

Super profits of 2021-2022: New norms or exceptional circumstances?



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4Q22 S&P EPS results are soft, but follow a tremendous profit boom

Investors remain focused on 4Q S&P EPS results and 2023 guidance, but it's important to put such in the big picture context of what's been the greatest profit boom at the S&P 500 in its 75 history and probably for large US companies since the profit boom of WWI. About 40% of 4Q S&P EPS has reported and results are on track for about \$54 of quarterly EPS. This is the first quarter of no y/y EPS growth since the 4 quarters of 2020 stricken by the pandemic. Moreover, this will be the second quarter of sequential S&P EPS decline from \$58 in 2Q22 and \$56 in 3Q22, despite seasonality and what's been healthy US GDP growth through 2022. Last week, US GDP reported 4Q at 2.9% q/q, albeit mostly inventory growth. However, this softening in profits and guidance for 2023 follows what was a 25% surge in S&P EPS from mid-2021 to mid-2022 from the record pre pandemic profitability of 2019.

Gauging what's normal requires looking at proper profitability metrics

Today's record S&P 500 profitability is much more than merely record high EPS in 2022. We expect S&P EPS to climb over time owing to inflation and more importantly the retention of earnings reinvested into these businesses at good returns on incremental capital. Thus, when we cite record "profitability" we are referring to margins, returns on capital, economic profits and observed real growth rates of profits relative to these driver norms and history. Inside this note, we show charts of S&P net margins, ROE, nominal and real EPS growth rates and tables of these metrics across the sectors. It paints a picture of record profitability nearly everywhere. Most notable is at Tech / Communications or all "digital" enterprises, but also at commodity producers, most manufacturers and the big box retailers of the S&P. Making for the highest net margins and ROE for the S&P 500 on record at 13%+ and 20%+.

The profit surge at digital is well known; while we expect a profit pause at these businesses in 2023, we think healthy growth still lies ahead afterward. Less appreciated profit surges are at industries that historically have been challenged to generate strong margins and returns. Including Energy, Materials, Auto, Semiconductors, some Retailers and some Industrials. Today, all of these and other sectors and key industries within them hit record net margins and ROE either in 2021 or 2022. A few notable exceptions are Aerospace at Industrials, still parts of travel and in-person Consumer Discretionary Services and Banks. However, Banks are generating some of the best profits, net interest margins and ROEs since the financial crisis on higher interest rates; as discussed in our previous Americas CIO View note. In this note, we take a closer look at the Energy sector and its 2022 profits.

Energy profits 2022 vs. 2020: Mother of cyclical profit swings

S&P Energy sector profits will likely finalize over \$200bn in 2022. This compares to a low of -\$5bn in 2020 and highs of \$70bn in 2018 and \$140bn in 2008. Our first cut at analyzing 2022 results, show the highest net margin, ROIC and ROE at Energy since 1995. A 2022E net margin of near 15% at Energy vs. prior highs of about 9.5% 2006-2007. A 2022E ROIC and ROE of about 14% and near 30%, which were only briefly matched in 2006-2007 and exceed the S&P now. Oil prices surged in 2022, especially the first half, but we're observing the strongest profits relative to the oil price at the Energy sector in recent decades. The explanation is much about losses in 2020 causing cost cutting and deferred maintenance spending then swinging to big 2022 revenue gains on price surges across oil, natural gas and refined products. Oil prices will likely remain volatile, but we expect pressure on profitability relative to oil prices as maintenance opex and capex rebound. We note that capex/D&A was under 100% 2020-2022 vs. about 150% in the slow capacity growth years of 1990-2005 and 200% in the strong capacity growth years of 2006-2016. Since 2016, Energy capex has been in decline despite inflation, more regulations and transition prep. This supports prices, but maintaining current production will likely require a capex surge eventually. We expect Energy profits to decline at least 10% in 2023, followed by about 5% thereafter. Energy profits are 11% of S&P vs. 7.5% average 2009-2019 and 16% in 2007 and 20%+ early 1980s. But contribution to S&P profits is not a profitability metric. Steel, Rails, Utilities dominated profits a century ago and Financials, Tech, Health Care none.

Watching the results: 4Q EPS tracker and our S&P sector strategy inside

The S&P profit boom the past 12 years is attributable to globalization and digitalization with large S&P companies often leading the way on both. We see great promise at S&P Health Care companies leading the next decade of profit growth with medical innovation. But right now, we think investors expect too much of the S&P 500 as it faces world challenges. Valuations are demanding and S&P EPS growth could be flat the next couple of years.

Contributor: Ju Wang, Portfolio Manager Equity

Global Equity Index Forecasts: 12-months			
Index	Dec 2023F	NTM EPS Growth	Target PE
S&P 500	4,100	1.4%	18.2
EuroStoxx 50	4,000	-2.0%	12.2
Stoxx 600	445	-1.0%	13.0
MSCI Japan	1,250	2.0%	13.3
MSCI Asia xJ	625	2.0%	13.6
MSCI EM	990	0.0%	12.5

S&P 500 Outlook at Yearend			
	2021	2022F	2023F
S&P 500	4766	3800	4100
Dividend Yield	1.3%	1.75%	1.75%
S&P EPS	\$210	\$222	\$225
Trailing PE	22.7	17.1	18.2
DPS	\$61	\$68	\$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%	36.5%
Equities	55-60%	53.5%
US Equities	40%	35.0%
S&P 500	35%	32.0%
Small Caps	0-10%	3.0%
Foreign DM	10-15%	11.5%
Foreign EM	0-10%	7.0%
Alternatives	10%	10%

Key CIO Views		
Macro signal:	Jan 2023	Dec 2023F
U.S. Fed Funds rate	4.25%-4.50%	5%-5.25%
10yr Treasury yield	3.52%	4.20%
US IG Corp Spreads	160bp	130bp
US High Yield Spreads	470bp	500bp
Crude Oil (WTI) \$/bbl	80	100
EUR / USD FX rate	1.08	1.05

GDP Forecasts			
Region	2021	2022F	2023F
US	5.7%	1.8%	0.4%
World	6.0%	3.2%	2.8%
Euro area	5.2%	3.2%	0.3%
China	8.1%	3.3%	5.0%
Japan	1.7%	1.6%	1.2%

* 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 1/30/2023 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	2021			2022			2023			Overweight			Equal weight			Underweight			
				2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023	2021	2022	2023	
Over-weight	15.2%	19.7%	Health Care	17.1	16.2	15.9	Biotechnology	12.1	12.6	13.0	Health Care Providers & Services	17.5	16.6	15.8								
							Health Care Equipment & Supplies	24.0	23.9	23.4	Life Sciences Tools & Services	25.4	27.0	25.9								
							Pharmaceuticals	15.3	13.3	13.1												
	8.0%	10.2%	Communication Services	14.6	16.2	16.0	Diversified Telecommunication Services	6.5	7.7	8.1	Wireless Telecommunication Services	60.9	58.6	35.2								
							Entertainment	29.6	29.3	27.7												
							Interactive Media & Services	15.9	18.1	17.4												
						Media	12.4	11.6	12.3													
	11.2%	12.5%	Financials	12.3	14.3	13.8	Banks	9.0	10.9	10.5	Diversified Financial Services	26.5	22.1	21.7	Capital Markets	14.4	18.2	17.7				
							Insurance	15.5	16.3	14.7					Consumer Finance	7.8	9.7	10.6				
	2.6%	3.6%	Real Estate	20.3	19.1	18.4	Real Estate Mgmt. & Development REITs	15.8	14.2	14.2												
	5.3%	6.3%	Energy	22.5	9.3	10.2	Energy Equipment & Services	43.3	25.8	18.9	Oil Gas & Consumable Fuels	21.6	8.8	9.8								
	3.0%	3.5%	Utilities	20.4	19.2	18.5	Electric Utilities	21.9	20.0	18.9	Gas Utilities	22.1	21.6	20.1	Water Utilities	39.5	35.7	33.6				
											Independent Power & Renewable Energy	8.1	8.5	8.8								
											Multi-Utilities	19.2	18.8	18.4								
Under-weight	26.1%	25.7%	Information Technology	24.0	23.2	22.4	Communications Equipment	17.0	16.4	15.9	Electronic Equipment	22.5	20.9	19.9	Semiconductors	18.4	20.9	20.9				
							IT Services	26.5	23.2	22.1	Software	30.0	27.1	25.6	Technology Hardware Storage & Peripherals	23.5	22.7	21.9				
	8.0%	7.5%	Industrials	27.2	20.9	20.5	Aerospace & Defense	33.4	26.6	24.5					Air Freight & Logistics	13.2	13.8	15.0				
							Airlines	-5.7	20.8	11.3					Building Products	21.3	20.0	21.2				
							Electrical Equipment	23.8	21.2	20.3					Commercial Services & Supplies	34.0	25.7	25.2				
							Industrial Conglomerates	22.9	21.7	20.3					Construction & Engineering	24.1	20.5	18.5				
							Road & Rail	21.3	18.2	18.7					Machinery	22.0	19.9	20.8				
															Professional Services	30.1	30.4	29.5				
															Trading Companies & Distributors	25.3	19.3	20.2				
		2.5%	0.0%	Materials	16.4	15.2	17.4								Chemicals	18.0	16.0	17.2				
															Construction Materials	31.6	30.3	26.7				
														Containers & Packaging	14.7	13.3	13.3					
	6.9%	3.8%	Consumer Staples	21.8	21.7	21.5					Personal Products	39.6	42.6	42.6	Beverages	26.3	25.4	24.9				
														Food Products	18.4	17.7	17.9					
														Food & Staples Retailing	24.3	23.2	22.7					
														Household Products	23.9	24.9	24.3					
														Tobacco	13.5	14.1	14.3					
	11.3%	7.3%	Consumer Discretionary	27.7	26.5	25.4	Auto Components	24	21.6	18.7	Hotels Restaurants & Leisure	16337	62.5	37.9	Automobiles	25.3	21.9	21.9				
														Distributors	20.1	18.5	18.5					
														Household Durables	8.4	7.5	8.8					
														Internet & Direct Marketing Retail	31.7	44.7	40.5					
														Leisure Products	11.2	10.8	10.8					
														Multiline Retail	16.8	22.0	20.5					
														Specialty Retail	20.3	19.6	20.4					
Aggregate PE: DWS View							Overweight	16.8	16.6	16.0	Equalweight	25.5	18.0	18.0	Underweight	19.7	20.4	20.7				
S&P 500								4071				2020, 2021 & 2022 EPS	207.99	223.00	225.00	2020, 2021 & 2022 PE	19.6	18.3	18.1			
												Bottom-up Consensus EPS	208.10	222.35	227.33	Bottom-up Cons. PE	19.6	18.3	17.9			
															2020, 2021 & 2022 Ex Energy PE	19.2	19.2	18.8				
															Btm-up Cons. Ex Energy PE	19.3	19.4	18.6				

Sector OW	10.21%
Sector UW	-10.21%
Industry OW	18.70%
Industry UW	-18.70%

Macro tilts:	
Cyclicals	-2.97%
Defensive	2.95%
Value	-5.93%
Growth	5.93%
Consumer	-6.61%
Services/experience	0.47%
Disc. Goods	-0.25%
Retailing	-0.65%
Durables	0.43%
Staples Goods/Retail	-1.51%
Commodity	-1.30%
Energy	0.84%
Metals/Chemicals	-2.14%
Capex	3.24%
Capacity additions	1.11%
Productivity	2.13%
Health Care	4.45%
Innovation	3.06%
Marketers	1.64%
Insurers	-0.32%
Financials	1.22%
Up rates/low spreads	2.03%
Capital Markets	-1.88%
Insurance	1.07%
Bond Substitutes	1.78%
Weak FX \$ plays	0.53%
High R&D plays	4.78%
Transports	-0.30%
Geopolitical risk	1.33%
Weak oil prices	-0.53%
Inflation shock	4.81%
Domestic GDP	-2.10%
Global GDP	-4.62%
Consumer TMT	0.40%
Trade sensitive	-1.83%

Note: More details on sector earnings forecast and sector intrinsic valuation can be found towards the back of this note.
Price as of 1/27/2023
Source: DWS Investment Management GmbH

S&P 500 pro-forma net margin by sector (Shaded are the peak margins)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	1Q22	2Q22	3Q22	
Communication Services	9.5%	6.7%	7.9%	9.4%	10.7%	9.5%	7.5%	5.1%	7.6%	6.9%	9.3%	10.2%	12.0%	12.3%	11.3%	12.9%	12.9%	12.3%	11.0%	12.5%	13.4%	13.8%	13.6%	15.5%	15.1%	15.1%	18.1%	16.9%	14.7%	13.3%	
Consumer Discretionary	4.3%	4.4%	5.5%	5.0%	5.5%	4.6%	2.4%	3.4%	4.0%	4.1%	5.8%	4.7%	4.0%	2.8%	4.5%	5.8%	6.0%	6.0%	6.3%	6.1%	6.8%	7.2%	7.0%	7.6%	7.1%	5.3%	7.7%	5.2%	6.2%	7.2%	
Consumer Staples	5.8%	6.4%	6.7%	6.5%	6.6%	6.4%	6.3%	6.8%	6.6%	6.6%	7.7%	7.6%	7.3%	7.2%	7.3%	7.5%	7.1%	6.9%	7.0%	7.0%	7.0%	7.2%	7.4%	7.6%	7.5%	7.4%	7.7%	7.3%	7.3%	7.2%	
Energy	5.4%	6.1%	6.9%	4.9%	4.8%	8.4%	7.6%	5.3%	6.8%	8.5%	8.5%	9.7%	9.4%	8.8%	5.1%	7.3%	8.1%	7.7%	7.3%	7.5%	5.0%	1.6%	4.6%	7.2%	5.3%	-0.8%	8.3%	10.6%	14.8%	14.7%	
Financials	9.6%	10.7%	11.8%	10.9%	11.3%	10.9%	9.7%	11.5%	13.4%	13.8%	13.6%	14.0%	12.3%	-2.9%	5.3%	11.0%	11.3%	12.9%	14.9%	14.0%	15.2%	15.1%	14.8%	17.4%	17.1%	13.8%	21.7%	18.3%	17.0%	14.6%	
Health Care	9.9%	10.2%	9.6%	9.6%	9.9%	9.9%	9.9%	9.9%	9.3%	10.3%	10.6%	10.4%	9.9%	10.0%	9.9%	9.7%	10.4%	10.5%	10.3%	10.2%	10.4%	10.5%	9.9%	10.2%	10.5%	10.0%	10.0%	11.5%	11.9%	11.3%	10.8%
Industrials	6.2%	6.3%	6.4%	6.4%	6.6%	6.6%	5.2%	5.4%	5.4%	5.9%	5.1%	5.3%	6.2%	5.2%	4.1%	6.1%	6.6%	7.0%	7.6%	8.1%	8.9%	8.6%	8.9%	10.4%	9.7%	5.7%	8.4%	8.1%	10.4%	9.6%	
Information Technology	10.0%	9.2%	10.9%	10.7%	13.2%	15.4%	9.0%	10.0%	11.5%	13.6%	13.4%	13.8%	14.0%	13.1%	13.9%	17.5%	17.7%	16.4%	18.0%	18.7%	19.0%	19.9%	21.2%	22.6%	21.8%	22.1%	24.6%	25.0%	23.5%	23.8%	
Materials	8.2%	7.0%	6.7%	5.9%	5.8%	5.8%	2.9%	3.5%	4.9%	6.4%	7.0%	8.1%	9.1%	4.4%	5.0%	7.5%	8.4%	7.0%	6.7%	6.0%	6.4%	6.7%	8.1%	8.9%	9.2%	9.2%	13.6%	13.7%	14.4%	11.2%	
Real Estate	5.8%	6.9%	7.5%	8.3%	10.8%	8.7%	5.1%	5.0%	5.4%	7.2%	18.1%	19.2%	19.8%	18.9%	18.5%	21.2%	27.6%	29.1%	29.8%	32.6%	35.2%	33.3%	34.0%	34.3%	34.2%	34.4%	37.2%	36.7%	37.0%	36.2%	
Utilities	10.7%	9.8%	7.9%	8.1%	8.0%	5.8%	5.1%	7.1%	9.0%	7.8%	7.8%	8.3%	8.9%	8.5%	9.5%	9.7%	9.9%	10.1%	9.8%	9.7%	10.7%	11.9%	11.8%	12.5%	12.8%	13.9%	13.7%	15.3%	11.7%	13.5%	
S&P 500	7.0%	7.2%	7.8%	7.6%	8.2%	8.2%	6.6%	7.0%	7.9%	8.5%	6.7%	7.0%	7.2%	5.5%	6.3%	8.4%	8.7%	8.8%	9.3%	9.4%	9.9%	9.9%	10.5%	11.7%	11.4%	10.7%	13.3%	13.0%	13.2%	12.4%	
S&P 500 ex. Financials & Real Estate	6.7%	6.7%	7.2%	7.0%	7.6%	7.7%	6.0%	6.2%	7.0%	7.5%	5.8%	6.0%	6.4%	6.3%	6.4%	7.9%	8.2%	8.1%	8.3%	8.6%	8.9%	8.9%	9.6%	10.7%	10.3%	9.9%	12.0%	12.1%	12.4%	11.9%	
S&P 500 ex. Energy & Utilities	6.8%	6.8%	7.3%	7.2%	7.8%	7.6%	5.8%	6.3%	7.0%	7.4%	5.3%	5.4%	5.9%	5.9%	6.6%	8.0%	8.2%	8.1%	8.5%	8.8%	9.3%	9.6%	10.1%	11.1%	10.8%	10.7%	12.3%	12.2%	12.1%	11.5%	
S&P 500 ex. Tech	6.7%	7.0%	7.5%	7.3%	7.7%	7.6%	6.4%	6.7%	7.6%	8.0%	6.3%	6.6%	6.7%	4.9%	5.7%	7.5%	7.8%	8.0%	8.4%	8.5%	8.9%	8.8%	9.3%	10.5%	10.1%	9.1%	11.8%	11.4%	11.9%	11.1%	

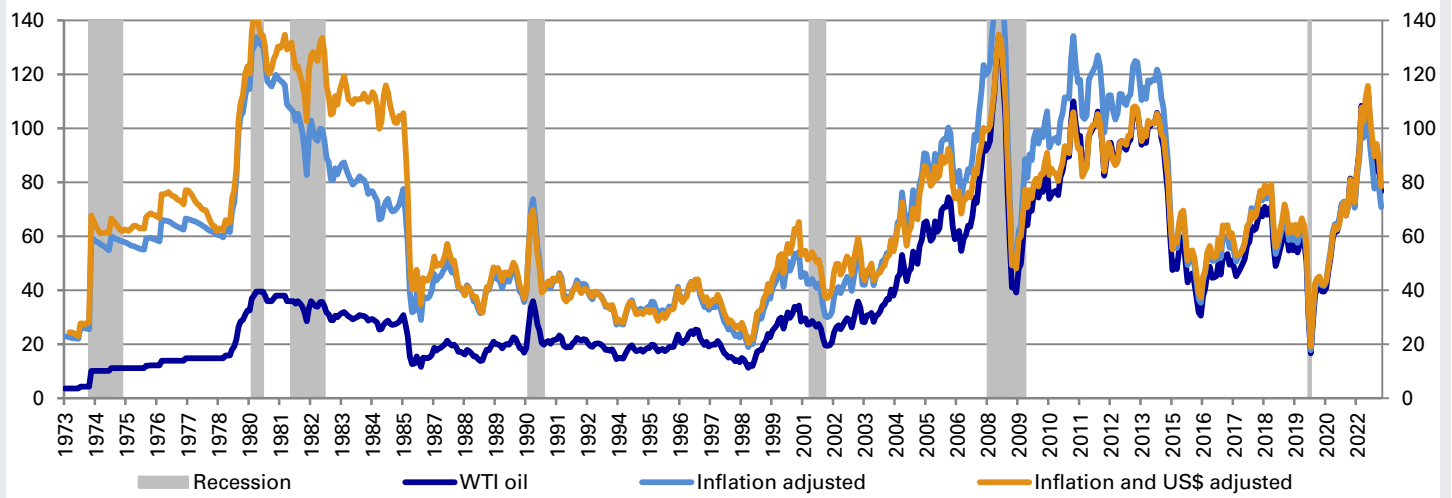
Source: Compustat, Clarifi, Factset, DWS Investment GmbH as of 3Q2022. Past performance may not be indicative of future results.

S&P 500 pro-forma ROE by sector (Shaded are the peak ROE)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	1Q22	2Q22	3Q22
Communication Services	21.2%	23.4%	18.3%	16.1%	12.7%	9.8%	7.2%	9.2%	13.5%	12.9%	13.5%	12.7%	12.8%	14.0%	11.4%	11.1%	10.2%	10.7%	15.3%	22.1%	24.7%	20.5%	20.0%	42.6%	18.1%	16.3%	22.5%	21.3%	20.4%	18.6%
Consumer Discretionary	16.7%	16.3%	17.1%	15.6%	18.0%	14.6%	7.7%	11.1%	10.3%	11.8%	12.3%	12.9%	11.5%	5.4%	14.4%	16.9%	18.6%	20.1%	21.8%	21.4%	23.1%	24.3%	23.0%	20.2%	32.3%	22.4%	29.6%	26.7%	27.0%	27.5%
Consumer Staples	25.2%	27.4%	29.0%	29.7%	30.8%	33.3%	32.4%	33.0%	31.2%	27.9%	25.8%	21.6%	21.7%	22.3%	23.7%	22.9%	22.9%	24.1%	24.3%	24.1%	24.0%	22.7%	23.1%	24.8%	26.6%	27.6%	29.1%	28.3%	28.3%	27.5%
Energy	12.5%	16.1%	16.6%	9.4%	11.3%	23.7%	17.5%	11.0%	18.2%	23.5%	27.8%	26.6%	24.5%	24.5%	11.2%	15.8%	18.7%	16.1%	13.9%	13.2%	5.5%	1.5%	5.7%	10.6%	7.1%	-0.8%	13.8%	17.0%	23.6%	27.9%
Financials	13.3%	13.7%	15.4%	14.2%	17.8%	17.7%	14.8%	14.8%	15.5%	15.8%	14.1%	15.6%	8.4%	-2.7%	0.7%	6.7%	6.8%	8.0%	8.9%	8.4%	8.7%	7.9%	8.5%	10.6%	10.3%	7.9%	12.0%	11.2%	11.1%	11.2%
Health Care	32.7%	32.1%	28.3%	29.8%	29.9%	30.3%	30.7%	29.7%	25.8%	23.3%	22.9%	20.7%	22.4%	23.1%	21.3%	20.9%	21.2%	21.6%	20.5%	22.3%	23.3%	23.1%	23.2%	25.4%	26.3%	26.6%	31.2%	30.6%	30.9%	30.6%
Industrials	17.1%	18.1%	18.1%	18.6%	18.8%	19.0%	15.3%	16.1%	15.3%	16.2%	17.2%	18.4%	20.4%	18.7%	15.1%	17.5%	19.0%	19.6%	20.1%	19.4%	22.8%	23.7%	24.3%	27.7%	26.6%	13.6%	20.7%	20.7%	22.5%	23.7%
Information Technology	23.7%	22.3%	24.2%	21.9%	23.1%	19.8%	6.9%	9.0%	13.7%	16.9%	18.9%	19.0%	21.3%	20.9%	21.7%	25.5%	25.9%	24.4%	22.8%	22.5%	23.7%	23.6%	25.5%	26.0%	36.1%	35.8%	43.4%	40.3%	39.0%	38.8%
Materials	20.8%	13.9%	13.3%	11.7%	11.6%	11.9%	6.2%	7.6%	9.9%	16.7%	16.8%	21.3%	18.3%	15.0%	9.8%	16.0%	19.4%	17.1%	16.2%	16.8%	18.3%	15.8%	17.7%	16.1%	12.2%	11.7%	19.9%	20.7%	21.3%	20.8%
Real Estate																						11.4%	8.2%	9.2%	9.3%	7.4%	10.9%	10.7%	10.8%	10.8%
Utilities	11.1%	11.1%	10.5%	11.2%	11.5%	13.4%	14.6%	12.3%	11.1%	11.1%	13.0%	13.8%	12.7%	12.9%	12.3%	11.5%	11.5%	10.3%	10.0%	10.3%	10.1%	10.7%	11.0%	11.3%	11.5%	11.1%	11.3%	11.6%	11.5%	11.1%
S&P 500	17.5%	17.7%	18.0%	16.6%	18.2%	18.2%	13.3%	14.3%	15.9%	17.1%	17.4%	17.9%	15.8%	12.1%	11.6%	14.9%	15.7%	15.8%	15.8%	15.7%	15.6%	15.2%	16.0%	18.6%	17.9%	15.4%	21.4%	20.8%	21.3%	21.6%

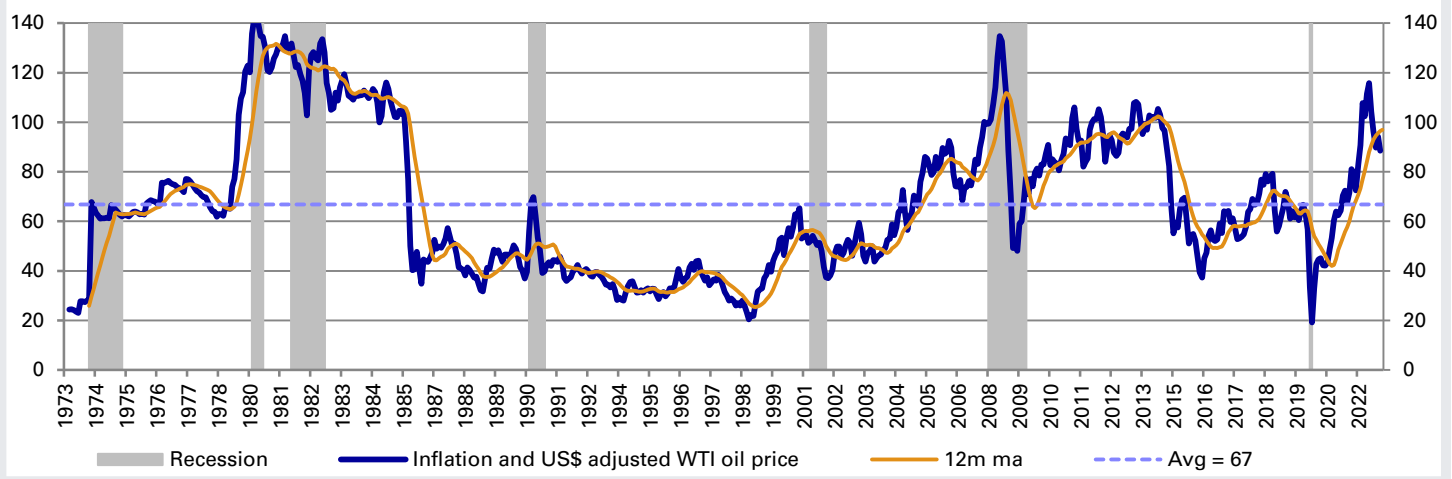
Source: Compustat, Clarifi, Factset, DWS Investment GmbH as of 3Q2022. Past performance may not be indicative of future results.

Inflation and US\$ adjusted WTI oil price



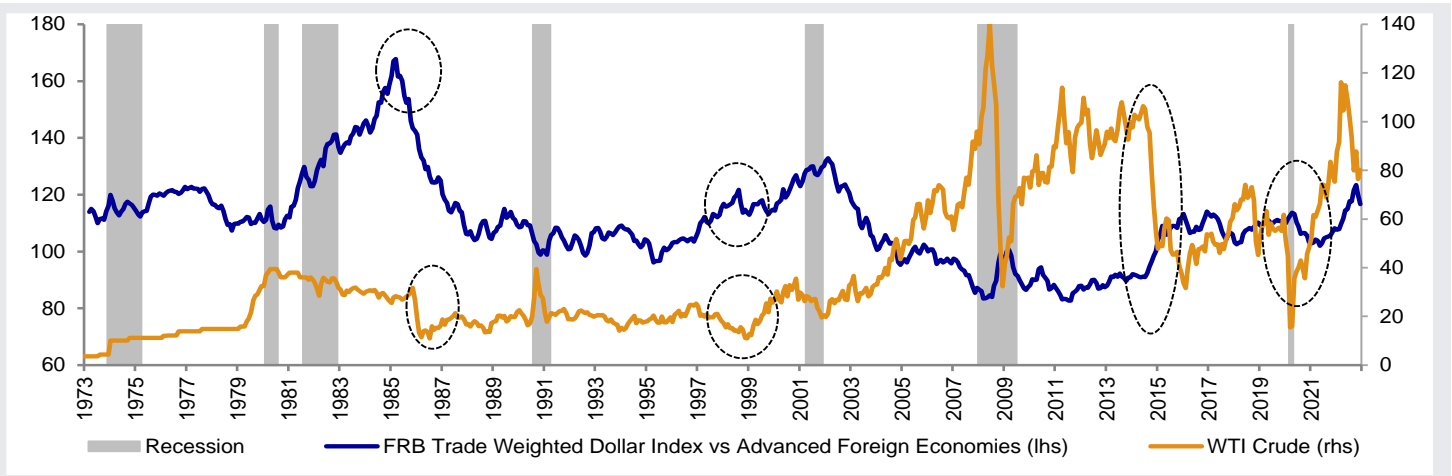
Source: Haver, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

Inflation and US\$ adjusted WTI oil price



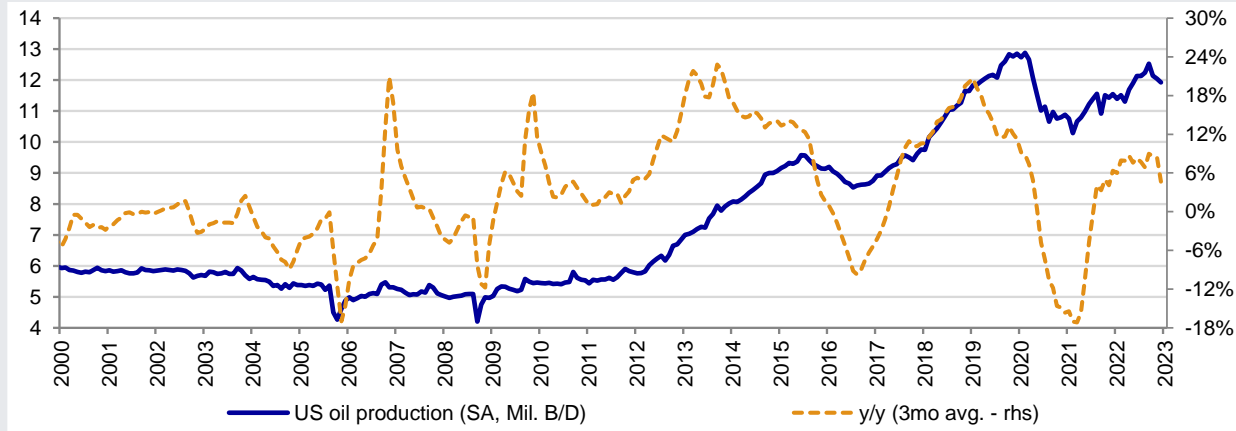
Source: Haver, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

WTI oil price vs. US dollar



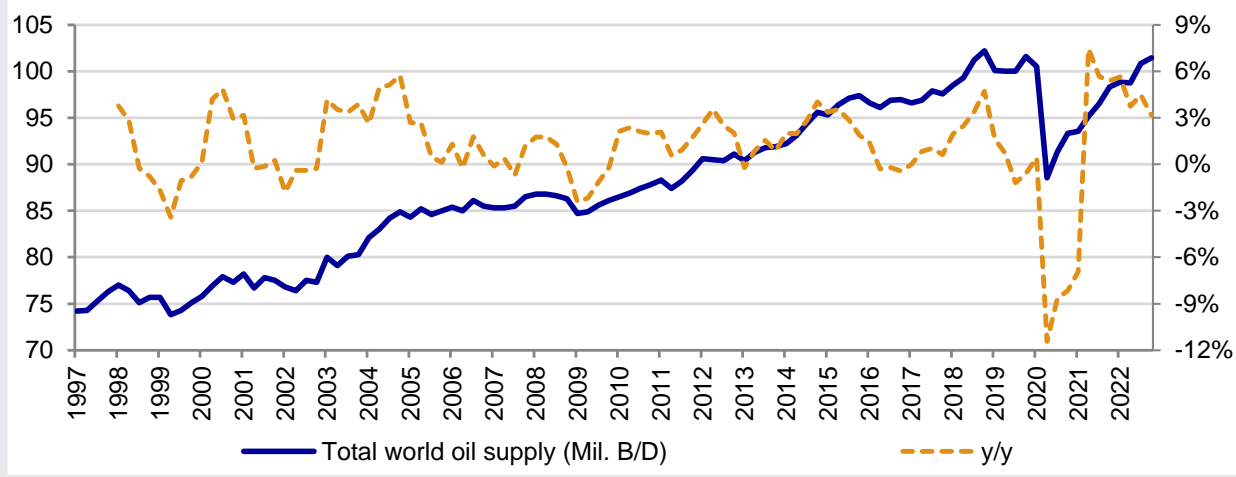
Source: Haver, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

US oil production



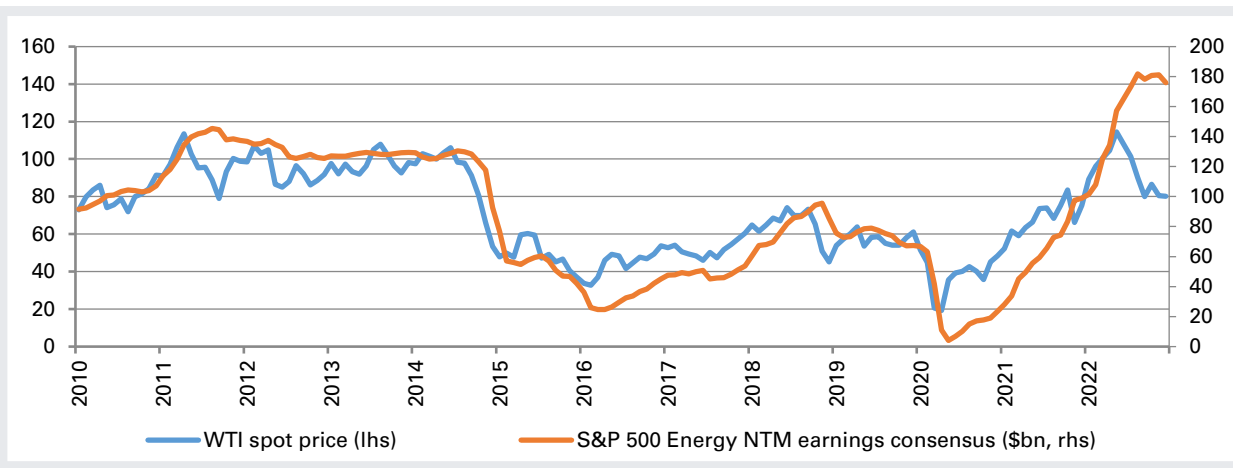
Source: Haver, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

World oil production



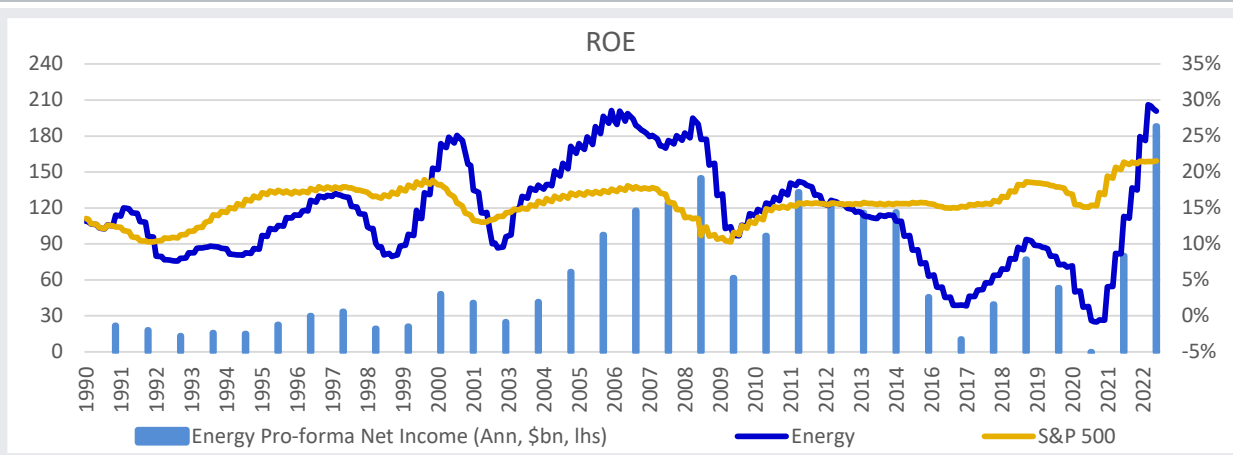
Source: Haver, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

S&P 500 Energy sector consensus next 12-month earnings vs. WTI oil price



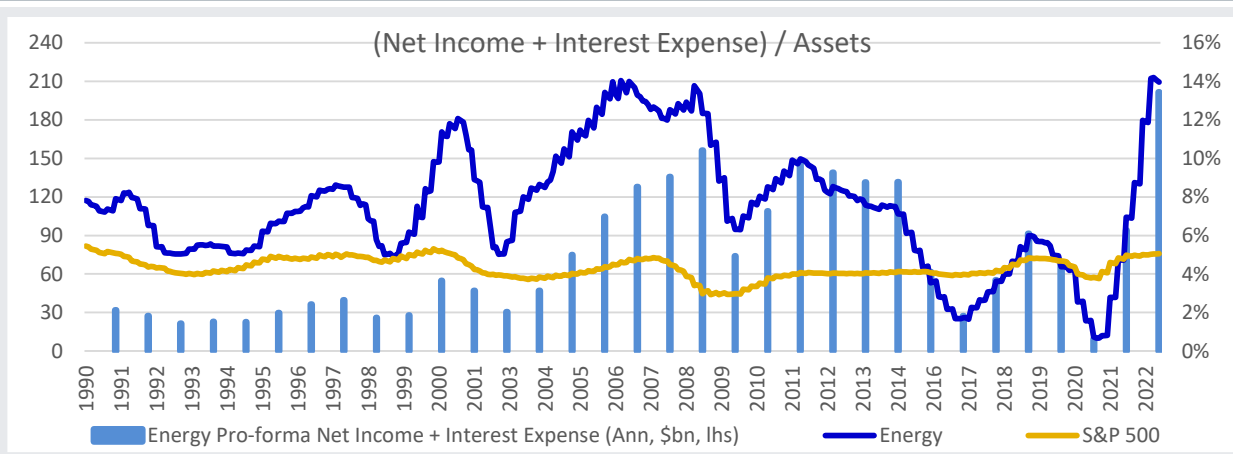
Source: Factset, Haver, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

S&P 500 Energy sector Return on Equity



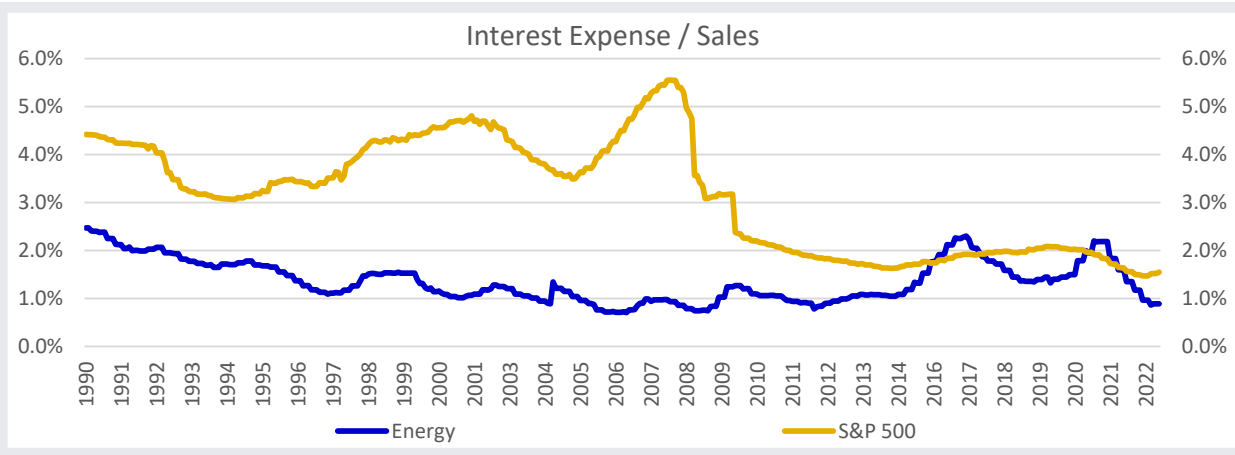
Source: Compustat, Clarifi, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

S&P 500 Energy sector (Net Income + Interest Expense) / Assets



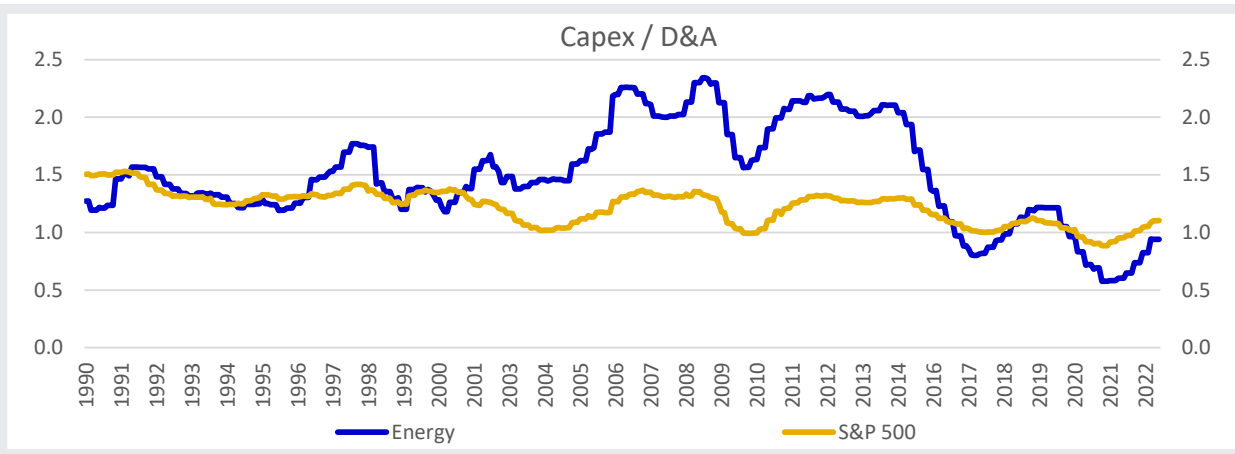
Source: Compustat, Clarifi, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

S&P 500 Energy sector Interest Expense / Sales



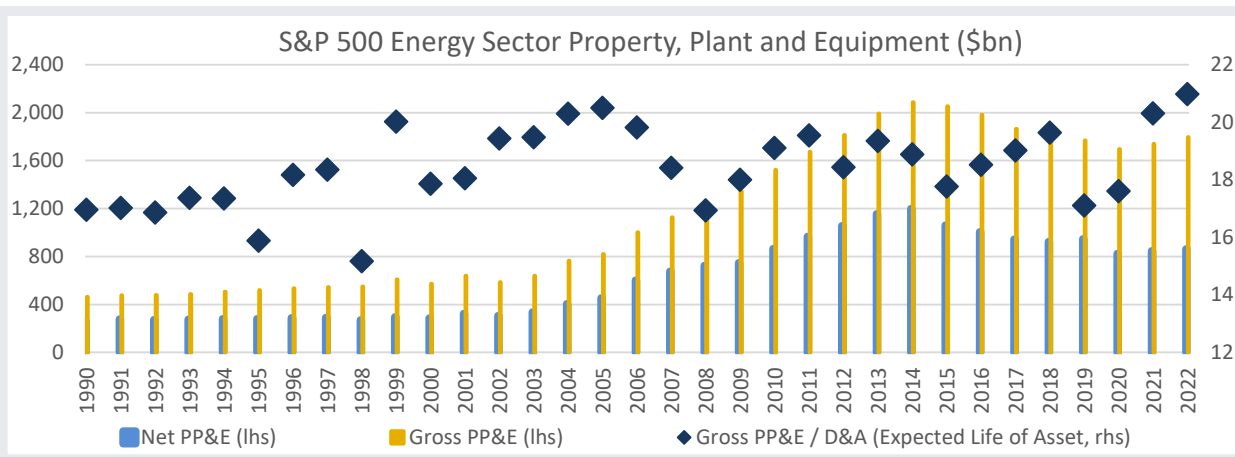
Source: Compustat, Clarifi, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

S&P 500 Energy sector Capex / D&A



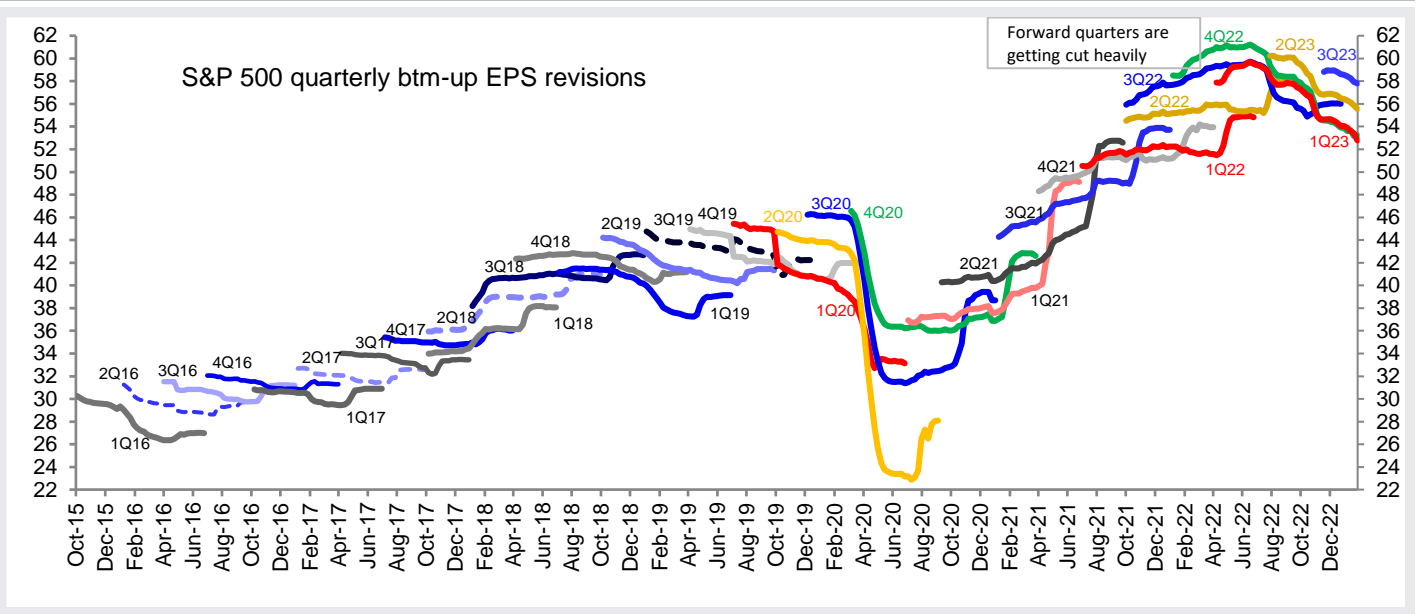
Source: Compustat, Clarifi, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

S&P 500 Energy sector PP&E



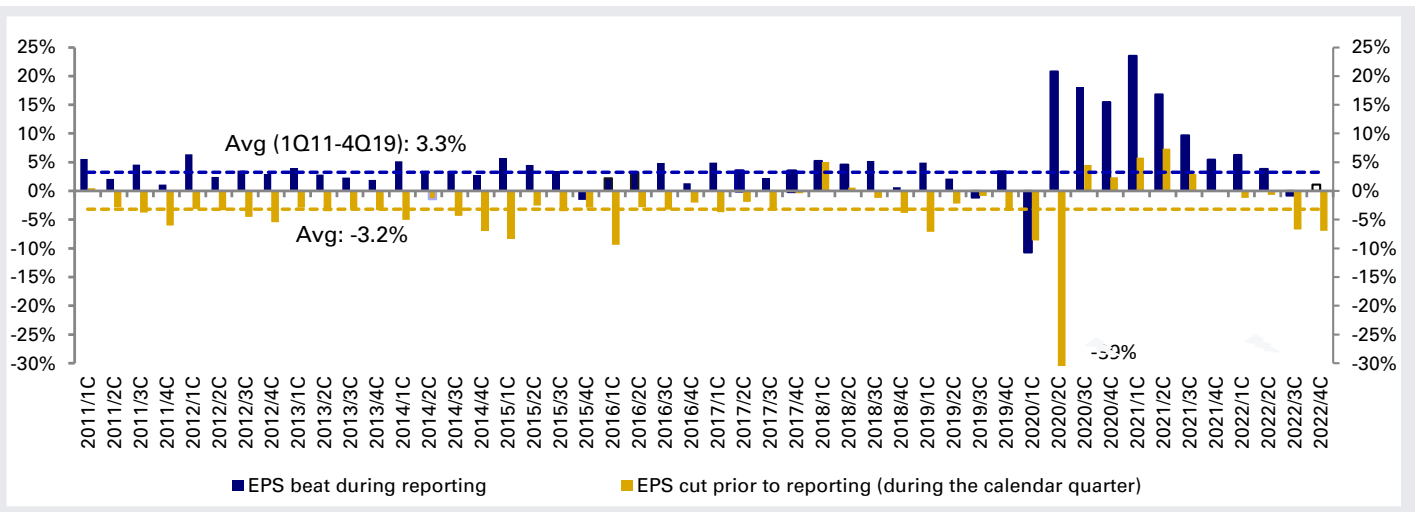
Source: Compustat, Clarifi, DWS Investment GmbH as of 12/31/2022. Past performance may not be indicative of future results.

S&P 500 quarterly EPS revision



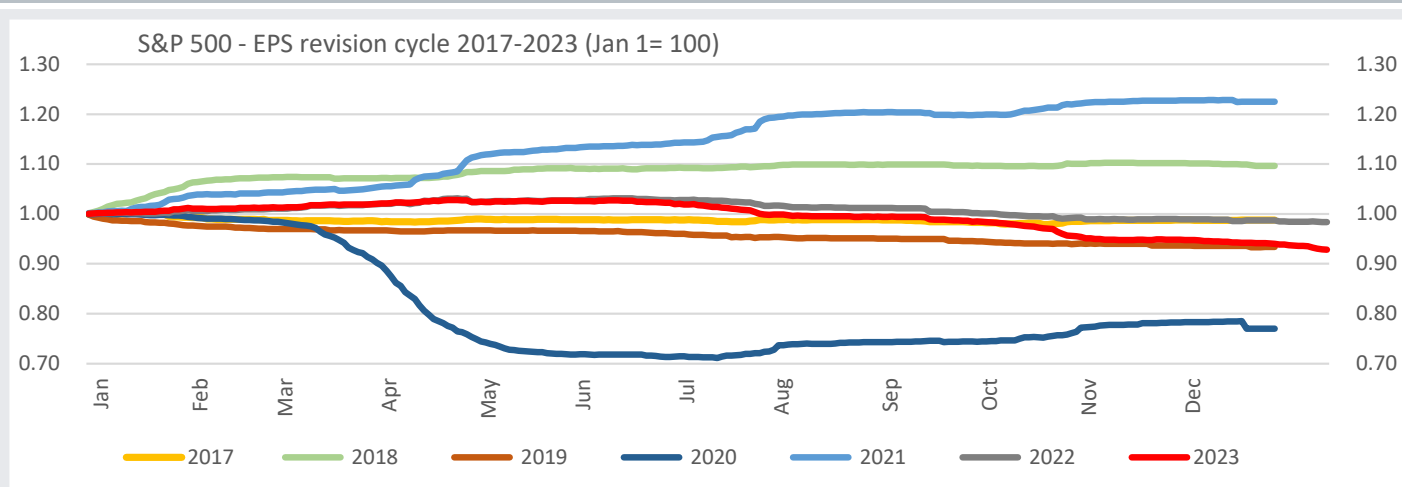
Source: Factset, IBES, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

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



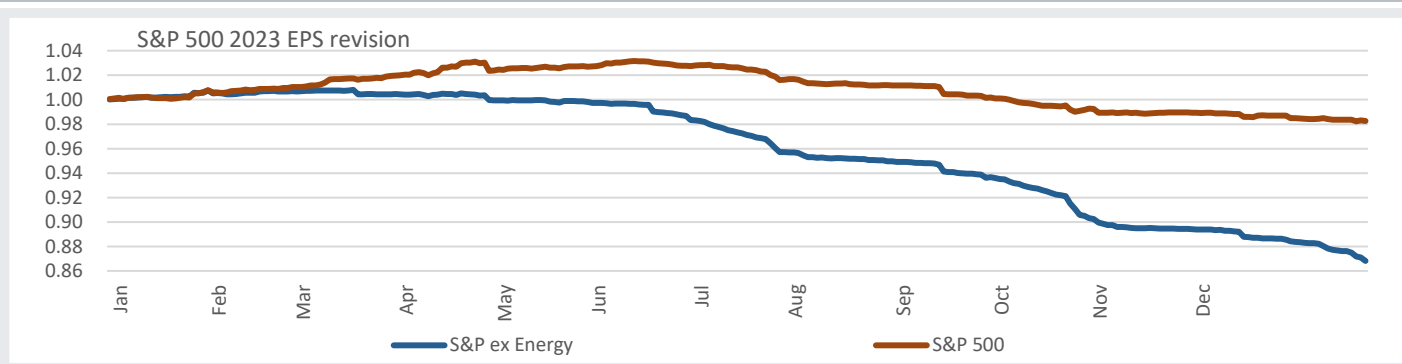
Source: Factset, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

S&P 500 annual EPS revision



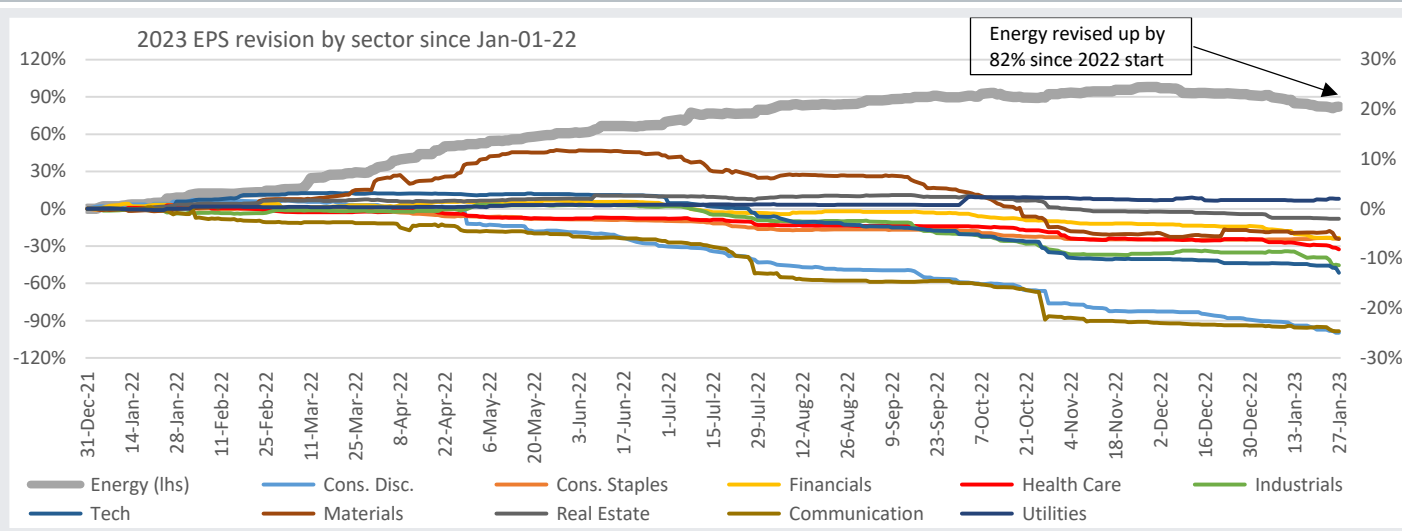
Source: Factset, IBES, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

S&P 500 2023 EPS revision (ex. Energy)



Source: Factset, IBES, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

S&P 500 2022 EPS revision by sector



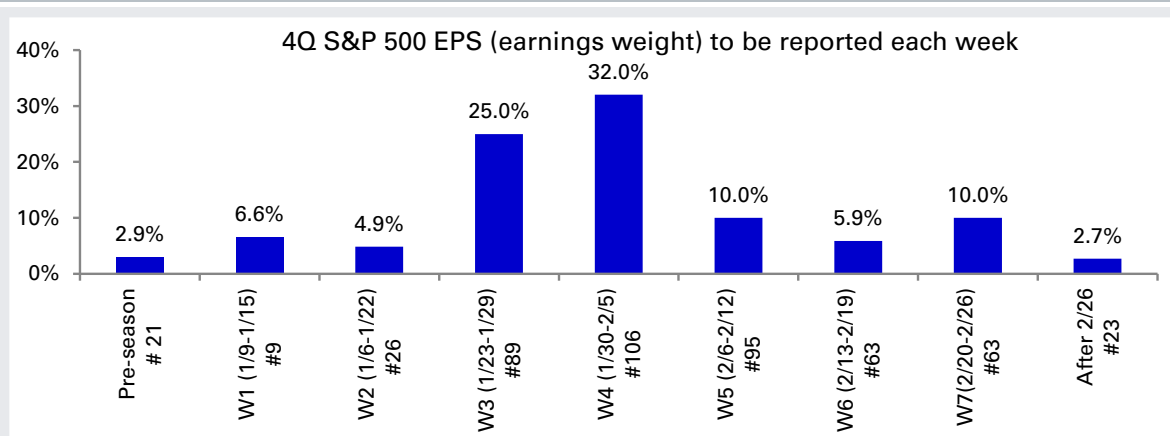
Source: Factset, IBES, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

S&P 500: 4Q22 earnings season summary statistics

	4Q22 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 (%)		
S&P 500	38.9%	142	65%	31%	1.1%	-0.3%	51%	32%	0.7%	5.6%		
S&P 500 ex. Financials & Real Est	33.7%	97	69%	29%	1.3%	5.3%	55%	32%	0.8%	5.9%		
S&P 500 ex. Energy	40.0%	135	66%	30%	1.2%	-4.1%	51%	32%	0.5%	4.3%		
S&P ex. Tech	39.0%	122	61%	34%	0.9%	4.3%	49%	35%	0.7%	6.8%		
S&P ex. Energy, Financials & Real Est	34.3%	90	70%	28%	1.5%	0.0%	56%	31%	0.6%	4.3%		
Communication Services	36.6%	5	40%	60%	0.3%	-13.2%	40%	60%	0.0%	-6.4%		
Consumer Discretionary	20.6%	10	60%	40%	1.8%	32.3%	60%	40%	-1.2%	16.9%		
Consumer Staples	39.1%	11	73%	27%	3.5%	-0.1%	82%	18%	1.1%	5.3%		
Energy	35.4%	7	57%	43%	-0.5%	85%	43%	43%	2.9%	20.0%		
Financials	71.8%	42	55%	38%	0.4%	-12.6%	43%	33%	0.2%	4.3%		
Health Care	26.5%	8	75%	25%	5.5%	6.3%	50%	38%	0.6%	6.2%		
Industrials	48.8%	27	59%	33%	-4.2%	78.0%	48%	30%	0.7%	13.4%		
Information Technology	38.4%	20	90%	10%	1.8%	-13.2%	60%	15%	0.5%	-2.7%		
Materials	29.5%	7	71%	29%	7.7%	-44.1%	43%	57%	0.9%	-10.1%		
Real Estate	16.2%	3	100%	0%	5.4%	-1.6%	33%	33%	1.4%	0.6%		
Utilities	16.0%	2	100%	0%	2.3%	22.9%	50%	50%	7.6%	21.6%		

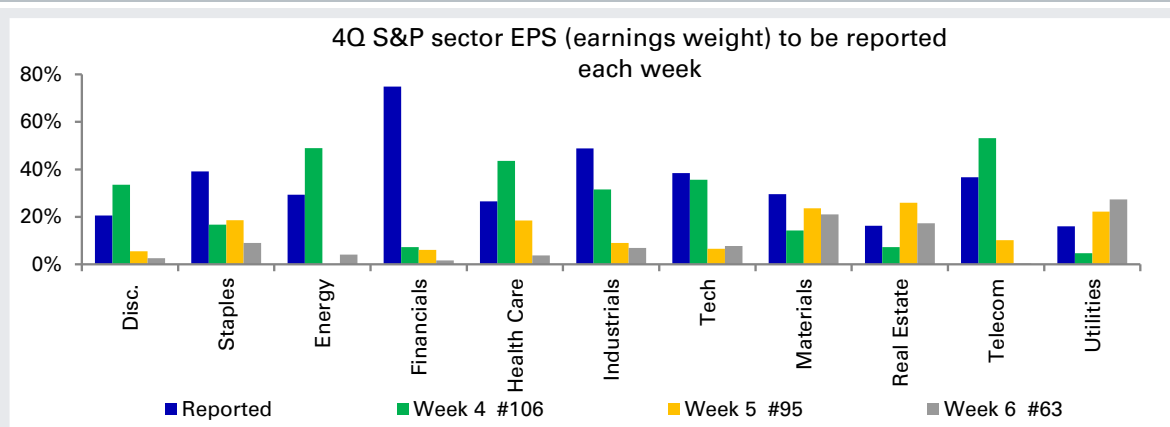
* # Beat, # miss and weighted surprise % is based on EPS and sales estimate as of 12/31/2022 (as of 12/1/2022 for pre-season reporters)
 EPS is considered beat or miss when the difference between actual and estimate as of 12/31/2022 is more than \$0.01 (12/1/2022 for pre-season reporters)
 Sales is considered beat or miss when the difference between actual and estimate as of 12/31/2022 is more than \$20 million (12/1/2022 for pre-season reporters)
 Source: Factset, DWS Investment GmbH as of 1/27/2022. Past performance may not be indicative of future results.

4Q22 S&P 500 earnings to be reported each week



Source: Factset, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

4Q22 S&P 500 earnings to be reported each week by sector



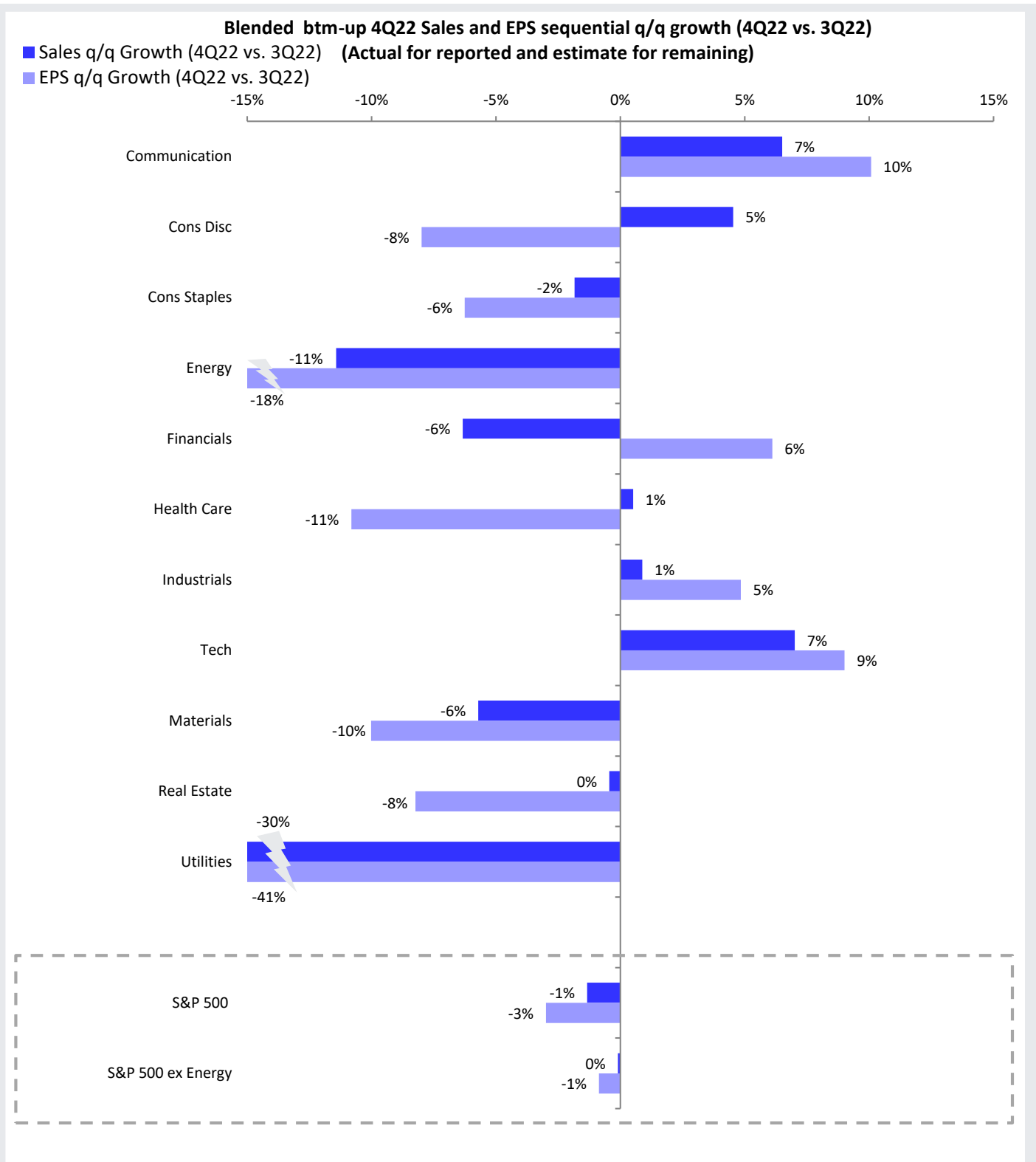
Source: Factset, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

S&P 500 EPS & Sales growth and Net Margins by sector (4Q22 is blended with actual for reported and consensus for the rest)

EPS growth (y/y)	2018					2019					2020					2021					2022			
	1Q18	2Q18	3Q18	4Q18	2018	1Q19	2Q19	3Q19	4Q19	2019	1Q20	2Q20	3Q20	4Q20	2020	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q22	3Q22	4Q22
S&P 500	27.2%	28.4%	27.2%	14.7%	21.6%	2.9%	1.9%	1.3%	3.5%	2.1%	-12.6%	-31.4%	-7.0%	4.3%	-9.0%	48.9%	90.4%	40.1%	30.0%	46.7%	10.1%	8.4%	4.1%	-3.2%
S&P 500 ex. Financials & Real Est	27.2%	29.4%	25.2%	14.5%	20.6%	1.7%	-0.1%	0.9%	2.4%	0.7%	-6.1%	-27.9%	-7.8%	1.1%	-6.9%	36.0%	80.1%	41.7%	35.7%	43.7%	17.7%	15.5%	8.4%	-1.7%
S&P 500 ex. Energy	25.6%	26.1%	24.4%	12.1%	19.3%	4.1%	2.6%	3.6%	6.3%	3.8%	-12.1%	-25.4%	-3.0%	7.9%	-5.1%	49.7%	76.7%	32.6%	22.3%	40.0%	4.4%	-2.2%	-6.3%	-7.4%
S&P 500 ex. Tech	25.1%	27.0%	26.5%	17.1%	22.1%	4.9%	3.4%	2.2%	1.2%	1.7%	-17.9%	-38.8%	-9.7%	1.0%	-14.7%	52.4%	105.4%	40.6%	32.0%	52.3%	9.2%	10.6%	5.5%	-1.3%
S&P ex. Energy, Fin & Real Est	25.2%	26.4%	21.6%	11.3%	17.7%	3.3%	0.7%	3.8%	5.8%	2.9%	-5.1%	-20.0%	-2.9%	5.4%	-1.7%	36.6%	64.1%	32.3%	25.8%	35.4%	10.3%	2.1%	-1.7%	-6.9%
S&P ex. Energy, Fin, Real Est, Healthcare	27.6%	28.8%	22.7%	10.7%	19.1%	1.6%	-2.0%	2.7%	4.8%	1.2%	-7.7%	-26.4%	-5.6%	5.0%	-4.3%	39.2%	79.5%	33.7%	25.7%	37.6%	8.5%	0.4%	-1.5%	-6.9%
FANG (FB, AMZN, NFLX, Google)	36.5%	112.2%	50.0%	31.0%	56.2%	28.6%	14.6%	-5.5%	16.0%	4.1%	-14.4%	-0.9%	60.1%	56.9%	42.1%	149.1%	109.4%	25.5%	35.7%	65.4%	-40.7%	-40.2%	-28.7%	-48.1%
FANG & AAPL	32.9%	71.7%	45.2%	16.7%	35.3%	8.3%	5.1%	-0.9%	17.9%	3.2%	-6.7%	6.4%	29.3%	45.0%	34.6%	135.6%	106.2%	41.0%	30.5%	58.2%	-20.2%	-27.5%	-15.1%	-29.5%
S&P ex FANG	26.9%	26.4%	26.4%	14.0%	20.5%	1.9%	1.3%	1.6%	2.9%	2.0%	-12.5%	-32.9%	-9.7%	1.4%	-11.2%	44.2%	89.1%	41.1%	29.5%	45.4%	14.2%	12.1%	6.2%	0.9%
S&P ex FANG & AAPL	26.7%	26.0%	25.8%	14.4%	20.5%	2.4%	1.6%	1.5%	1.9%	2.0%	-13.1%	-34.4%	-10.0%	-0.8%	-12.8%	41.1%	88.5%	40.0%	29.9%	45.2%	14.6%	13.1%	6.3%	1.6%
S&P ex. Energy & Fin & Real Est & FANG	24.7%	23.7%	20.3%	10.2%	16.0%	1.9%	-0.1%	4.4%	5.1%	2.9%	-4.5%	-21.2%	-6.2%	1.7%	-4.3%	30.0%	60.5%	33.0%	24.7%	32.7%	16.1%	6.6%	1.2%	-1.8%
Communication Services	22.6%	37.6%	27.2%	16.7%	25.5%	9.6%	9.8%	0.9%	8.4%	3.3%	-9.0%	-21.3%	2.0%	1.0%	2.9%	53.2%	72.3%	35.3%	16.4%	39.0%	-3.0%	-14.5%	-21.5%	-20.2%
Consumer Discretionary	17.6%	21.5%	27.0%	18.1%	21.0%	11.0%	4.3%	2.8%	2.0%	1.1%	-46.3%	-62.4%	2.0%	3.3%	-19.0%	173.2%	259.4%	15.1%	47.0%	69.2%	-26.6%	-11.9%	11.0%	-15.4%
Multiline & Specialty Retail	22.9%	30.4%	24.3%	18.8%	23.0%	9.7%	6.5%	10.9%	6.3%	9.3%	-40.4%	22.7%	39.5%	17.4%	11.6%	203.3%	36.7%	16.3%	17.1%	39.7%	-0.8%	-6.6%	-0.9%	-4.6%
Consumer Staples	13.0%	14.1%	9.3%	4.3%	9.1%	-0.8%	-0.6%	3.4%	2.8%	1.3%	6.9%	-5.0%	5.5%	6.0%	4.8%	10.3%	19.5%	7.0%	7.3%	11.0%	7.6%	2.2%	1.3%	-2.1%
Energy	75.9%	108.2%	103.0%	87.1%	87.1%	-24.3%	-12.4%	-36.6%	-41.4%	-29.9%	-28.5%	-169.5%	-110.2%	-102.7%	-110.0%	18.0%	245.8%	178.5%	9720%	-1542%	264.0%	302.4%	145.4%	60.2%
Financials	29.9%	27.4%	41.1%	16.5%	28.3%	7.2%	10.5%	2.4%	9.8%	7.8%	-39.5%	-48.8%	-3.5%	20.5%	-18.6%	138.4%	167.7%	36.3%	10.0%	67.6%	-17.4%	-20.2%	-17.0%	-11.6%
Financials ex. BAC, C & JPM	25.9%	25.2%	45.5%	12.9%	26.9%	5.3%	6.2%	0.9%	4.9%	4.9%	-32.7%	-45.8%	-2.3%	23.6%	-15.1%	106.3%	152.8%	34.0%	16.0%	67.6%	-19.9%	-17.7%	-18.0%	-16.0%
Health Care	16.9%	17.9%	17.2%	13.9%	12.1%	10.0%	12.8%	8.6%	10.1%	9.9%	4.6%	3.6%	8.2%	7.3%	9.9%	28.3%	25.5%	27.0%	26.3%	28.0%	16.5%	8.2%	-0.1%	-6.9%
Industrials	29.5%	25.8%	28.3%	33.9%	24.5%	8.2%	-9.0%	2.4%	-9.9%	-3.6%	-26.9%	-80.1%	-46.9%	-28.9%	-47.0%	-1.8%	384.3%	76.2%	38.8%	70.1%	36.4%	29.6%	18.8%	36.5%
Industrials ex. BA	26.7%	25.6%	28.1%	30.6%	22.7%	9.8%	5.6%	6.1%	3.1%	5.0%	-19.3%	-74.5%	-45.5%	-24.5%	-42.7%	-2.1%	243.1%	70.8%	43.2%	61.9%	38.1%	31.2%	28.5%	21.8%
Industrials ex. Defense	30.5%	26.3%	26.5%	25.9%	23.6%	6.5%	-1.0%	2.6%	-12.2%	-5.0%	-29.8%	-88.5%	-51.8%	-33.9%	-52.7%	-3.9%	699.2%	98.9%	45.9%	86.7%	43.6%	38.1%	16.7%	40.8%
Information Technology	35.6%	34.3%	29.8%	7.3%	19.6%	-4.6%	-4.2%	-2.1%	11.7%	3.3%	9.8%	1.3%	3.8%	14.8%	14.0%	37.6%	49.9%	38.2%	24.2%	29.6%	13.5%	0.1%	-1.2%	-8.8%
Materials	67.3%	63.6%	-28.3%	-22.8%	11.3%	-12.7%	-19.5%	80.2%	-11.8%	-9.4%	-7.7%	-34.7%	-13.0%	12.9%	-6.2%	48.0%	133.8%	87.4%	64.5%	84.5%	47.5%	19.0%	-8.7%	-20.7%
Real Estate	8.2%	8.8%	6.7%	7.6%	7.9%	4.7%	0.9%	4.3%	0.0%	2.1%	-2.9%	-12.3%	-5.6%	0.4%	-4.2%	8.8%	29.2%	17.3%	10.1%	14.9%	16.9%	10.5%	8.4%	3.8%
Utilities	18.9%	7.5%	11.9%	-10.4%	7.6%	-0.7%	1.5%	7.3%	18.1%	6.3%	4.3%	7.0%	0.8%	-2.8%	1.3%	-1.2%	12.8%	10.3%	-1.3%	5.2%	26.5%	-4.9%	-9.5%	0.5%

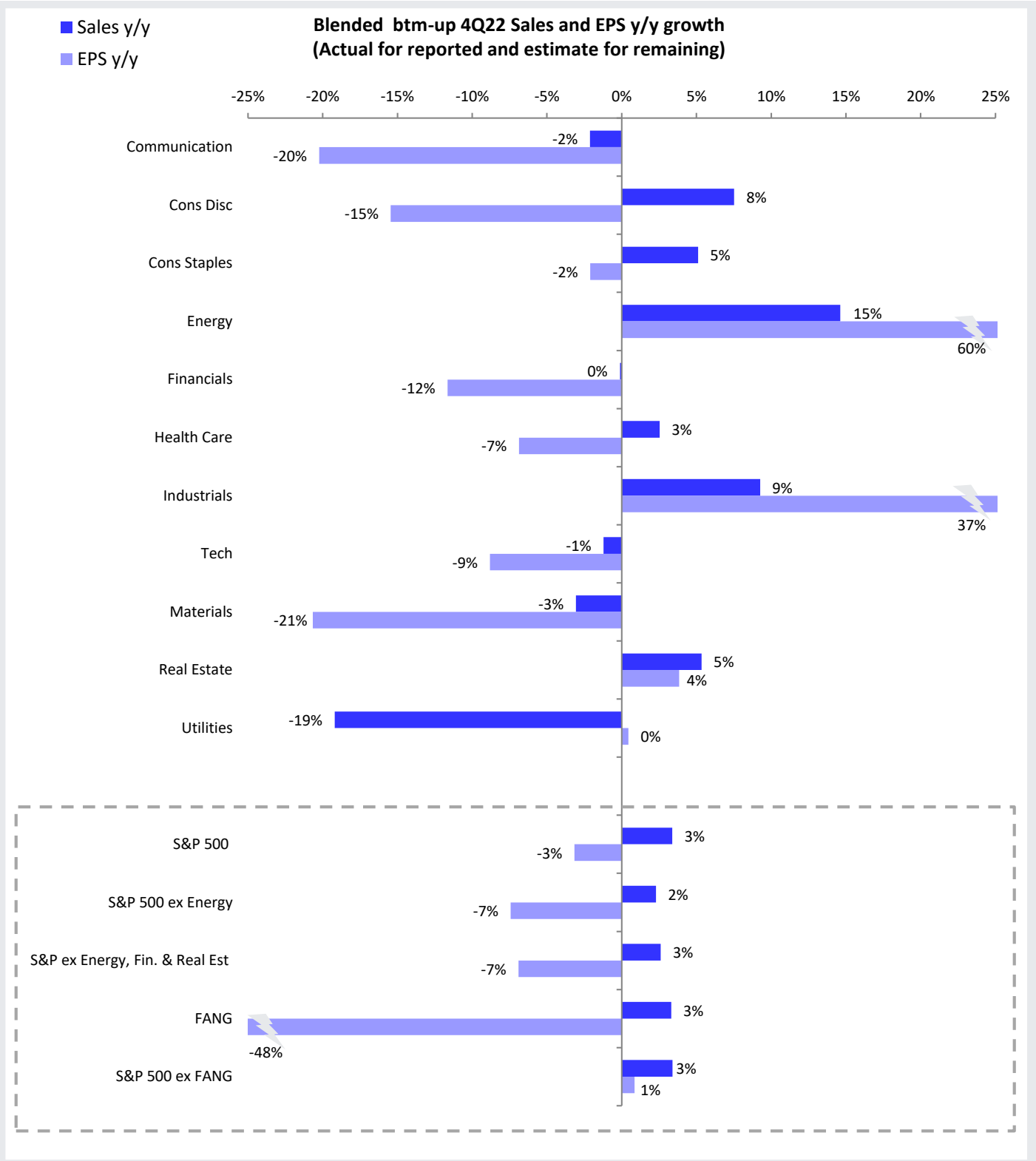
Sales growth (y/y)	2018					2019					2020					2021					2022			
	1Q18	2Q18	3Q18	4Q18	2018	1Q19	2Q19	3Q19	4Q19	2019	1Q20	2Q20	3Q20	4Q20	2020	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q22	3Q22	4Q22
S&P 500	9.4%	11.2%	10.7%	4.0%	8.7%	5.8%	5.2%	4.0%	7.8%	5.7%	-1.8%	-10.3%	-2.3%	-0.5%	-3.7%	9.5%	21.8%	13.9%	15.2%	15.0%	13.6%	12.2%	13.0%	3.4%
S&P 500 ex. Financials & Real Est	9.2%	10.2%	9.6%	1.7%	7.6%	3.3%	2.9%	2.1%	6.5%	3.7%	-2.8%	-11.7%	-2.5%	1.5%	-3.9%	12.2%	26.7%	17.5%	16.5%	18.8%	15.3%	13.1%	12.3%	3.8%
S&P 500 ex. Energy	7.9%	8.5%	7.6%	1.6%	6.3%	3.7%	3.3%	3.4%	7.7%	4.5%	-1.6%	-6.7%	0.3%	4.0%	-1.1%	12.4%	20.6%	13.4%	11.7%	15.0%	10.3%	6.8%	8.6%	2.3%
S&P 500 ex. Tech	8.0%	9.7%	8.7%	2.2%	7.1%	3.8%	3.4%	2.4%	6.4%	4.0%	-3.2%	-12.5%	-3.4%	-0.1%	-5.2%	10.0%	24.8%	16.3%	15.9%	17.3%	13.7%	12.5%	12.7%	4.1%
S&P ex. Energy, Fin & Real Est	8.4%	8.5%	8.0%	1.0%	6.4%	3.5%	3.3%	3.3%	7.9%	4.5%	-2.0%	-7.1%	0.8%	4.8%	-1.0%	13.0%	22.2%	13.8%	11.9%	16.6%	11.7%	7.3%	6.8%	2.6%
S&P ex. Energy, Fin, Real Est, Healthcare	8.7%	8.8%	8.2%	-0.7%	6.3%	0.7%	0.4%	0.1%	6.5%	1.8%	-5.3%	-10.0%	-2.0%	2.6%	-4.1%	13.9%	22.9%	13.5%	11.4%	17.9%	10.8%	6.5%	9.6%	2.6%
FANG (FB, AMZN, NFLX, Google)	37.8%	35.2%	27.5%	21.8%	29.5%	16.2%	21.0%	23.5%	20.7%	20.9%	21.3%	22.9%	27.8%	35.8%	27.7%	40.7%	38.6%	24.5%	16.8%	28.5%	11.5%	7.7%	9.2%	3.3%
FANG & AAPL	27.8%	28.1%	24.3%	9.4%	21.4%	8.7%	13.7%	15.0%	15.8%	12.5%	13.9%	19.0%	16.5%	30.2%	22.5%	44.8%	37.9%	25.8%	14.8%	27.4%	10.5%	5.9%	8.9%	1.1%
S&P ex FANG	7.9%	9.3%	8.5%	1.7%	6.7%	3.0%	2.5%	1.7%	5.9%	3.2%	-3.2%	-11.9%	-3.7%	-0.4%	-4.8%	10.4%	23.8%	16.2%	15.6%	16.4%	13.0%	12.1%	12.0%	3.4%
S&P ex FANG & AAPL	7.8%	9.2%	8.3%	1.7%	6.6%	3.2%	2.5%	1.7%	5.8%	3.3%	-3.3%	-12.3%	-3.8%	-1.0%	-5.2%	9.5%	23.5%	15.9%	15.8%	16.2%	13.8%	12.4%	12.1%	3.6%
S&P ex. Energy & Fin & Real Est & FANG	7.5%	7.7%	7.3%	0.1%	5.5%	2.9%	2.6%	2.4%	7.3%	3.8%	-3.1%	-8.6%	-0.6%	3.0%	-2.4%	11.4%	21.1%	13.1%	11.5%	15.8%	11.7%	7.3%	8.7%	2.6%
Communication Services	12.1%	10.7%	13.0%	12.8%	11.6%	12.2%	14.8%	11.1%	3.8%	9.2%	3.9%	-7.2%	0.7%	5.5%	2.6%	12.3%	25.9%	16.6%	11.5%	15.1%	7.3%	3.6%	1.2%	-2.1%
Consumer Discretionary	9.9%	9.8%	10.3%	7.7%	8.9%	4.4%	5.3%	5.6%	2.9%	4.2%	0.4%	-11.9%	6.4%	11.8%	6.8%	19.6%	35.3%	10.6%	11.2%	13.1%	9.0%	11.0%	14.5%	7.5%
Multiline & Specialty Retail	5.3%	7.6%	5.9%	3.1%	0.0%	4.6%	3.2%	4.2%	2.7%	0.0%	0.9%	11.4%	16.5%	15.5%	0.0%	28.5%	17.1%	9.2%	10.0%	0.0%	3.1%	2.4%	4.2%	1.9%
Consumer Staples	5.3%	5.5%	3.0%	1.9%	4.0%	2.7%	2.5%	3.6%	3.4%	2.7%	5.8%	-0.2%	3.4%	4.7%	5.1%	3.8%	12.5%	10.1%	9.5%	6.5%	9.5%	8.5%	8.3%	5.1%
Energy	18.2%	28.2%	25.8%	9.0%	20.2%	0.9%	-0.4%	-8.4%	-6.1%	-3.8%	-10.8%	-54.0%	-34.5%	-32.2%	-32.9%	3.2%	111.0%	73.2%	88.9%	51.5%	58.9%	75.9%	47.7%	14.6%
Financials	4.3%	8.2%	5.2%	4.7%	5.4%	4.7%	3.4%	4.2%	6.2%	4.6%	0.1%	-4.1%	-2.7%	-0.7%	-1.6%	9.3%	11.4%	10.7%	9.5%	5.5%	0.5%	2.5%	8.6%	-0.1%
Financials ex. BAC, C & JPM	3.7%	9.3%	5.5%	4.5%	5.6%	5.6%	3.6%	4.3%	6.4%	5.0%	-0.2%	-6.5%	-2.1%	0.2%	-1.9%	10.6%	16.2%	12.1%	10.4%	6.6%	1.0%	1.9%	8.5%	-2.7%
Health Care	7.4%	7.5%	7.2%	7.8%	6.6%	14.6%	14.8%	15.6%	13.1%	15.3%	9.2%	6.7%	10.3%	12.6%	9.9%	10.5%	20.0%	15.0%	13.4%	12.7%	14.5%	9.7%	5.5%	2.5%
Industrials	10.4%	9.7%	7.9%	4.8%	4.9%	5.0%	-0.3%	0.7%	2.0%	2														

S&P 500: Blended bottom-up 4Q22 Sales and EPS sequential q/q growth by sector: 4Q22 vs. 3Q22



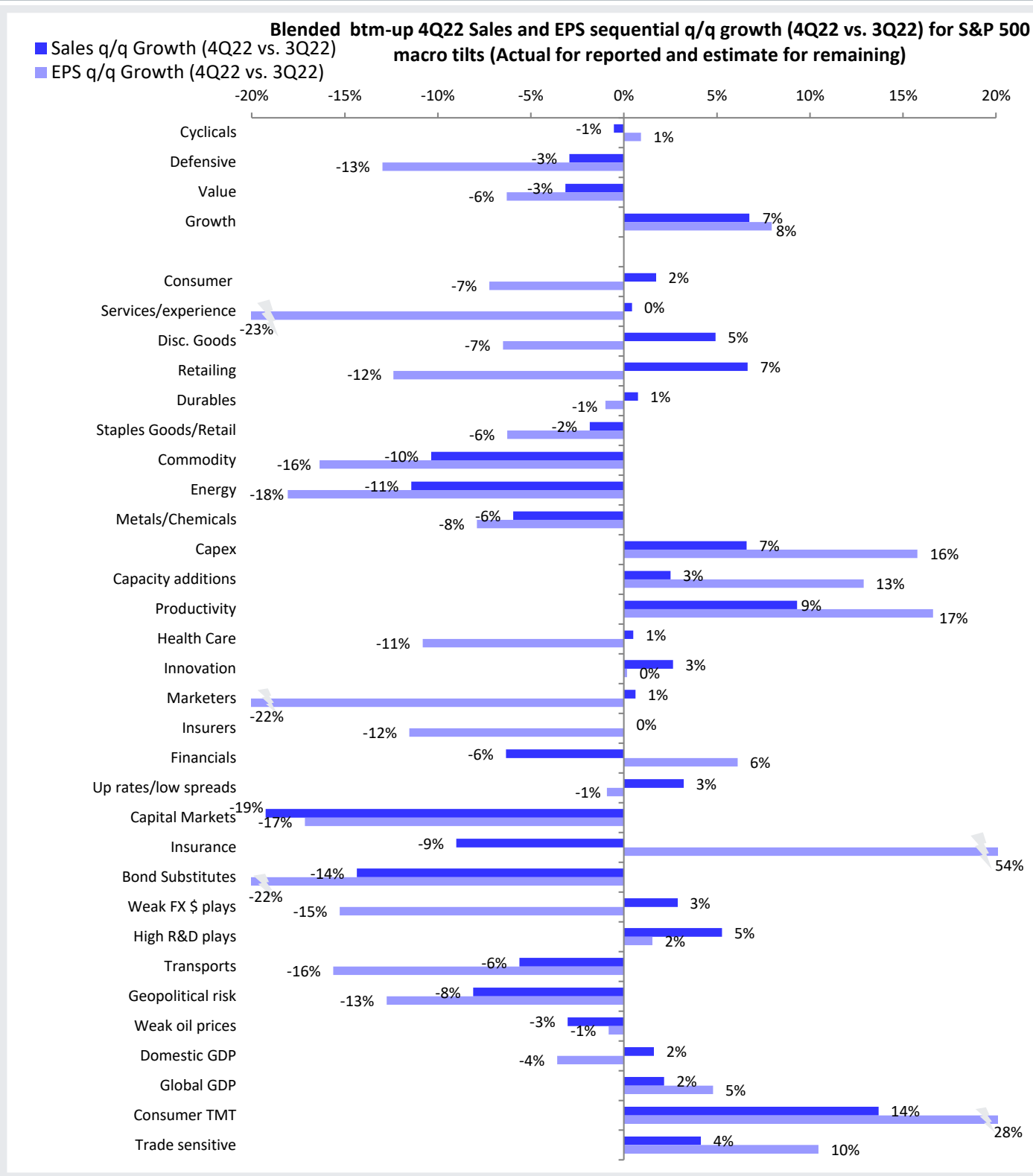
Source: Factset, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

S&P 500: Blended bottom-up 4Q22 Sales and EPS y/y growth by sector: 4Q22 vs. 4Q21



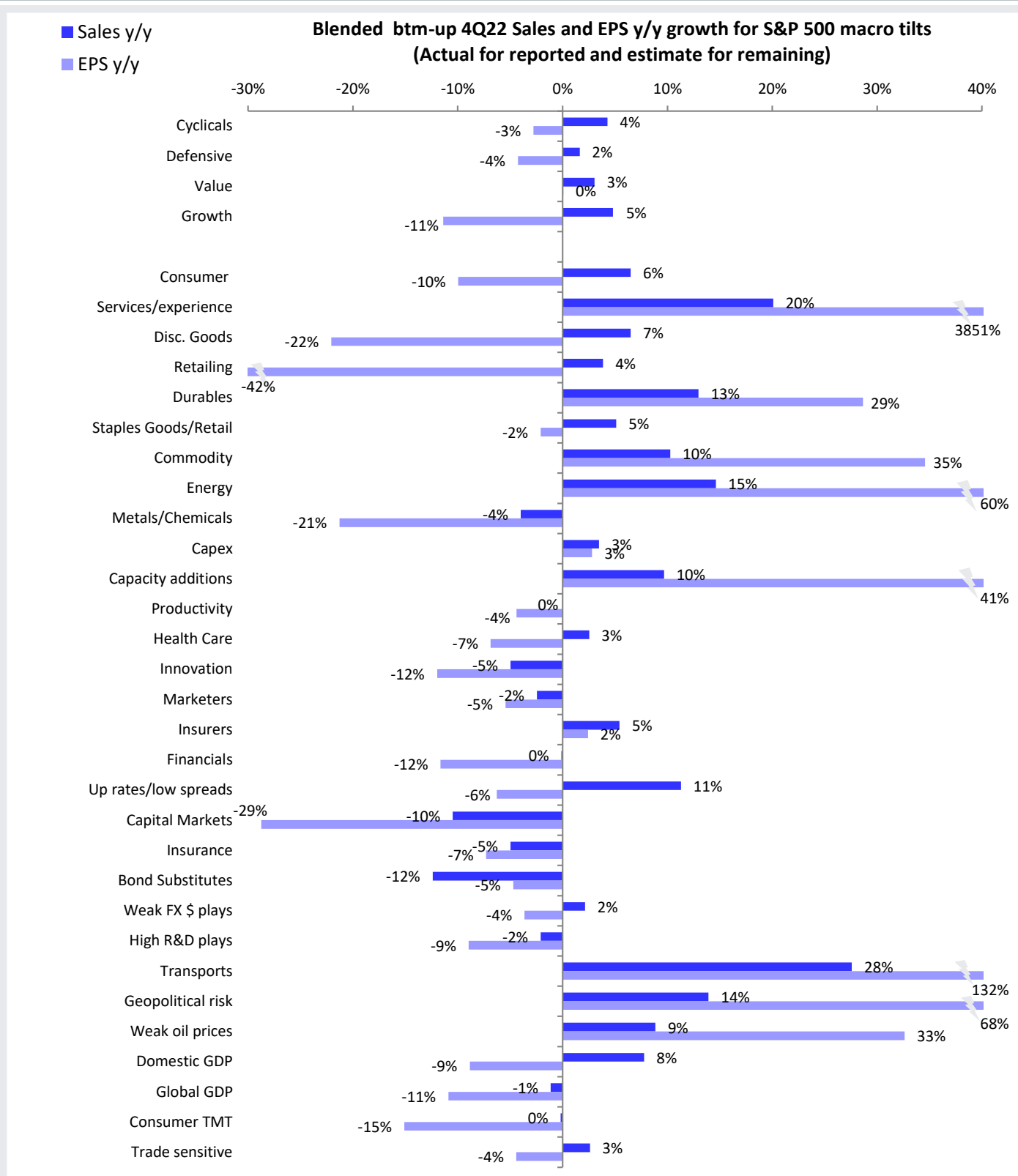
Source: Factset, DWS Investment GmbH as of 1/20/2022. Past performance may not be indicative of future results.

S&P 500: Blended bottom-up 4Q22 Sales and EPS sequential q/q growth for macro tilts: 4Q22 vs. 3Q22



Source: Factset, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.

S&P 500: Blended bottom-up 4Q22 Sales and EPS y/y growth for macro tilts: 4Q22 vs. 4Q21



Source: Factset, DWS Investment GmbH as of 1/27/2023. 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	y/y	Bottom-up Consensus (IBES)				DWS View				Normalized 2023	
										2022E	y/y	2023E	y/y	2022E	y/y	2023E	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	49.0%										
S&P 500 EPS (current constituents)	\$116.53	\$117.26	\$117.49	\$129.37	\$156.07	\$161.57	\$144.24	\$207.99	46.4%	\$222.41	6.9%	\$228.02	2.5%	\$223	7.2%	\$225	0.9%	\$220	98%
Sector (\$ bn)																			
Communication Services	67.9	78.3	90.9	96.7	123.4	130.8	134.1	185.4	38.3%	163.8	-11.6%	172.6	5.3%	168.0	-9.4%	170.0	1.2%	157.0	92%
Consumer Discretionary	64.5	75.3	84.1	88.2	104.0	101.9	80.4	133.9	66.6%	137.8	2.9%	151.9	10.2%	140.0	4.5%	146.0	4.3%	149.3	102%
Consumer Staples	78.7	77.0	79.4	84.1	90.8	91.5	95.4	105.2	10.2%	108.1	2.8%	113.2	4.8%	106.0	0.8%	107.0	0.9%	107.0	100%
Energy	94.3	39.6	10.8	37.3	69.6	49.6	-5.1	78.4	1632%	204.3	160.5%	170.4	-16.6%	190.5	142.9%	172.5	-9.4%	147.8	86%
Financials	172.4	187.1	188.7	195.8	242.5	249.5	198.2	328.9	65.9%	274.4	-16.6%	307.1	11.9%	282.0	-14.3%	292.5	3.7%	295.0	101%
Health Care	137.9	153.0	157.8	172.2	189.2	207.3	227.4	294.1	29.4%	309.0	5.1%	295.0	-4.5%	310.0	5.4%	315.0	1.6%	300.7	95%
Industrials	99.9	103.4	97.4	106.2	129.8	124.1	65.1	109.0	67.4%	140.5	28.8%	156.5	11.4%	142.0	30.2%	145.0	2.1%	145.5	100%
Information Technology	177.8	185.2	194.7	229.7	268.1	266.1	298.2	382.0	28.1%	392.0	2.6%	413.5	5.5%	395.0	3.4%	410.0	3.8%	410.0	100%
Materials	24.5	23.6	22.4	28.2	35.2	33.6	32.0	58.5	82.9%	62.7	7.3%	55.9	-10.9%	63.0	7.7%	55.2	-12.4%	54.5	99%
Real Estate	23.4	26.6	29.5	32.4	36.0	37.7	37.4	44.4	18.6%	48.8	9.9%	49.7	1.8%	47.0	5.9%	49.0	4.3%	47.6	97%
Utilities	31.2	31.5	33.7	35.1	38.7	42.7	44.1	47.1	6.8%	48.0	2.0%	51.5	7.3%	50.0	6.2%	52.0	4.0%	52.6	101%
S&P 500	972.5	980.6	989.4	1106.1	1327.4	1334.7	1207.1	1767.0	46.4%	1889.5	6.9%	1937.2	2.5%	1893.5	7.2%	1914.2	1.1%	1867.0	98%
S&P ex. Energy (\$bn)	878.2	941.0	978.6	1068.8	1257.8	1285.1	1212.3	1688.6	39.3%	1685.2	-0.2%	1766.8	4.8%	1703.0	0.9%	1741.7	2.3%	1719.3	99%
S&P ex. Tech (\$bn)	794.8	795.4	794.7	876.3	1059.3	1068.6	908.9	1385.0	52.4%	1497.5	8.1%	1523.7	1.8%	1498.5	8.2%	1504.2	0.4%	1457.0	97%
S&P 500 Sales/Share (historical index)	\$1,163	\$1,127	\$1,151	\$1,232	\$1,339	\$1,415	\$1,362	\$1,567	15.0%										
S&P 500 Non-GAAP Net Margin	10.2%	10.4%	10.3%	10.7%	12.1%	11.5%	10.3%	13.3%											

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
2022E	223	55	58	56	54
2023E	225	53	56	57	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 9/30/2022.

Source: Factset, DWS Investment GmbH as of 1/27/2023. Past performance may not be indicative of future results.



DWS Investment GmbH View: S&P 500 fair value by sector: Assuming a ~5.50% 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 %
Communication Services	2,692	15.8	170.0	92%	157.0	-8%	144.4	15%	5.50%	2,625	0%	2,625	1.1%	2,820	18.0	5%
Consumer Discretionary	3,636	24.9	146.0	102%	149.3	-8%	137.4	12%	5.50%	2,498	12%	2,786	1.1%	2,993	20.0	-18%
<i>ex. Auto & Internet Retail</i>	2,069	22.1	93.5	100%	93.5	-8%	86.0	17%	5.50%	1,564	5%	1,642	1.6%	1,755	18.8	-15%
Consumer Staples	2,303	21.5	107.0	100%	107.0	-8%	98.4	13%	4.75%	2,072	0%	2,072	2.6%	2,179	20.4	-5%
Energy	1,799	10.4	172.5	86%	147.8	-12%	130.0	16%	6.00%	2,167	-20%	1,734	2.7%	1,843	12.5	2%
Financials	4,033	13.8	292.5	101%	295.0	-10%	265.5		6.25%	4,248	-10%	3,824	2.1%	4,097	13.9	2%
Banks	1,361	10.5	130.0	105%	136.5	-10%	122.9		6.75%	1,820	-15%	1,547	3.1%	1,650	12.1	21%
Health Care	5,051	16.0	315.0	95%	300.7	-10%	270.7	9%	5.25%	5,155	0%	5,155	1.6%	5,497	18.3	9%
Industrials	2,962	20.4	145.0	100%	145.5	-8%	133.9	18%	5.50%	2,434	0%	2,434	1.7%	2,599	17.9	-12%
Information Technology	9,132	22.3	410.0	100%	410.0	-5%	389.5	2%	5.50%	7,082	10%	7,790	1.1%	8,368	20.4	-8%
Materials	961	17.4	55.2	99%	54.5	-10%	49.0	17%	5.75%	853	0%	853	1.7%	913	16.8	-5%
Real Estate	891	18.2	49.0	97%	47.6	-8%	43.8	29%	5.00%	876	0%	876	3.5%	915	19.2	3%
Utilities	961	18.5	52.0	101%	52.6	-8%	48.4	60%	5.00%	969	0%	969	3.2%	1,015	19.3	6%
S&P 500 (\$ bn)	34,421	18.0	1914.2	98%	1867.0	-8.4%	1711.0		5.51%	30,979	0.4%	31117	1.7%	33,240	17.8	-3%
S&P 500 Index (\$/sh)	4060	18.0	225.0	98%	220.0	-8.2%	202.0	11%	5.50%	3673	0.0%	3673	1.7%	3915	17.8	-4%



Source: IBES, DWS Investment GmbH as of 1/27/2023. 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 9/30/2022.

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 %
CONSUMER DISCRETIONARY	3,636	24.9	146.0	102%	149.3	-8%	137	12%	5.50%	2,498	12%	2,786	1.1%	2,993	20.0	-18%
Auto Components	39,854	18.1	2,200	105%	2,310	-8%	2,125	11%	5.75%	36,960	5%	38,808	0.4%	42,047	18.2	6%
Automobiles	521,117	20.0	26,000	95%	24,700	-12%	21,736	19%	6.50%	334,400	30%	434,720	0.6%	473,604	19.2	-9%
Distributors	55,219	18.4	3,000	100%	3,000	-8%	2,760	13%	5.75%	48,000	-5%	45,600	1.7%	48,804	16.3	-12%
Hotels Restaurants & Leisure	625,668	37.9	16,500	135%	22,275	-7%	20,716	27%	5.00%	414,315	20%	497,178	1.4%	529,879	23.8	-15%
Household Durables	127,483	8.8	14,500	90%	13,050	-15%	11,093	14%	6.75%	164,333	-15%	139,683	1.6%	151,083	11.6	19%
Internet & Direct Marketing Retail	1,045,291	39.4	26,500	100%	26,500	-8%	24,380	1%	5.50%	443,273	60%	709,236	0.0%	769,193	29.0	-26%
Leisure Products	8,260	11.8	700	100%	700	-8%	644	27%	5.75%	11,200	-20%	8,960	4.4%	9,350	13.4	13%
Multiline Retail	173,542	20.4	8,500	100%	8,500	-8%	7,820	12%	5.25%	148,952	0%	148,952	1.4%	159,093	18.7	-8%
Specialty Retail	844,773	20.4	41,500	100%	41,500	-7%	38,595	13%	5.25%	735,143	0%	735,143	1.7%	783,633	18.9	-7%
Textiles Apparel & Luxury Goods	194,295	29.4	6,600	103%	6,798	-7%	6,322	1%	5.25%	120,422	10%	132,464	1.5%	141,467	20.8	-27%
CONSUMER STAPLES	2,303	21.5	107.0	100%	107.0	-8%	98	13%	4.75%	2,072	0%	2,072	2.6%	2,179	20.4	-5%
Beverages	599,417	25.0	24,000	100%	24,000	-7%	22,320	13%	4.75%	469,895	15%	540,379	2.5%	568,894	23.7	-5%
Food & Staples Retailing	528,012	22.5	23,500	100%	23,500	-6%	22,090	8%	4.75%	465,053	0%	465,053	1.5%	494,188	21.0	-6%
Food Products	375,648	17.9	21,000	100%	21,000	-9%	19,110	24%	4.75%	402,316	-5%	382,200	2.6%	401,967	19.1	7%
Household Products	491,107	24.6	20,000	100%	20,000	-8%	18,400	9%	4.75%	387,368	10%	426,105	2.6%	448,085	22.4	-9%
Personal Products	64,464	43.0	1,500	100%	1,500	-8%	1,380	2%	4.75%	29,053	20%	34,863	0.9%	37,234	24.8	-42%
Tobacco	244,266	14.4	17,000	100%	17,000	-9%	15,470	20%	4.75%	325,684	-25%	244,263	6.0%	248,548	14.6	2%
Energy	1,799	10.4	172.5	86%	147.8	-12%	130	16%	6.00%	2,167	-20%	1,734	2.7%	1,843	12.5	2%
Energy Equipment & Services	143,273	19.1	7,500	100%	7,500	-8%	6,900	20%	5.75%	120,000	5%	126,000	1.9%	134,594	17.9	-6%
Oil Gas & Consumable Fuels	1,655,868	10.0	165,000	85%	140,250	-12%	123,420	16%	6.00%	2,057,000	-20%	1,645,600	3.3%	1,739,127	12.4	5%
FINANCIALS	4,033	13.8	292.5	101%	295.0	-10%	266	0%	6.25%	4,248	-10%	3,824	2.1%	4,097	13.9	2%
Capital Markets	1,049,654	17.8	59,000	95%	56,050	-10%	50,445	2%	6.25%	807,120	-5%	766,764	2.1%	821,414	14.7	-22%
Banks	1,360,516	10.5	130,000	105%	136,500	-10%	122,850	N/A	6.75%	1,820,000	-10%	1,638,000	3.0%	1,749,349	12.8	29%
Consumer Finance	206,036	10.1	20,500	95%	19,475	-15%	16,554	N/A	7.00%	236,482	-20%	189,186	1.6%	205,104	10.5	0%
Diversified Financial Services	577,808	21.8	26,500	100%	26,500	-7%	24,645	3%	5.50%	448,091	0%	448,091	0.0%	486,179	18.3	-16%
Insurance	838,985	14.8	56,500	100%	56,500	-8%	51,980	N/A	5.75%	904,000	-5%	858,800	1.6%	920,079	16.3	10%
Health Care	5,051	16.0	315.0	95%	300.7	-10%	271	9%	5.25%	5,155	0%	5,155	1.6%	5,497	18.3	9%
Biotechnology	799,877	13.1	61,000	95%	57,950	-10%	52,155	14%	5.25%	993,429	-15%	844,414	2.3%	894,354	15.4	12%
Health Care Equipment & Supplies	1,113,265	23.4	47,500	98%	46,550	-9%	42,361	9%	5.25%	806,867	20%	968,240	1.0%	1,038,247	22.3	-7%
Health Care Providers & Services	1,177,122	16.0	73,500	95%	69,825	-9%	63,541	8%	5.25%	1,210,300	0%	1,210,300	1.3%	1,294,941	18.5	10%
Life Sciences Tools & Services	446,892	26.0	17,200	95%	16,340	-9%	14,869	10%	5.25%	283,227	20%	339,872	0.2%	367,313	22.5	-18%
Pharmaceuticals	1,514,255	13.2	114,600	95%	108,870	-10%	97,983	8%	5.25%	1,866,343	-10%	1,679,709	2.5%	1,775,592	16.3	17%

Source: IBES, DWS Investment GmbH as of 1/27/2023. 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 %
INDUSTRIALS	2,962	20.4	145.0	100%	145.5	-8%	134	18%	5.50%	2,434	0%	2,434	1.7%	2,599	17.9	-12%
Aerospace & Defense	637,743	24.5	26,000	102%	26,520	-8%	24,398	22%	5.25%	464,731	10%	511,205	1.5%	545,883	20.6	-14%
Air Freight & Logistics	211,659	14.9	14,200	100%	14,200	-10%	12,780	8%	6.00%	213,000	-10%	191,700	2.9%	203,455	14.3	-4%
Airlines	77,506	11.4	6,800	115%	7,820	-15%	6,647	69%	8.00%	83,088	0%	83,088	0.6%	91,769	11.7	18%
Building Products	168,799	21.1	8,000	100%	8,000	-8%	7,360	15%	5.75%	128,000	0%	128,000	1.7%	137,018	17.1	-19%
Commercial Services & Supplies	138,881	25.3	5,500	100%	5,500	-8%	5,060	12%	5.00%	101,200	0%	101,200	1.4%	107,911	19.6	-22%
Construction & Engineering	37,051	18.5	2,000	100%	2,000	-8%	1,840	18%	5.50%	33,455	0%	33,455	0.5%	36,137	18.1	-2%
Electrical Equipment	191,827	20.2	9,500	102%	9,690	-8%	8,915	11%	5.25%	169,806	5%	178,296	1.7%	189,969	19.6	-1%
Industrial Conglomerates	346,066	20.2	17,100	102%	17,442	-8%	16,047	11%	5.25%	305,650	0%	305,650	1.9%	324,935	18.6	-6%
Machinery	652,656	20.7	31,500	97%	30,555	-8%	28,111	21%	5.50%	511,102	0%	511,102	1.5%	546,750	17.9	-16%
Professional Services	106,147	29.5	3,600	100%	3,600	-8%	3,312	19%	5.25%	63,086	0%	63,086	0.5%	67,949	18.9	-36%
Road & Rail	307,487	18.6	16,500	97%	16,005	-8%	14,725	18%	5.25%	280,469	0%	280,469	1.8%	298,550	18.7	-3%
Trading Companies & Distributors	86,130	20.0	4,300	97%	4,171	-10%	3,754	14%	5.50%	68,253	0%	68,253	1.3%	73,170	17.5	-15%
INFORMATION TECHNOLOGY	9,132	22.3	410.0	100%	410.0	-5%	390	2%	5.50%	7,082	10%	7,790	1.1%	8,368	20.4	-8%
Communications Equipment	294,312	15.9	18,500	100%	18,500	-7%	17,205	-3%	5.75%	299,217	-10%	269,296	2.4%	286,314	15.5	-3%
Technology Hardware Storage & Periphe	2,352,694	21.6	109,000	100%	109,000	-5%	103,550	3%	5.50%	1,882,727	5%	1,976,864	0.7%	2,131,063	19.6	-9%
Electronic Equipment Instruments & Com	208,014	19.8	10,500	100%	10,500	-7%	9,765	11%	5.75%	169,826	5%	178,317	1.1%	191,900	18.3	-8%
IT Services	1,570,042	22.0	71,500	100%	71,500	-5%	67,925	7%	5.50%	1,235,000	15%	1,420,250	1.2%	1,523,393	21.3	-3%
Semiconductors & Semiconductor Equipr	1,888,176	21.0	90,000	100%	90,000	-8%	82,800	2%	6.00%	1,380,000	0%	1,380,000	1.5%	1,483,299	16.5	-21%
Software	2,819,154	25.5	110,500	100%	110,500	-5%	104,975	0%	5.00%	2,099,500	20%	2,519,400	0.8%	2,700,035	24.4	-4%
MATERIALS	961	17.4	55.2	99%	54.5	-10%	49	17%	5.75%	853	0%	853	1.7%	913	16.8	-5%
Chemicals	656,567	17.3	38,000	100%	38,000	-10%	34,200	15%	5.75%	594,783	0%	594,783	1.9%	635,557	16.7	-3%
Construction Materials	45,638	26.8	1,700	95%	1,615	-10%	1,454	19%	5.75%	25,278	0%	25,278	0.8%	27,281	16.9	-40%
Containers & Packaging	98,700	13.2	7,500	100%	7,500	-10%	6,750	36%	5.75%	117,391	-15%	99,783	2.8%	105,717	14.1	7%
Metals & Mining	160,346	20.0	8,000	92%	7,360	-10%	6,624	5%	6.00%	110,400	-10%	99,360	2.0%	106,358	14.5	-34%
REAL ESTATE	891	18.2	49.0	97%	47.6	-8%	44	29%	5.00%	876	0%	876	3.5%	915	19.2	3%
Equity Real Estate Investment Trusts (RE	863,051	18.4	47,000	97%	45,590	-8%	41,943	30%	5.00%	838,856	0%	838,856	3.7%	875,110	19.2	1%
Real Estate Management & Development	28,256	14.1	2,000	100%	2,000	-8%	1,840	4%	5.50%	33,455	0%	33,455	0.0%	36,298	18.1	28%
COMMUNICATION SERVICES	2,692	15.8	170.0	92%	157.0	-8%	144	15%	5.50%	2,625	0%	2,625	1.1%	2,820	18.0	5%
Diversified Telecommunication Services	306,230	8.1	38,000	95%	36,100	-15%	30,685	105%	5.50%	557,909	-30%	390,536	6.5%	398,451	11.0	30%
Entertainment	500,141	27.8	18,000	100%	18,000	-5%	17,100	9%	5.50%	310,909	25%	388,636	0.2%	421,081	23.4	-16%
Interactive Media & Services	1,494,035	17.1	87,500	90%	78,750	-5%	74,813	-8%	5.50%	1,360,227	5%	1,428,239	0.0%	1,549,639	19.7	4%
Media	302,203	12.6	24,000	90%	21,600	-12%	19,008	60%	6.25%	304,128	-25%	228,096	2.2%	244,122	11.3	-19%
Wireless Telecommunication Services	89,105	35.6	2,500	100%	2,500	-5%	2,375	42%	5.25%	45,238	10%	49,762	0.0%	53,867	21.5	-40%
UTILITIES	961	18.5	52.0	101%	52.6	-8%	48	60%	5.00%	969	0%	969	3.2%	1,015	19.3	6%
Electric Utilities	606,293	18.9	32,000	102%	32,640	-8%	30,029	60%	5.00%	600,576	5%	630,605	3.2%	660,882	20.2	9%
Gas Utilities	15,043	20.1	750	100%	750	-8%	690	46%	5.00%	13,800	0%	13,800	2.8%	14,524	19.4	-3%
Independent Power and Renewable Elect	25,798	8.9	2,900	100%	2,900	-15%	2,465	113%	7.00%	35,214	0%	35,214	3.1%	37,646	13.0	46%
Multi-Utilities	285,195	18.4	15,500	100%	15,500	-8%	14,260	59%	5.00%	285,200	0%	285,200	3.4%	298,377	19.3	5%
Water Utilities	28,395	33.4	850	100%	850	-5%	808	38%	3.75%	21,533	0%	21,533	1.7%	22,626	26.6	-20%

Source: IBES, DWS Investment GmbH as of 1/27/2023. 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 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	\$225.00	DWS 2023E S&P 500 DPS	\$70.00	DWS 2023E S&P 500 aggregate ROE	22.5%	Fair long-term nominal return on S&P 500 index	8.50%
		2023E dividend payout ratio	31%	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	1.50%
"Normal 2023E" EPS / 2023E EPS	98%	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	5.50%
		Normal share repurchase payout ratio	19%	Estimated ROE on reinvested S&P EPS	8.50%	+ 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	8.50%
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%	Fair S&P 500 Market Value and Book Value Multiple	
<u>S&P 500 EPS Capitalization Valuation</u>		<u>S&P 500 DPS Discount Model</u>		+ Fair return on true reinvestment	2.56%	2022E end S&P 500 book value per share	\$1,000
Normal EPS / (real CoE - (EM/payout) - EM):		Normal DPS / (nominal CoE - DPS growth):		+ Value added return on true reinvestment	0.00%	Fair PB = Fair PE * normal aggregate ROE	3.67
S&P 500 intrinsic value at 2023 start	3673	S&P 500 intrinsic value at 2023 start	3673	= Long-term earnings growth	5.56%	Fair PE =(inc ROE-g)/(inc real ROE*(real CoE-real g))	18.2
S&P 500 intrinsic value at 2023 end	3915	S&P 500 intrinsic value at 2023 end	3915	+ Growth from net share repurchases	1.03%	= Long-term S&P 500 fair value of book at 2023 start	3673
Implied fair fwd PE in early 2023 on 2023E \$225 EPS	16.3	Implied fair forward yield on 2023E DPS of \$70.0	1.91%	= Long-term S&P 500 EPS/DPS growth	6.59%	Implied S&P 500 fair value of book at 2023 start	3673
Implied fair trailing PE at 2023 end on 2023E \$225 EPS	17.4	Implied fair trailing yield on 2023E DPS of \$70.0	1.79%	+ Fair normal dividend yield	1.91%	Steady-state PB = normal agg. ROE / real CoE	3.67
				= Total long-term return at constant PE	8.50%	Confirmed by fair steady-state PE = 1 / real CoE	18.2
Normal EPS / (real CoE-value added EPS growth)	3673	DPS discount model using true DPS (all payout)	3673	Value added growth premium in fair value est.	0%	Normal 2023E economic profit per share	\$147.00

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	5.00%	4427	4567	4709	4852	4997
Real	5.25%	4041	4158	4275	4393	4511
cost of	5.50%	3718	3816	3915	4014	4112
equity	5.75%	3443	3527	3611	3695	3778
	6.00%	3206	3279	3352	3424	3495

Source: DWS Investment Management GmbH

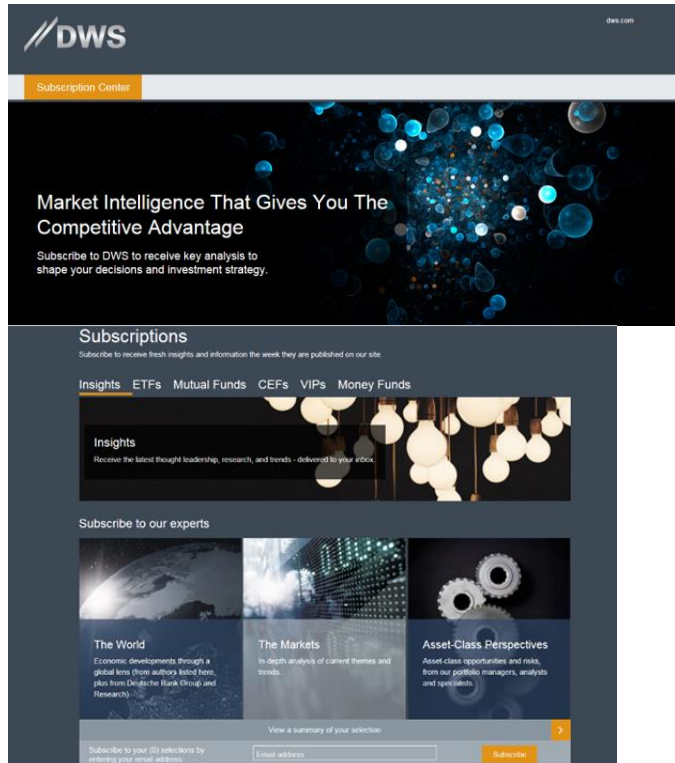
Optimistic 2023 end 10yr yield outlook: 2.5% inflation expectation + 1% overnight real rate + 0.75% inflation risk premium - 0.5% risk asset hedge = 3.75%

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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