0	5.0%	278.8	-9.5%	307.2	10.2%	293.5	-4.7%	310.7	5.9%	308.7	99%	
Industrials	100.5	104.0	98.3	107.2	130.5	125.0	66.4	111.5	140.0	25.5%	156.3	11.6%	179.1	14.6%	151.8	8.4%	158.0	4.1%	159.6	101%	
Information Technology	162.5	168.1	176.4	207.8	239.6	233.4	264.7	345.7	353.0	2.1%	351.1	-0.6%	408.6	16.4%	343.5	-2.7%	369.9	7.7%	369.9	100%	
Materials	24.8	23.7	22.8	28.7	36.1	34.1	32.4	61.3	64.0	4.4%	53.4	-16.5%	56.7	6.1%	53.5	-16.4%	55.3	3.4%	54.5	99%	
Real Estate	22.3	25.5	28.0	31.5	35.1	36.5	36.4	43.5	50.5	16.2%	50.2	-0.6%	53.4	6.4%	49.9	-1.2%	51.2	2.7%	49.7	97%	
Utilities	32.6	32.8	35.3	36.7	40.5	44.5	45.9	49.0	50.4	2.8%	53.6	6.4%	57.8	7.9%	51.0	1.3%	52.7	3.2%	52.7	100%	
S&P 500	969.9	977.2	986.2	1104.1	1320.6	1328.6	1201.3	1765.9	1848.2	4.7%	1859.5	0.6%	2080.0	11.9%	1858.5	0.6%	1972.5	6.1%	1932.0	98%	
S&P ex. Energy (\$bn)	875.3	937.6	975.8	1067.0	1250.7	1279.4	1208.0	1686.9	1646.9	-2.4%	1702.4	3.4%	1922.2	12.9%	1688.0	2.5%	1793.3	6.2%	1780.9	99%	
S&P ex. Tech (\$bn)	807.4	809.0	809.8	896.3	1081.0	1095.2	936.6	1420.2	1495.2	5.3%	1508.4	0.9%	1671.3	10.8%	1515.0	1.3%	1602.6	5.8%	1562.1	97%	
S&P 500 Sales/Share (historical index)	\$1,163	\$1,127	\$1,151	\$1,232	\$1,339	\$1,415	\$1,362	\$1,567	\$1,743	11.3%											
S&P 500 Non-GAAP Net Margin	10.2%	10.4%	10.3%	10.7%	12.1%	11.5%	10.3%	13.3%	12.5%												

S&P 500 EPS	Year	1Q	2Q	3Q	4Q
2019A	163	39	41	41	42
2020A	140	33	28	38	42
2021A	210	49	53	54	54
2022A	222	55	58	56	53
2023E	222	52	55	56	59

S&P 500 EPS historical constituents represents the earnings per share (EPS) of S&P 500 index constituents at the time, while S&P 500 EPS current constituents represents the earnings per share of index constituents as of the date the data was compiled 3/31/2023.

Source: Factset, DWS Investment GmbH as of 4/19/2023. Past performance may not be indicative of future results.

DWS Investment GmbH View: S&P 500 fair value by sector: Assuming a ~5.60% real cost of equity (CoE) for overall S&P 500

	Market Value (\$bn)	Current 2023 PE	2023E Earnings (\$bn)	Normal Ratio	Normal 2023E Earnings	Accounting Quality Adjustment	Fully Adjusted Earnings	Net Debt / Market Cap	Real CoE	Steady State Value	Growth Premium	2023 Start Fair Value (\$bn)	2021E Dividend Yield	2023 End Fair Value (\$bn)	PE on Normal 2023E EPS	2023 End Upside %	2023 End Upside vs. S&P 500	Tilt
Communication Services	2,848	15.6	182.5	95%	173.4	-8%	159.5	15%	5.60%	2,849	0%	2,849	1.1%	3,063	17.7	8%	12%	3.71%
Consumer Discretionary	3,480	25.0	139.0	102%	142.4	-8%	131.0	12%	5.50%	2,382	12%	2,664	1.1%	2,861	20.1	-18%	-14%	-4.63%
<i>ex. Auto & Internet Retail</i>	1,936	19.9	97.5	100%	97.5	-8%	89.7	17%	5.50%	1,631	7%	1,745	1.6%	1,866	19.1	-4%	1%	
Consumer Staples	2,539	21.1	120.6	100%	120.6	-7%	112.2	13%	5.00%	2,243	0%	2,243	2.7%	2,363	19.6	-7%	-3%	-1.16%
Energy	1,680	9.4	179.2	84%	151.2	-15%	128.5	16%	6.00%	2,141	-20%	1,713	3.0%	1,816	12.0	8%	12%	1.68%
Financials	4,638	13.1	353.5	99%	349.4	-10%	314.5		6.40%	4,914	-10%	4,422	2.2%	4,740	13.6	2%	6%	0.52%
Banks	1,147	8.5	135.0	100%	135.0	-10%	121.5		6.75%	1,800	-15%	1,530	3.6%	1,624	12.0	42%	46%	
Health Care	5,049	16.3	310.7	99%	308.7	-8%	284.0	9%	5.40%	5,260	0%	5,260	1.6%	5,617	18.2	11%	15%	5.19%
Industrials	2,999	19.0	158.0	101%	159.6	-8%	146.8	18%	5.60%	2,622	0%	2,622	1.8%	2,799	17.5	-7%	-3%	-0.36%
Information Technology	8,959	24.2	369.9	100%	369.9	-5%	351.4	2%	5.55%	6,332	10%	6,965	1.0%	7,491	20.3	-16%	-12%	-4.45%
Materials	927	16.8	55.3	99%	54.5	-10%	49.1	17%	5.80%	846	0%	846	1.8%	906	16.6	-2%	2%	-1.34%
Real Estate	860	16.8	51.2	97%	49.7	-8%	45.7	29%	5.25%	870	0%	870	3.8%	909	18.3	6%	10%	0.35%
Utilities	1,006	19.1	52.7	100%	52.7	-8%	48.4	60%	5.25%	923	0%	923	3.1%	970	18.4	-4%	1%	0.48%
S&P 500 (\$ bn)	34,986	17.7	1972.5	98%	1932.0	-8.3%	1771.1		5.62%	31,381	0.0%	31,376	1.7%	33,536	17.4	-4%	0%	
S&P 500 Index (\$/sh)	4155	17.7	235.0	94%	220.0	-8.2%	202.0	11%	5.60%	3607	0.0%	3607	1.7%	3847	17.5	-7%	0%	

	>5%		Bigger upside vs. S&P 500
	between -5% and 5%		Same upside as S&P 500
	<-5%		Smaller upside vs. S&P 500

Source: IBES, DWS Investment GmbH as of 4/19/2023. Past performance may not be indicative of future results.

S&P 500 EPS historical constituents represents the earnings per share (EPS) of S&P 500 index constituents at the time, while S&P 500 EPS current constituents represents the earnings per share of index constituents as of the date the data was compiled 3/31/2023.

The estimated 2023 year end upside is on absolute valuation basis of each sector, not on relative sector valuation basis.

DWS Investment GmbH View: S&P 500 fair value by industry (1 of 2)

	Market Value (\$bn)	Current 2023 PE	2023E Earnings (\$bn)	Normal Ratio	Normal 2023E Earnings	Accounting Quality Adjustment	Fully Adjusted Earnings	Net Debt / Market Cap	Real CoE	Steady State Value	Growth Premium	2023 Start Fair Value (\$bn)	2021E Dividend Yield	2023 End Fair Value (\$bn)	PE on Normal 2023E EPS	2023 End Upside %	2023 End Upside vs. S&P 500
CONSUMER DISCRETIONARY	3,549	25.5	139.0	102%	142.4	-8%	131	12%	5.50%	2,382	12%	2,664	1.1%	2,861	20.1	-19%	-15%
Automobile Components	40,750	15.7	2,600	105%	2,730	-8%	2,512	11%	5.75%	43,680	5%	45,864	0.4%	49,697	18.2	22%	26%
Automobiles	570,591	21.9	26,000	100%	26,000	-12%	22,880	19%	6.50%	352,000	30%	457,600	0.5%	498,869	19.2	-13%	-8%
Distributors	53,301	16.9	3,150	100%	3,150	-8%	2,898	13%	5.75%	50,400	0%	50,400	1.8%	53,895	17.1	1%	5%
Hotels Restaurants & Leisure	766,407	31.9	24,000	110%	26,400	-7%	24,552	27%	5.00%	491,040	15%	564,696	1.2%	603,310	22.9	-21%	-17%
Household Durables	133,523	11.6	11,500	95%	10,925	-15%	9,286	14%	6.50%	142,865	-15%	121,436	1.5%	131,149	12.0	-2%	2%
Broadline Retail	970,085	62.6	15,500	110%	17,050	-7%	15,857	1%	5.50%	288,300	60%	461,280	0.1%	500,233	29.3	-48%	-44%
Leisure Products	6,810	10.8	630	90%	567	-8%	522	27%	6.00%	8,694	-20%	6,955	5.3%	7,212	12.7	6%	10%
Specialty Retail	821,017	20.0	41,000	100%	41,000	-7%	38,130	13%	5.25%	726,286	0%	726,286	1.8%	773,173	18.9	-6%	-2%
Textiles Apparel & Luxury Goods	186,624	27.0	6,900	100%	6,900	-7%	6,417	1%	5.25%	122,229	10%	134,451	1.3%	143,744	20.8	-23%	-19%
CONSUMER STAPLES	2,573	21.3	120.6	100%	120.6	-7%	112	13%	5.00%	2,243	0%	2,243	2.7%	2,363	19.6	-8%	-4%
Beverages	636,585	24.5	26,000	100%	26,000	-7%	24,180	13%	4.80%	503,750	15%	579,313	2.4%	610,643	23.5	-4%	0%
Consumer Staples Distribution & Retail	699,417	21.9	32,000	100%	32,000	-6%	30,080	8%	5.00%	601,600	0%	601,600	1.5%	640,847	20.0	-8%	-4%
Food Products	410,633	18.7	22,000	100%	22,000	-8%	20,240	24%	5.25%	385,524	-5%	366,248	2.4%	387,567	17.6	-6%	-1%
Household Products	522,255	25.5	20,500	100%	20,500	-8%	18,860	9%	5.00%	377,200	10%	414,920	2.5%	437,847	21.4	-16%	-12%
Personal Care Products	60,685	37.9	1,600	100%	1,600	-8%	1,472	2%	4.75%	30,989	20%	37,187	1.0%	39,695	24.8	-35%	-30%
Tobacco	243,604	13.2	18,500	100%	18,500	-8%	17,020	20%	5.00%	340,400	-30%	238,280	6.0%	243,013	13.1	0%	4%
Energy	1,689	9.4	179.2	84%	151.2	-15%	128	16%	6.00%	2,141	-20%	1,713	3.0%	1,816	12.0	8%	12%
Energy Equipment & Services	129,228	14.0	9,200	100%	9,200	-8%	8,464	20%	6.00%	141,067	3%	145,299	2.2%	155,219	16.9	20%	24%
Oil Gas & Consumable Fuels	1,560,066	9.2	170,000	84%	141,950	-15%	120,658	16%	6.00%	2,010,958	-22%	1,568,548	3.6%	1,653,970	11.7	6%	10%
FINANCIALS	4,747	13.4	353.5	99%	349.4	-10%	314	0%	6.40%	4,914	-10%	4,422	2.2%	4,740	13.6	0%	4%
Capital Markets	981,043	15.8	62,000	95%	58,900	-10%	53,010	2%	6.50%	815,538	-5%	774,762	2.3%	830,447	14.1	-15%	-11%
Banks	1,176,335	8.7	135,000	100%	135,000	-10%	121,500	N/A	6.75%	1,800,000	-15%	1,530,000	3.4%	1,626,907	12.1	38%	42%
Consumer Finance	196,338	10.1	19,500	95%	18,525	-15%	15,746	N/A	7.00%	224,946	-10%	202,452	1.7%	219,162	11.8	12%	16%
Financial Services	1,579,393	21.3	74,000	100%	74,000	-7%	68,820	3%	5.50%	1,251,273	0%	1,251,273	0.4%	1,352,501	18.3	-14%	-10%
Insurance	814,133	12.9	63,000	100%	63,000	-8%	57,960	N/A	6.00%	966,000	-10%	869,400	1.7%	933,032	14.8	15%	19%
Health Care	5,104	16.4	310.7	99%	308.7	-8%	284	9%	5.40%	5,260	0%	5,260	1.6%	5,617	18.2	10%	14%
Biotechnology	806,258	14.7	55,000	100%	55,000	-8%	50,600	14%	5.50%	920,000	-5%	874,000	2.3%	927,820	16.9	15%	19%
Health Care Equipment & Supplies	1,058,924	21.2	50,000	100%	50,000	-8%	46,000	9%	5.25%	876,190	20%	1,051,429	1.1%	1,127,119	22.5	6%	11%
Health Care Providers & Services	1,107,768	14.2	78,000	98%	76,440	-8%	70,325	8%	5.25%	1,339,520	-5%	1,272,544	1.3%	1,360,951	17.8	23%	27%
Life Sciences Tools & Services	643,839	29.9	21,500	98%	21,070	-8%	19,384	10%	5.50%	352,444	20%	422,932	0.3%	457,792	21.7	-29%	-25%
Pharmaceuticals	1,486,827	14.2	105,000	100%	105,000	-8%	96,600	8%	5.50%	1,756,364	-8%	1,615,855	2.6%	1,710,799	16.3	15%	19%
INDUSTRIALS	3,060	19.4	158.0	101%	159.6	-8%	147	18%	5.60%	2,622	0%	2,622	1.8%	2,799	17.5	-9%	-4%
Aerospace & Defense	638,012	22.0	29,000	103%	29,870	-8%	27,480	22%	5.25%	523,436	10%	575,780	1.4%	614,972	20.6	-4%	1%
Air Freight & Logistics	232,885	17.3	13,500	100%	13,500	-8%	12,420	8%	6.00%	207,000	-10%	186,300	2.8%	197,908	14.7	-15%	-11%
Passenger Airlines	71,221	7.5	9,500	115%	10,925	-15%	9,286	69%	8.00%	116,078	0%	116,078	0.6%	128,141	11.7	80%	84%
Building Products	154,267	17.1	9,000	100%	9,000	-8%	8,280	15%	5.75%	144,000	0%	144,000	1.9%	153,915	17.1	0%	4%
Commercial Services & Supplies	174,453	34.9	5,000	100%	5,000	-8%	4,600	12%	5.25%	87,619	0%	87,619	1.1%	93,865	18.8	-46%	-42%
Construction & Engineering	23,362	22.2	1,050	105%	1,103	-8%	1,014	18%	5.50%	18,442	0%	18,442	0.2%	19,974	18.1	-15%	-10%

Source: IBES, DWS Investment GmbH as of 4/19/2023. Past performance may not be indicative of future results. The estimated 2023 year end upside is on absolute valuation basis of each sector, not on relative sector valuation basis.

DWS Investment GmbH View: S&P 500 fair value by industry (2 of 2)

	Market Value (\$bn)	Current 2023 PE	2023E Earnings (\$bn)	Normal Ratio	Normal 2023E Earnings	Accounting Quality Adjustment	Fully Adjusted Earnings	Net Debt / Market Cap	Real CoE	Steady State Value	Growth Premium	2023 Start Fair Value (\$bn)	2021E Dividend Yield	2023 End Fair Value (\$bn)	PE on Normal 2023E EPS	2023 End Upside %	2023 End Upside vs. S&P 500
Electrical Equipment	186,380	19.6	9,500	103%	9,785	-8%	9,002	11%	5.50%	163,676	5%	171,860	1.8%	183,420	18.7	-2%	3%
Industrial Conglomerates	306,761	22.7	13,500	103%	13,905	-8%	12,793	11%	5.50%	232,593	0%	232,593	2.1%	247,501	17.8	-19%	-15%
Machinery	618,690	17.7	35,000	97%	33,950	-8%	31,234	21%	5.50%	567,891	0%	567,891	1.6%	607,093	17.9	-2%	2%
Professional Services	263,251	25.8	10,200	100%	10,200	-8%	9,384	19%	5.25%	178,743	0%	178,743	1.7%	190,528	18.7	-28%	-23%
Ground Transportation	301,066	17.2	17,500	98%	17,150	-8%	15,778	18%	5.50%	286,873	0%	286,873	1.9%	305,925	17.8	2%	6%
Trading Companies & Distributors	89,255	17.2	5,200	100%	5,200	-8%	4,784	14%	5.50%	86,982	0%	86,982	1.7%	92,902	17.9	4%	8%
INFORMATION TECHNOLOGY	9,050	24.5	369.9	100%	369.9	-5%	351	2%	5.55%	6,332	10%	6,965	1.0%	7,491	20.3	-17%	-13%
Communications Equipment	310,348	14.2	21,800	100%	21,800	-7%	20,274	-3%	6.00%	337,900	-5%	321,005	2.2%	342,678	15.7	10%	15%
Technology Hardware Storage & Periphe	2,702,710	25.0	108,000	100%	108,000	-5%	102,600	3%	5.50%	1,865,455	5%	1,958,727	0.6%	2,113,489	19.6	-22%	-18%
Electronic Equipment Instruments & Com	211,946	20.0	10,600	100%	10,600	-7%	9,858	11%	6.00%	164,300	0%	164,300	1.1%	177,258	16.7	-16%	-12%
IT Services	406,140	17.3	23,500	100%	23,500	-5%	22,325	7%	5.50%	405,909	5%	426,205	2.3%	452,671	19.3	11%	16%
Semiconductors & Semiconductor Equipr	2,129,637	24.2	88,000	100%	88,000	-7%	81,840	2%	6.00%	1,364,000	10%	1,500,400	1.2%	1,617,485	18.4	-24%	-20%
Software	3,289,656	27.9	118,000	100%	118,000	-5%	112,100	0%	5.25%	2,135,238	20%	2,562,286	0.7%	2,754,863	23.3	-16%	-12%
MATERIALS	954	17.3	55.3	99%	54.5	-10%	49	17%	5.80%	846	0%	846	1.8%	906	16.6	-5%	-1%
Chemicals	652,422	17.2	38,000	100%	38,000	-10%	34,200	15%	5.75%	594,783	3%	612,626	1.9%	654,448	17.2	0%	4%
Construction Materials	45,285	28.3	1,600	95%	1,520	-10%	1,368	19%	6.00%	22,800	0%	22,800	0.9%	24,653	16.2	-46%	-41%
Containers & Packaging	92,672	13.8	6,700	98%	6,566	-10%	5,909	36%	5.75%	102,772	-10%	92,495	3.0%	97,856	14.9	6%	10%
Metals & Mining	163,737	18.2	9,000	94%	8,460	-10%	7,614	5%	6.00%	126,900	-5%	120,555	1.8%	129,288	15.3	-21%	-17%
REAL ESTATE	819	16.0	51.2	97%	49.7	-8%	46	29%	5.25%	870	0%	870	3.8%	909	18.3	11%	15%
Health Care REITs	60,757	16.0	3,800	97%	3,686	-8%	3,391	50%	5.25%	64,593	0%	64,593	4.2%	67,207	18.2	11%	15%
Hotel & Resort REITs	11,663	9.1	1,275	97%	1,237	-8%	1,138	31%	5.25%	21,673	0%	21,673	2.9%	22,829	18.5	96%	100%
Industrial REITs	95,300	21.2	4,500	97%	4,365	-8%	4,016	21%	5.25%	76,491	0%	76,491	3.4%	80,193	18.4	-16%	-12%
Office REITs	25,238	10.5	2,400	97%	2,328	-8%	2,142	76%	5.25%	40,795	0%	40,795	5.3%	41,985	18.0	66%	71%
Residential REITs	118,836	16.1	7,400	97%	7,178	-8%	6,604	34%	5.25%	125,786	0%	125,786	3.9%	131,208	18.3	10%	15%
Retail REITs	88,007	10.4	8,500	97%	8,245	-8%	7,585	52%	5.25%	144,484	0%	144,484	6.4%	147,217	17.9	67%	71%
Specialized REITs	395,071	18.4	21,500	97%	20,855	-8%	19,187	31%	5.25%	365,459	0%	365,459	3.6%	382,505	18.3	-3%	1%
Real Estate Management & Development	24,293	13.1	1,850	95%	1,758	-8%	1,617	4%	5.25%	30,798	0%	30,798	-	33,339	19.0	37%	41%
COMMUNICATION SERVICES	2,888	15.8	182.5	95%	173.4	-8%	160	15%	5.60%	2,849	0%	2,849	1.1%	3,063	17.7	6%	10%
Diversified Telecommunication Services	305,673	8.3	37,000	90%	33,300	-15%	28,305	105%	5.50%	514,636	-30%	360,245	6.1%	368,792	11.1	21%	25%
Entertainment	451,897	20.5	22,000	100%	22,000	-5%	20,900	9%	5.50%	380,000	25%	475,000	0.1%	514,817	23.4	14%	18%
Interactive Media & Services	1,749,781	18.6	94,000	97%	91,180	-5%	86,621	-8%	5.50%	1,574,927	10.0%	1,732,420	0.0%	1,879,676	20.6	7%	12%
Media	291,623	11.3	25,800	90%	23,220	-12%	20,434	60%	6.00%	340,560	-25%	255,420	2.3%	272,531	11.7	-7%	-2%
Wireless Telecommunication Services	88,598	23.9	3,700	100%	3,700	-5%	3,515	42%	5.25%	66,952	10%	73,648	0.0%	79,724	21.5	-10%	-6%
UTILITIES	998	18.9	52.7	100%	52.7	-8%	48	60%	5.25%	923	0%	923	3.1%	970	18.4	-3%	1%
Electric Utilities	652,994	19.5	33,500	100%	33,500	-8%	30,820	60%	5.25%	587,048	5%	616,400	3.2%	647,504	19.3	-1%	3%
Gas Utilities	15,218	17.9	850	100%	850	-8%	782	46%	5.25%	14,895	0%	14,895	2.8%	15,705	18.5	3%	7%
Independent Power and Renewable Elect	16,616	11.9	1,400	100%	1,400	-15%	1,190	113%	7.00%	17,000	0%	17,000	2.7%	18,245	13.0	10%	14%
Multi-Utilities	284,014	17.8	16,000	100%	16,000	-8%	14,720	59%	5.25%	280,381	-5%	266,362	3.5%	279,042	17.4	-2%	2%
Water Utilities	28,754	31.9	900	100%	900	-5%	855	38%	4.25%	20,118	0%	20,118	1.8%	21,220	23.6	-26%	-22%

Source: IBES, DWS Investment GmbH as of 4/19/2023. Past performance may not be indicative of future results. The estimated 2023 year end upside is on absolute valuation basis of each sector, not on relative sector valuation basis.

S&P 500 industry monitor (1 of 2)

Sector	Industry	PE on 2022 EPS	PE on 2023 Consensus EPS	2023 Consensus EPS Growth	2024 Consensus EPS Growth	2023 EPS 3m Revision	3m Total Return Momentum	2023 End Upside (Intrinsic Valuation)	Combined Signal
Consumer Discretionary		29.7	21.0	16.6%	21.4%	-6.6%	12.5%	-18.5%	1
	Automobile Components	23.3	13.5	32.6%	30.3%	-4.5%	17.5%	18.0%	1
	Automobiles	23.9	20.7	-2.6%	18.7%	-15.2%	48.0%	-22.7%	0
	Household Durables	7.2	10.2	-33.9%	6.9%	-4.4%	9.1%	1.6%	0
	Leisure Products	12.0	10.4	1.1%	13.4%	-16.2%	-13.6%	3.6%	-1
	Textiles Apparel & Luxury Goods	26.8	22.0	2.4%	19.1%	3.5%	2.5%	-21.4%	0
	Hotels Restaurants & Leisure	77.5	20.1	207.4%	25.5%	0.1%	9.8%	-19.2%	1
	Distributors	17.4	15.9	1.2%	8.0%	0.1%	0.2%	0.2%	0
	Broadline Retail	88.4	36.9	43.7%	66.8%	-14.1%	18.1%	-48.0%	1
	Specialty Retail	18.0	16.4	1.7%	8.1%	-4.2%	-6.6%	-4.0%	0
Consumer Staples		21.3	18.7	4.5%	8.8%	-0.5%	-0.7%	-5.6%	0
	Consumer Staples Distribution & Retail	22.7	19.1	6.9%	10.9%	-4.1%	2.5%	-8.1%	0
	Food Products	16.5	16.4	-4.5%	5.4%	-1.0%	-1.0%	-4.4%	0
	Beverages	25.9	22.0	7.9%	8.9%	0.0%	-1.3%	-2.6%	0
	Tobacco	12.8	11.2	6.6%	7.2%	6.3%	-3.7%	3.8%	0
	Household Products	26.0	22.2	7.0%	9.4%	-0.6%	-2.6%	-14.7%	0
	Personal Care Products	36.5	30.5	-8.1%	30.4%	-0.8%	-1.9%	-31.9%	0
Energy		8.7	9.8	-9.9%	-1.8%	-7.3%	-4.8%	12.7%	-1
	Energy Equipment & Services	24.8	11.8	70.1%	24.1%	0.7%	-9.4%	28.6%	1
	Oil Gas & Consumable Fuels	8.2	9.7	-12.2%	-3.2%	-7.7%	-4.4%	10.3%	-1
Financials		14.2	11.6	9.6%	11.5%	-2.3%	-4.0%	6.1%	0
	Banks	8.9	7.8	6.7%	7.4%	-4.5%	-10.5%	47.6%	0
	Financial Services	23.1	17.9	12.7%	14.4%	0.9%	2.2%	-11.5%	1
	Consumer Finance	8.4	8.9	-12.4%	7.5%	-1.9%	5.6%	14.2%	0
	Capital Markets	16.4	13.1	9.2%	14.2%	-3.4%	-4.3%	-13.7%	0
	Insurance	15.6	11.0	22.9%	15.0%	0.1%	-6.7%	18.7%	1
Health Care		15.6	15.6	-9.4%	10.2%	-4.8%	-6.1%	14.9%	-1
	Health Care Providers & Services	15.3	12.7	7.6%	11.3%	-0.2%	-11.9%	25.2%	0
	Health Care Equipment & Supplies	25.1	22.5	0.5%	11.2%	2.6%	1.5%	13.6%	0
	Life Sciences Tools & Services	24.7	22.6	-4.0%	13.5%	-2.1%	-2.6%	-27.9%	0
	Biotechnology	12.4	15.7	-23.7%	3.7%	-8.3%	-1.9%	16.2%	-1
	Pharmaceuticals	12.3	13.2	-16.2%	11.4%	-9.5%	-9.9%	19.7%	-1
Industrials		22.4	16.6	18.2%	14.3%	-2.4%	1.3%	-6.8%	0
	Aerospace & Defense	44.1	19.1	87.4%	23.6%	-6.3%	-1.2%	-0.8%	0
	Building Products	20.5	16.3	13.1%	11.3%	1.1%	3.5%	-2.5%	1
	Trading Companies & Distributors	19.6	14.8	23.3%	7.9%	9.0%	13.6%	1.5%	1
	Electrical Equipment	21.3	19.2	0.0%	10.6%	0.6%	1.2%	-5.6%	0
	Construction & Engineering	26.6	20.5	13.8%	13.8%	1.1%	16.0%	-14.8%	1
	Industrial Conglomerates	20.3	17.7	-8.1%	24.6%	-21.9%	4.9%	-16.9%	-1

Source: Factset, DWS Investment GmbH as of 4/19/2023. Past performance may not be indicative of future results.

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S&P 500 industry monitor (2 of 2)

Sector	Industry	PE on 2022 EPS	PE on 2023 Consensus EPS	2023 Consensus EPS Growth	2024 Consensus EPS Growth	2023 EPS 3m Revision	3m Total Return Momentum	2023 End Upside (Intrinsic Valuation)	Combined Signal
	Machinery	19.0	15.2	16.6%	7.3%	3.4%	0.3%	-4.7%	1
	Commercial Services & Supplies	31.9	25.7	10.1%	12.9%	0.7%	4.1%	-45.6%	1
	Professional Services	26.8	22.3	6.2%	13.1%	-3.0%	-3.9%	-29.1%	0
	Air Freight & Logistics	13.6	14.8	-16.8%	10.6%	-6.4%	12.7%	-14.4%	-1
	Passenger Airlines	24.6	5.4	254.8%	28.6%	15.0%	3.1%	81.9%	1
	Ground Transportation	17.5	15.8	1.2%	9.3%	-2.1%	-4.8%	2.3%	0
Information Technology		24.4	21.5	-2.0%	15.9%	-3.7%	20.8%	-17.1%	0
	IT Services	19.2	16.6	5.4%	9.6%	-2.1%	-1.3%	8.9%	0
	Software	31.2	24.0	12.5%	15.5%	-0.5%	16.9%	-16.2%	1
	Communications Equipment	17.8	14.2	16.1%	7.9%	4.6%	10.5%	3.4%	1
	Technology Hardware Storage & Peripherals	24.4	22.5	-3.0%	11.8%	-4.0%	23.5%	-20.6%	0
	Electronic Equipment Instruments & Components	20.1	17.7	1.3%	12.2%	-3.2%	5.0%	-21.7%	0
	Semiconductors & Semiconductor Equipment	20.6	20.5	-19.8%	25.3%	-9.5%	32.9%	-26.5%	-1
Materials		13.4	15.6	-20.2%	7.5%	-5.3%	1.2%	-1.3%	-1
	Chemicals	15.4	15.7	-12.1%	10.9%	-8.9%	0.6%	2.1%	-1
	Construction Materials	30.1	21.8	16.5%	18.6%	-6.4%	-0.1%	-45.1%	0
	Metals & Mining	8.4	15.6	-42.5%	-6.2%	12.4%	6.4%	-22.2%	1
	Containers & Packaging	11.9	13.2	-16.5%	8.3%	-8.6%	-2.3%	5.1%	-1
Real Estate		27.3	32.2	-22.6%	9.6%	-5.4%	-2.4%	6.1%	-1
	Industrial REITs	27.6	42.1	-35.9%	2.2%	-3.1%	5.9%	-15.6%	0
	Hotel & Resort REITs	13.9	18.1	-27.4%	6.1%	-11.8%	-0.3%	95.4%	-1
	Office REITs	20.0	28.5	-36.4%	10.6%	12.2%	-17.1%	65.9%	-1
	Health Care REITs	89.4	74.0	-33.8%	82.4%	-42.9%	-0.2%	14.4%	-1
	Residential REITs	27.0	35.7	-32.0%	11.2%	-5.2%	-2.2%	13.8%	-1
	Retail REITs	28.0	26.4	3.1%	2.8%	-4.6%	-5.5%	65.7%	-1
	Specialized REITs	27.8	32.2	-21.0%	9.2%	-4.5%	-2.6%	-3.6%	-1
	Real Estate Management & Development	11.3	11.9	-18.7%	16.6%	-4.9%	-10.5%	36.2%	-1
Communication Services		16.5	14.2	-1.5%	17.8%	-0.6%	17.7%	7.8%	0
	Diversified Telecommunication Services	6.9	7.9	-13.1%	1.8%	-5.9%	1.8%	21.4%	-1
	Wireless Telecommunication Services	82.6	15.0	295.4%	39.4%	3.6%	3.2%	-7.6%	1
	Media	10.9	9.7	-1.2%	13.2%	-2.7%	6.0%	-6.8%	0
	Entertainment	28.4	18.8	9.0%	38.2%	-2.8%	12.9%	11.2%	1
	Interactive Media & Services	20.0	16.8	-1.4%	20.9%	3.1%	26.3%	8.4%	1
Utilities		19.1	16.8	5.7%	7.8%	-1.1%	-5.3%	-1.2%	0
	Multi-Utilities	18.0	16.7	3.2%	4.6%	-1.1%	-3.8%	1.0%	0
	Water Utilities	33.6	28.0	11.4%	7.5%	0.0%	-6.5%	-25.0%	1
	Gas Utilities	19.7	17.1	8.1%	6.7%	0.3%	-1.9%	5.3%	1
	Electric Utilities	19.3	16.6	6.6%	9.1%	-1.2%	-5.7%	1.6%	0
	Independent Power and Renewable Electricity Producers	14.4	12.2	5.5%	11.6%	-1.7%	-18.0%	11.6%	0
S&P 500		18.4	16.4	0.2%	12.0%	-3.6%	5.1%	-6.4%	0

Source: Factset, DWS Investment GmbH as of 4/19/2023. Past performance may not be indicative of future results.

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S&P 500 Intrinsic Valuation Model

S&P 500 Capitalized EPS Valuation		S&P 500 Dividend Discount Model		S&P 500 Long-term EPS & DPS Growth		S&P 500 Cost of Equity & Fair Book Multiple	
DWS 2023E S&P 500 EPS	\$222.00	DWS 2023E S&P 500 DPS	\$70.00	DWS 2023E S&P 500 aggregate ROE	22.2%	Fair long-term nominal return on S&P 500 index	8.60%
		2023E dividend payout ratio	32%	2022E end S&P 500 book value per share	\$1,000	Components of estimated fair S&P 500 return:	
DWS "normal 2023E" S&P 500 EPS	\$220.00	DWS "normal 2023E" S&P 500 DPS	\$70.00	DWS "normal 2023E" S&P 500 aggregate ROE	20.2%	+ Long-term real risk free interest rate	1.60%
"Normal 2023E" EPS / 2023E EPS	99%	Normal dividend payout ratio	35%			+ Long-term fair S&P 500 equity risk premium*	4.00%
Accounting quality adjustment to pro forma EPS	-\$18.00	EPS directed to net share repurchases	\$38.00	S&P EPS retained for true reinvestment	47%	= Long-term real S&P 500 cost of equity	5.60%
		Normal share repurchase payout ratio	19%	Estimated ROE on reinvested S&P EPS	8.60%	+ Long-term inflation forecast	3.00%
Normal 2023E S&P 500 EPS fair to capitalize	\$202	Total payout of S&P 500 EPS	\$108.00	Economic margin (EM) or ROE-CoE	0.00%	= S&P 500 nominal cost of equity	8.60%
Key principle: steady-state value = normal EPS / real CoE		Total payout ratio of normal and quality adj. EPS	53%	Sources of long-term earnings growth:		* S&P 500 ERP history 300-400bps, w/ real CoE @ 5% - 6.5%	
				+ Long-term inflation forecast	3.00%		
<u>S&P 500 EPS Capitalization Valuation</u>		<u>S&P 500 DPS Discount Model</u>		+ Fair return on true reinvestment	2.61%	<u>Fair S&P 500 Market Value and Book Value Multiple</u>	
Normal EPS / (real CoE - (EM/payout) - EM):		Normal DPS / (nominal CoE - DPS growth):		+ Value added return on true reinvestment	0.00%	2022E end S&P 500 book value per share	\$1,000
S&P 500 intrinsic value at 2023 start	3607	S&P 500 intrinsic value at 2023 start	3607	= Long-term earnings growth	5.61%	Fair PB = Fair PE * normal aggregate ROE	3.61
S&P 500 intrinsic value at 2023 end	3847	S&P 500 intrinsic value at 2023 end	3847	+ Growth from net share repurchases	1.05%	Fair PE =(inc ROE-g)/(inc real ROE*(real CoE-real g))	17.9
Implied fair fwd PE in early 2023 on 2023E \$222 EPS	16.2	Implied fair forward yield on 2023E DPS of \$70.0	1.94%	= Long-term S&P 500 EPS/DPS growth	6.66%	Implied S&P 500 fair value of book at 2023 start	3607
Implied fair trailing PE at 2023 end on 2023E \$222 EPS	17.3	Implied fair trailing yield on 2023E DPS of \$70.0	1.82%	+ Fair normal dividend yield	1.94%	Steady-state PB = normal agg. ROE / real CoE	3.61
				= Total long-term return at constant PE	8.60%	Confirmed by fair steady-state PE = 1 / real CoE	17.9
Normal EPS / (real CoE-value added EPS growth)	3607	DPS discount model using true DPS (all payout)	3607	Value added growth premium in fair value est.	0%	Normal 2023E economic profit per share	\$146.00

S&P 500 EPS discount model 5 steps to value:

- 1) Estimate normalized S&P 500 EPS
- 2) Adjust normalized EPS for pro forma accounting quality
- 3) Estimate a fair long-term real return on S&P 500 ownership (CoE)
- 4) Capitalize normalized and accounting quality adj. EPS at real CoE
- 5) Consider long-term potential for value added growth opportunities

Normal 2023E S&P 500 EPS						
		\$210	\$215	\$220	\$225	\$230
Real	5.10%	4336	4473	4611	4751	4892
cost of	5.35%	3965	4079	4194	4310	4426
equity	5.60%	3653	3750	3847	3944	4041
	5.85%	3388	3471	3554	3636	3719
	6.10%	3158	3230	3302	3374	3444

Source: DWS Investment Management GmbH

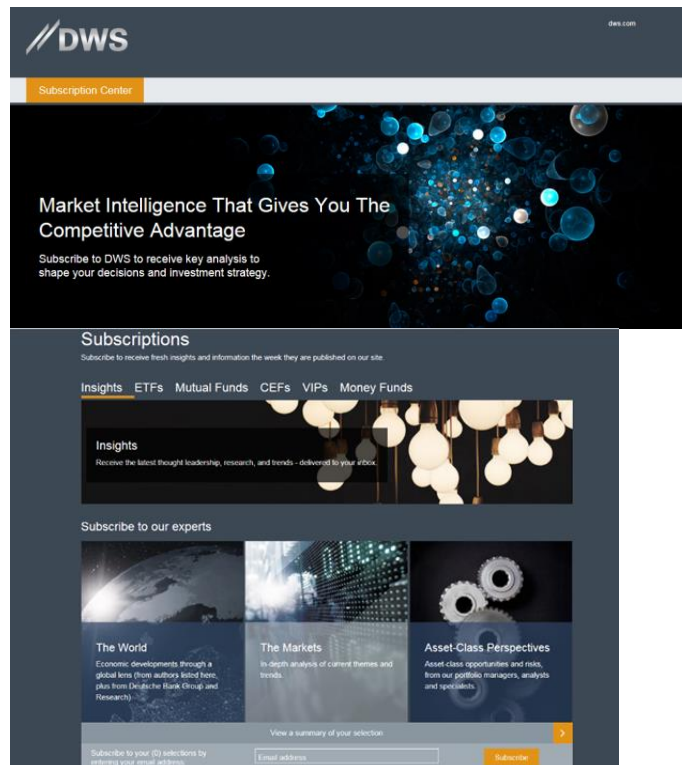
Optimistic 2023 end 10yr yield outlook: 2.5% inflation expectation + 1% overnight real rate + 0.75% inflation risk premium - 0.5% risk asset hedge = 3.75%

Pessimistic 2023 end 10yr yield outlook: 2.5% inflation expectation + 1% overnight real rate + 1.5% inflation risk premium - 0% risk asset hedge = 5.00%

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