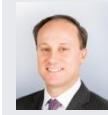


PE Risks: Rising rates, falling margins. How normal is 2022 S&P EPS?



David Bianco
Americas Chief Investment Officer
DWS

20yr S&P EPS growth super-cycle on Global & Digital. Can Healthcare extend it?

A two-part S&P EPS super cycle in 2000s and then 2010s. Strong China growth and related strength in commodity prices, US capex and exports drove double-digit S&P EPS growth for non-financials in 2000s. Continued globalization with a surge in digitalization further boosted S&P profitability in the 2010s and through the pandemic. The average rolling 10yr and 20yr real S&P 500 EPS rate shifted up after the mid-1990s. The average 10yr rolling real S&P EPS growth was 1.9% during 1960-1993, but jumped to 5.3% during 1994-2022. Unfortunately, the drivers of such superb real growth are slowing. The question today is will any economic trends and sectors pick up the baton to keep EPS growth strong or even just healthy in the 2020s. We think demographic demand trends against a rising supply of innovation in medicine, medical devices/equipment and diagnostics have the best chance of aiding healthy S&P EPS growth. Ongoing digitalization, virtualization, electric vehicles and utilities should also help push healthy EPS growth. Many consumer, commodity and manufacturing industries are likely to divert earnings from reinvestment to distributions.

Equity time value properly estimates normal EPS growth from retained earnings

Using annual EPS averages over a full economic cycle is a classic value investing tool. Graham & Dodd suggested 5-7 year trailing EPS averages to capture cyclical peaks and troughs in earnings power. Making such full cycle observation on EPS is the conceptual basis of Shiller's PE. Cycles were shorter in Graham & Dodd's time, so Shiller used 10yr averages to span recent cycles. However, time value must be properly accounted for if using EPS from 10 or more years ago to calculate averages indicative of normal EPS today. The Shiller PE uses inflation to adjust past EPS for time value, but this is not sufficient. Unless the dividend payout is 100% of earnings, companies should generate EPS growth above inflation. To compensate for forgone dividends, EPS growth must exceed inflation by the retention ratio multiplied by the real cost of equity. Real EPS growth equal to this amount is merely a dividend substitute. The Shiller PE doesn't adjust for EPS growth that should come from retained earnings. This is a major pitfall because dividend payout ratios declined tremendously since 1900-1950, from over two-thirds to less than a third in recent decades. Thus, EPS underlying Shiller's PE notably underestimates today's normal EPS. We modify Shiller's method by making an equity time value adjustment (ETVA) to historical EPS. We raise historical EPS observations by inflation plus the retention ratio that year multiplied by a real cost of equity estimate compounded for all years past. Our ETVA properly accounts for the opportunity cost of retained earnings, beyond inflation adjusting.

2022E S&P EPS is higher than inflation and fair return reinvestment would support

In 2022, 10yr trailing ETVA S&P EPS is \$198; inflation only adjusted 10yr trailing S&P EPS is \$167; and Shiller inflation only adjusted 10yr GAAP S&P EPS is \$141. 2022 S&P non-GAAP EPS is likely to be \$225-230, about 15% higher than 10yr trailing ETVA S&P EPS. Most of 2022 S&P EPS above ETVA trend is from 2018-2022. We expect some of that digital surge to reverse in the coming years, but also some of the globalization benefits at other sectors from the years before. We think real S&P EPS growth will be 3% or less.

S&P EPS quality deteriorating, quality metrics suggest unsustainable cash flow

Another concern we have is deteriorating S&P earnings quality. The GAAP to non-GAAP EPS ratio averages 86% out of recessions, usually above 90% for healthy mid-cycle quarters. However, it fell toward 80% in the last couple of quarters. Another metric we monitor is: $(\text{Net income} + \text{D\&A}) / (\text{CFO} - \text{Stock Option Expense})$. Free Cash Flow vs. Net Income is more an indication of investment activity than earnings quality. But comparing Cash Flow from Operations (CFO) to Net Income + Depreciation & Amortization (D&A) over several years helps reveal earnings quality. This measure is 10% higher than usual, both non-GAAP and GAAP based, suggesting earnings overstate steady-state cash flow.

Bigger Bear risk rising: S&P EPS risk still ahead and interest rates still climbing

If 2yr Treasury yields stay over 4% and 10yr TIPS over 1% at 2023 end, then the trailing S&P PE should not be above 18x on 2023E S&P EPS of \$225-235. Because rates are at these levels today and likely to persist through 2023 given Fed resolve, unless a worse than expected recession hits, we lower our 2023 end S&P target to 4200 from 4400. No change to our 4200 12-month target. But less upside through 2023 means that this small bear is justified and the risk of a bigger bear is rising. We maintain our next 5%+ S&P price move signal as Down, but daily/weekly volatility likely stays high upward and down.

Contributor: Ju Wang, Portfolio Manager Equity

Global Equity Index Forecasts: 12-months

Index	Sep 2023F	NTM EPS Growth	Target PE
S&P 500	4,200	4.7%	18.0
EuroStoxx 50	3,750	3.6%	12.0
Stoxx 600	445	3.4%	12.7
MSCI Japan	1,250	5.5%	13.0
MSCI Asia xJ	660	3.2%	12.3
MSCI EM	1,030	1.7%	11.7

S&P 500 Outlook at Yearend

	2021	2022F	2023F
S&P 500	4766	4100	4200
Dividend Yield	1.4%	1.6%	1.6%
S&P EPS	\$210	\$227	\$235
Trailing PE	22.7	18.1	17.9
DPS	\$60.50	\$68	\$72

Next 5%+ Price Move
(Up / Balanced Risk / **Down**)

Risk of near-term further 10%+ correction
(Low / **Moderate** / High)

Taxable U.S. Investor Asset Allocations

Asset Class	Long-term	Current
Fixed Income/Cash	30-35%	38.5%
Equities	55-60%	52.5%
US Equities	40%	37.0%
S&P 500	35%	33.0%
Small Caps	0-10%	4.0%
Foreign DM	10-15%	9.5%
Foreign EM	0-10%	6.0%
Alternatives	10%	9%

Key CIO Views

Macro signal:	2021	Sep 2023F
U.S. Fed Funds rate	0-0.25%	3.50-3.75%
10yr Treasury yield	1.52%	3.25%
US IG Corp Spreads	100bp	150bp
US High Yield Spreads	340bp	550bp
Crude Oil (WTI) \$/bbl	75	100
EUR / USD FX rate	1.13	1.05

GDP Forecasts

Region	2021	2022F	2023F
US	5.7%	1.9%	0.7%
World	6.0%	3.1%	2.8%
Euro area	5.2%	3.1%	0.7%
China	8.1%	3.3%	5.3%
Japan	1.7%	1.5%	0.9%

* 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 9/23/2022 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	2021	2022	2023	Equal weight	2021	2022	2023	Underweight	2021	2022	2023	
Over-weight	14.7%	19.2%	Health Care	15.9	15.1	14.5	Biotechnology Health Care Equipment & Supplies Health Care Technology Life Sciences Tools & Services Pharmaceuticals	10.8 22.0 28.3 22.2 14.5	11.1 21.3 25.9 24.0 12.5	11.0 20.0 23.8 21.4 12.3					Health Care Providers & Services	17.5	16.5	15.5	
	8.1%	9.8%	Communication Services	13.7	14.7	13.6	Diversified Telecommunication Servi Entertainment Interactive Media & Services Media	6.0 26.1 15.7 10.1	7.0 22.3 17.5 9.7	7.0 19.7 15.8 9.6	Wireless Telecommunication Servi	56.0	52.8	26.4					
	10.9%	11.9%	Financials	10.7	12.2	11.3	Banks Diversified Financial Services Insurance	8.0 23.0 13.4	9.7 19.2 12.9	8.5 18.5 12.2					Capital Markets Consumer Finance	12.8 6.5	15.2 7.8	15.1 8.0	
	3.3%	3.8%	Utilities	21.6	20.4	19.2	Electric Utilities Multi-Utilities	23.1 20.8	21.4 20.4	20.0 19.3	Gas Utilities Independent Power & Renewable E	21.7 8.4	21.6 8.2	18.4 8.2	Water Utilities	35.9	32.4	29.5	
	2.8%	3.3%	Real Estate	19.1	17.5	17.0	Real Estate Mgmt. & Development REITs	13.5 19.7	12.1 17.8	11.0 17.2									
Equal-weight	4.6%	4.6%	Energy	18.6	8.9	11.1	Energy Equipment & Services	29.5	17.5	13.8					Oil Gas & Consumable Fuels	18.1	8.6	11.0	
Under-weight	7.8%	7.6%	Industrials	23.5	17.8	16.6	Aerospace & Defense Electrical Equipment Industrial Conglomerates	29.3 20.2 19.5	22.3 17.8 18.0	19.9 16.6 16.5	Airlines Road & Rail	-4.5 20.3	18.2 17.2	9.1 16.5	Air Freight & Logistics Building Products Commercial Services & Supplies Construction & Engineering Machinery Professional Services Trading Companies & Distributors	11.8 17.3 33.6 22.3 17.3 22.2 20.5	11.8 16.0 29.5 18.9 15.9 21.0 16.1	12.2 16.0 27.9 17.9 15.4 20.4 16.1	
	26.7%	25.5%	Information Technology	22.2	20.5	19.1	Communications Equipment IT Services	14.6 23.9	13.6 20.5	12.9 18.8	Electronic Equipment	19.9	18.7	17.0	Semiconductors Software Technology Hardware Storage & Per	14.7 27.9 24.4	15.2 24.7 22.5	14.0 22.8 21.5	
	11.7%	9.9%	Consumer Discretionary	25.5	25.7	23.8	Auto Components Hotels Restaurants & Leisure Textiles Apparel & Luxury Goods	18.7 818.1 20.3	15.1 43.9 19.2	13.2 26.3 17.6	Household Durables	6.6	5.5	6.4	Automobiles Distributors Internet & Direct Marketing Retail Leisure Products Multiline Retail Specialty Retail	37.3 17.6 47.8 14.0 16.0 17.4	34.4 16.0 45.8 13.5 19.5 16.4	32.4 16.5 16.5 13.5 19.2 16.2	
	7.0%	4.4%	Consumer Staples	21.2	20.7	20.2					Personal Products	34.3	30.5	28.9	Beverages Food Products Food & Staples Retailing Household Products Tobacco	26.0 18.1 23.2 23.4 12.7	24.6 17.8 22.3 23.2 13.0	23.7 17.7 21.8 22.7 12.7	
	2.5%	0.0%	Materials	13.8	12.3	14.3									Chemicals Construction Materials Containers & Packaging Metals & Mining	15.5 28.9 12.9 7.8	13.5 25.9 11.0 7.9	14.9 24.4 10.7 13.0	
Aggregate PE: DWS View							Overweight	16.0	15.7	14.5	Equalweight	22.0	14.4	13.4	Underweight	19.9	17.7	17.9	
S&P 500								3758				2020, 2021 & 2022 EPS	209.53	227.00	235.00	2020, 2021 & 2022 PE	17.9	16.6	16.0
											Bottom-up Consensus EPS	206.83	227.14	243.06	Bottom-up Cons. PE	18.2	16.5	15.5	
															2020, 2021 & 2022 Ex Energy PE	17.4	17.4	16.5	
															Btm-up Cons. Ex Energy PE	18.0	17.6	16.1	

Sector OW	8.22%
Sector UW	-8.22%
Industry OW	16.77%
Industry UW	-16.77%

Macro tilts:	
Cyclicals	-2.91%
Defensive	3.00%
Value	-5.33%
Growth	5.33%
Consumer	-4.33%
Services/experience	0.92%
Disc. Goods	0.21%
Retailing	-0.63%
Durables	0.87%
Staples Goods/Retail	-1.36%
Commodity	-2.08%
Energy	0.03%
Metals/Chemicals	-2.12%
Capex	3.53%
Capacity additions	1.87%
Productivity	1.66%
Health Care	4.53%
Innovation	2.82%
Marketers	1.76%
Insurers	-0.36%
Financials	1.03%
Up rates/low spreads	1.17%
Capital Markets	-0.87%
Insurance	0.72%
Bond Substitutes	1.39%
Weak FX \$ plays	0.67%
High R&D plays	4.60%
Transports	-0.68%
Geopolitical risk	-0.10%
Weak oil prices	-1.01%
Inflation shock	1.95%
Domestic GDP	-0.86%
Global GDP	-3.28%
Consumer TMT	0.54%
Trade sensitive	-1.16%

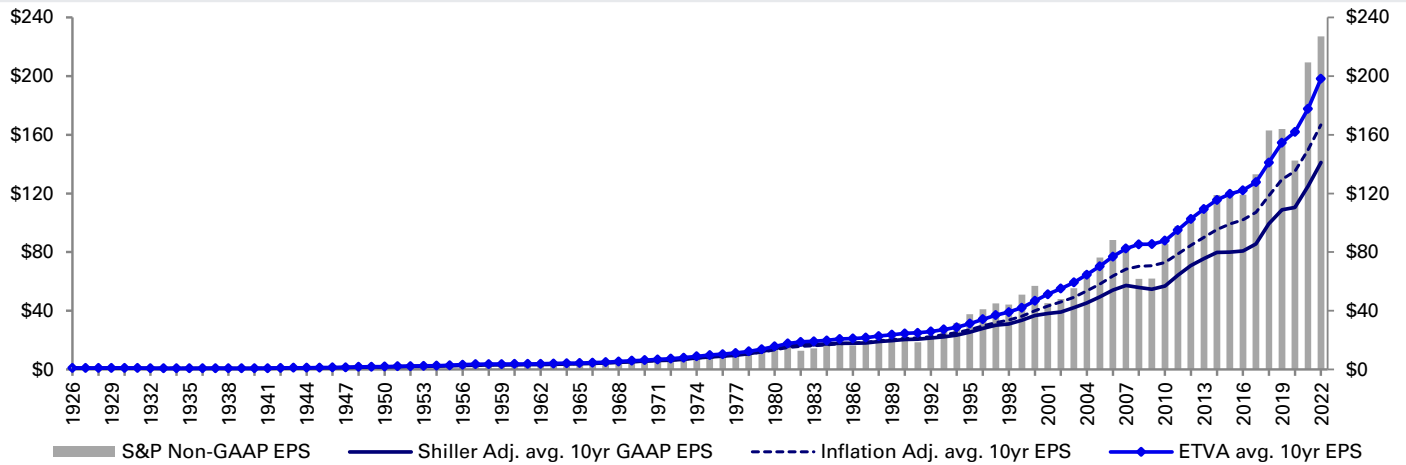
Note: Diversified Financial Services, Real Estate Management & Development and REITs moved from EW to OW; Gas Utilities, Wireless Telecommunication Services moved from UW to EW; Auto Components, Road & Rail moved from UW to OW; HC Providers & Services moved from OW to UW; Tobacco moved from EW to UW.

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

Price as of 9/22/2022

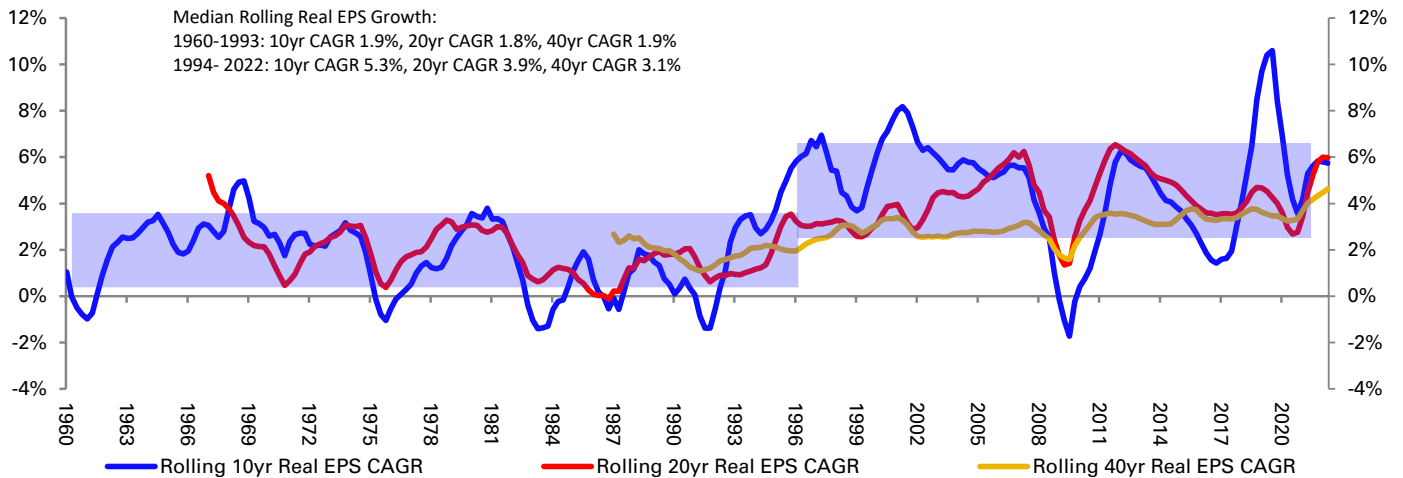
Source: DWS Investment Management GmbH

Different cyclical adjusted measures of S&P 500 EPS



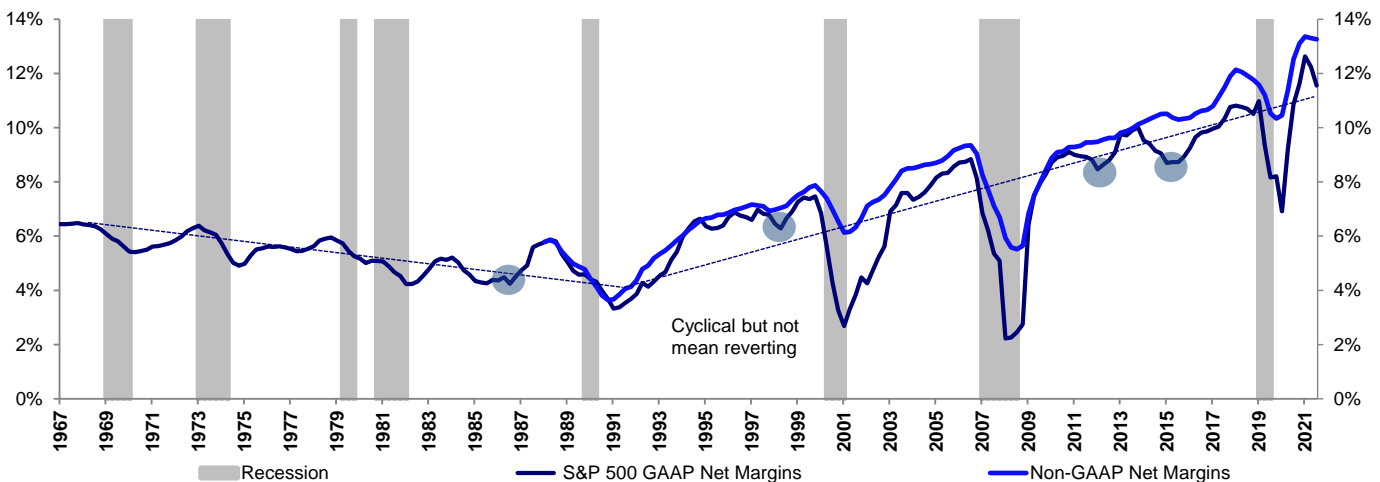
Source: IBES, S&P, Haver, DWS Investment GmbH as of 9/16/2022. Past performance may not be indicative of future results.

10, 20, 40-year rolling real EPS growth of S&P 500



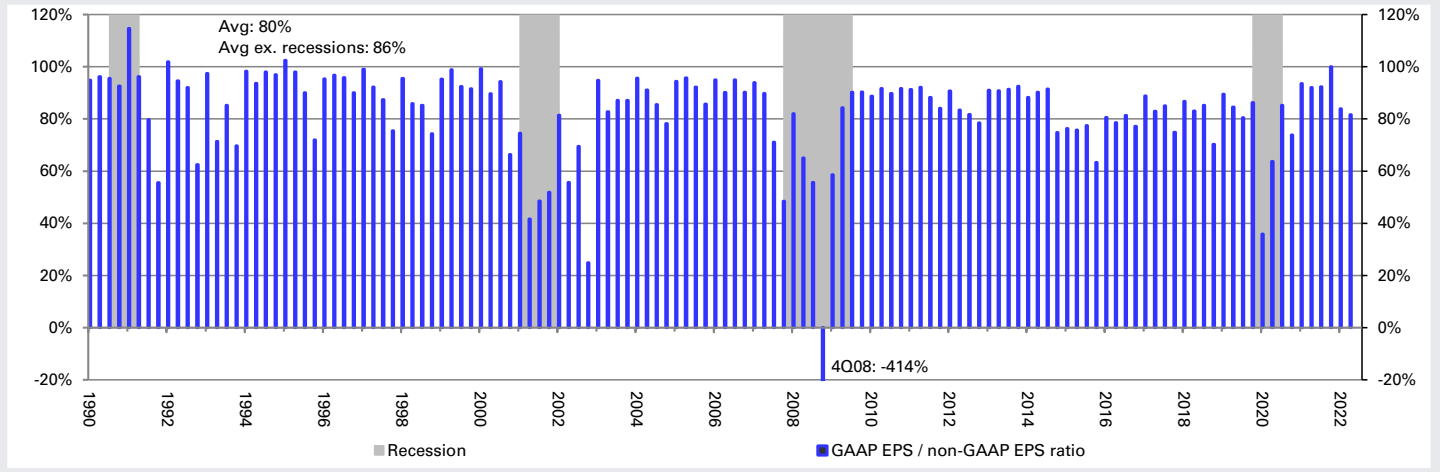
Source: IBES, S&P, Haver, DWS Investment GmbH as of 2Q2022. Past performance may not be indicative of future results.

Different cyclical adjusted measures of S&P 500 EPS



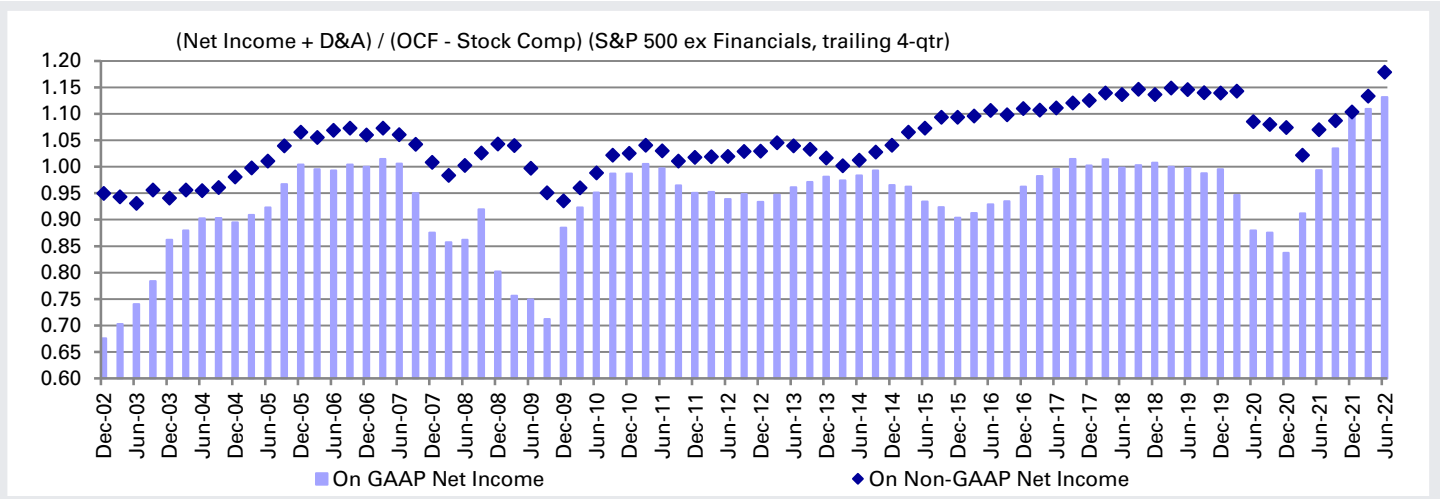
Source: IBES, Haver, Clarifi, DWS Investment GmbH as of 2Q2022. Past performance may not be indicative of future results.

S&P 500 GAAP vs. non-GAAP EPS



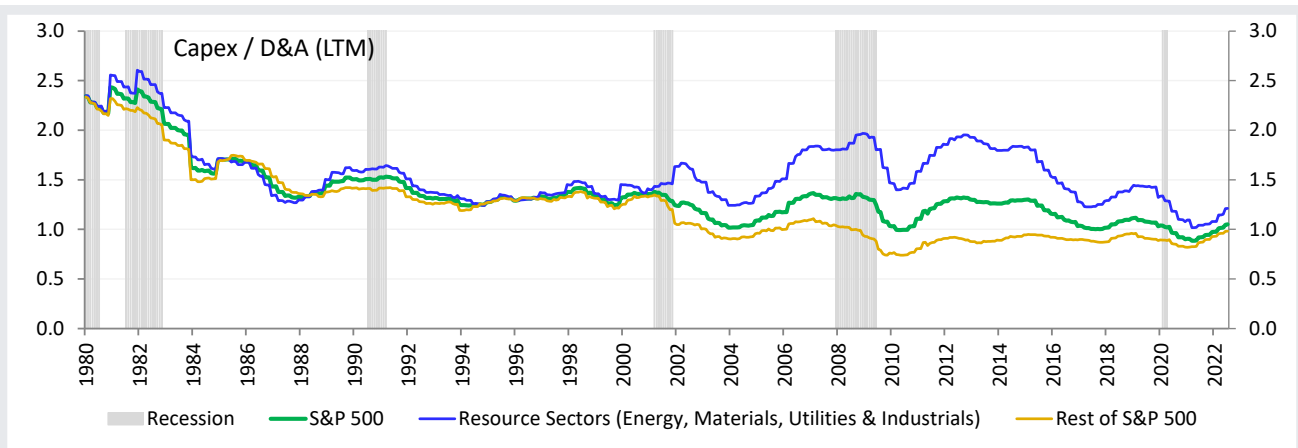
Source: IBES, Haver, Clarifi, DWS Investment GmbH as of 2Q2022. Past performance may not be indicative of future results.

S&P 500 ex Financials: (Net Income + D&A) / (OCF – Stock Compensation)

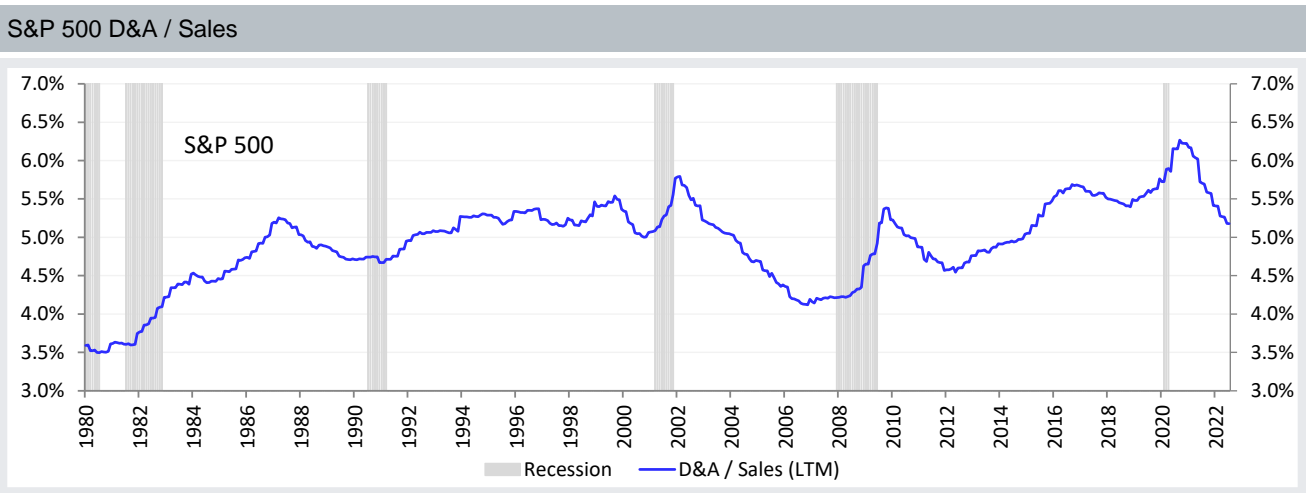


Source: IBES, Haver, Clarifi, DWS Investment GmbH as of 2Q2022. Past performance may not be indicative of future results.

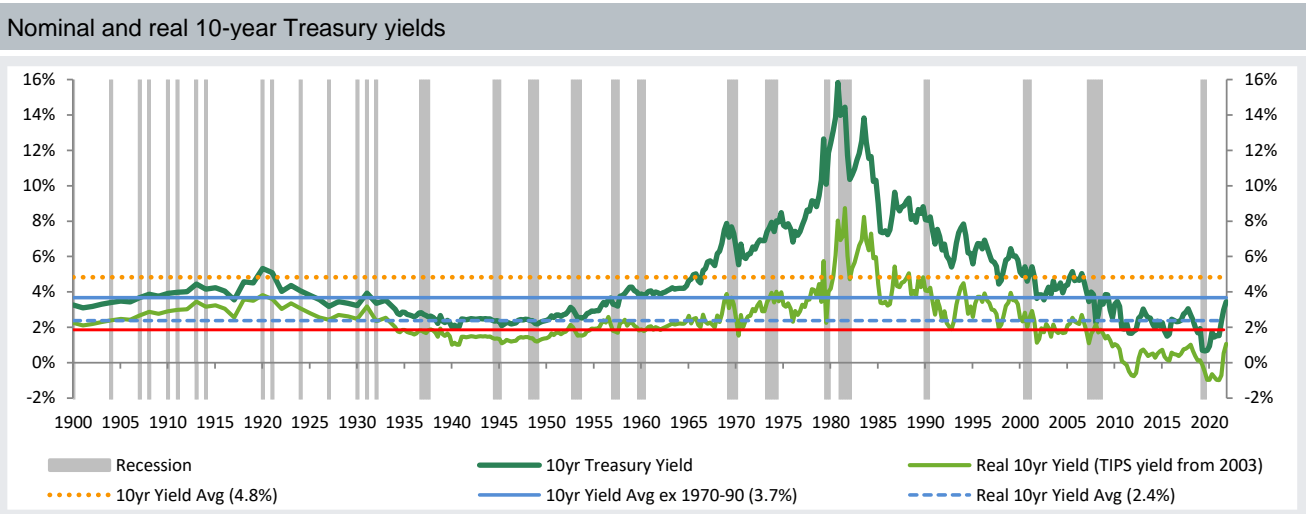
S&P 500 Capex / D&A: Resource sectors vs. the rest



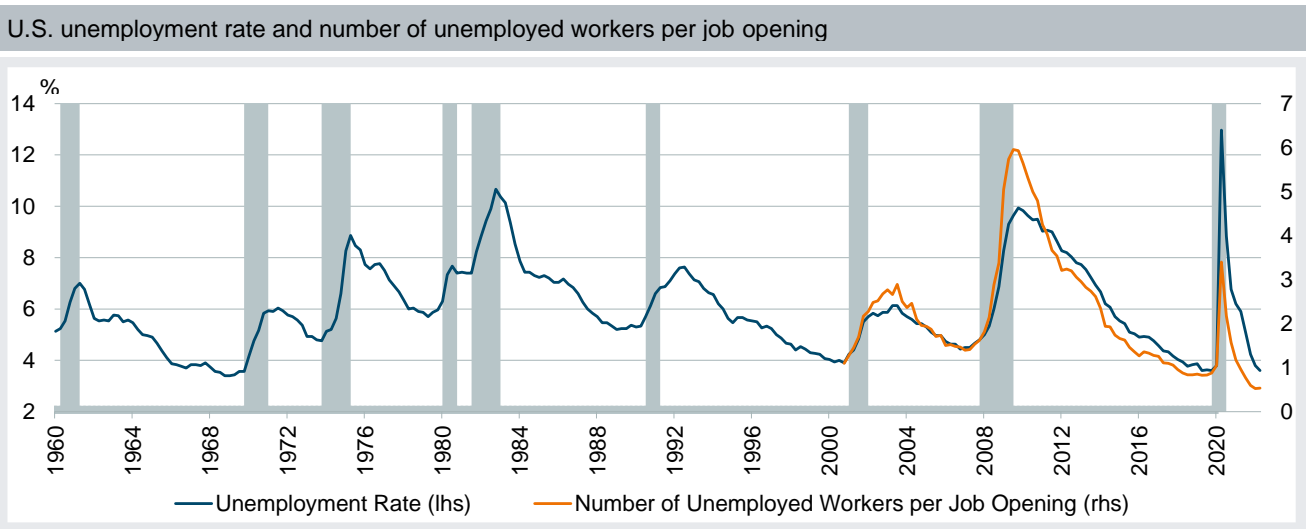
Source: Compustat, Clarifi, DWS Investment GmbH as of 7/31/2022. Past performance may not be indicative of future results.



Source: Compustat, Clarifi, DWS Investment GmbH as of 7/31/2022. Past performance may not be indicative of future results.

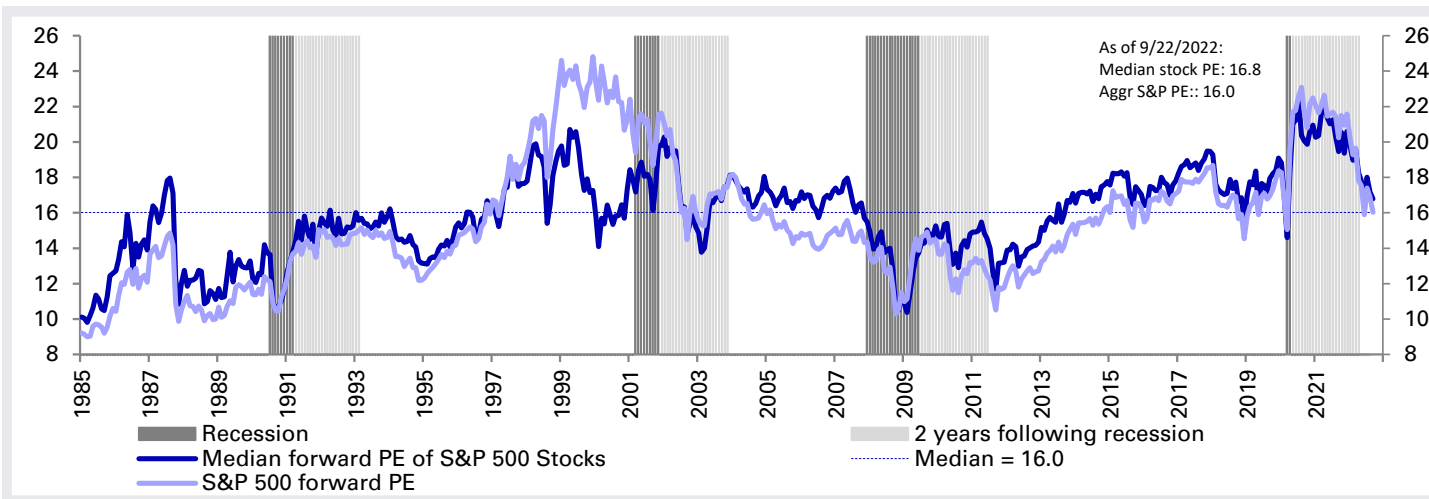


Source: Haver, DWS Investment GmbH as of 9/16/2022. Past performance may not be indicative of future results.



Source: Haver, DWS Investment GmbH as of 2Q2022. Past performance may not be indicative of future results.

S&P 500 median stock forward PE



Source: Compustat, Clarifi, DWS Investment GmbH as of 9/22/2022. Past performance may not be indicative of future results.

S&P 500 return statistics on mid-term election years

Time Period	All Years				Mid-term Election Years				Non-recession Mid-term Election Years				Election Years				Non-recession Election Years (Presidential and Mid-term)			
	Avg	Std Dev	Max	Min	Avg	Std Dev	Max	Min	Avg	Std Dev	Max	Min	Avg	Std Dev	Max	Min	Avg	Std Dev	Max	Min
Jan	0.9%	5.0%	13.2%	-8.6%	-2.0%	3.4%	3.3%	-7.6%	-1.1%	3.1%	3.3%	-6.2%	-0.7%	4.6%	11.8%	-7.6%	0.3%	4.2%	11.8%	-6.2%
Feb	0.2%	3.7%	7.1%	-11.0%	1.0%	4.0%	7.1%	-6.1%	1.4%	3.9%	7.1%	-3.0%	0.5%	3.3%	7.1%	-6.1%	0.9%	3.3%	7.1%	-3.9%
Mar	1.2%	3.4%	9.7%	-10.2%	1.1%	3.1%	5.9%	-4.6%	1.7%	3.4%	5.9%	-4.6%	0.6%	3.7%	9.7%	-10.2%	1.5%	3.4%	9.7%	-4.6%
Apr	1.3%	3.8%	9.4%	-9.0%	-0.7%	4.6%	8.5%	-9.0%	0.2%	4.2%	8.5%	-6.2%	0.2%	3.9%	8.5%	-9.0%	0.5%	3.5%	8.5%	-6.2%
May	0.2%	3.7%	9.2%	-8.6%	-1.7%	5.0%	9.2%	-8.6%	-1.9%	4.5%	5.0%	-8.6%	-0.8%	4.2%	9.2%	-8.6%	-1.3%	3.7%	5.0%	-8.6%
Jun	-0.2%	3.3%	5.4%	-8.6%	-2.1%	3.4%	3.9%	-8.2%	-2.0%	4.0%	3.9%	-8.2%	-0.6%	3.7%	4.3%	-8.6%	-0.1%	3.6%	4.3%	-8.2%
Jul	0.6%	4.1%	8.8%	-7.9%	0.1%	5.2%	7.3%	-7.9%	0.4%	5.0%	6.9%	-7.9%	-0.1%	4.1%	7.3%	-7.9%	-0.1%	3.8%	6.9%	-7.9%
Aug	0.1%	4.7%	11.6%	-14.6%	-0.6%	7.4%	11.6%	-14.6%	-0.6%	6.5%	7.1%	-14.6%	0.5%	5.8%	11.6%	-14.6%	0.5%	5.4%	10.6%	-14.6%
Sept	-0.6%	4.3%	8.8%	-11.9%	-1.8%	6.1%	8.8%	-11.9%	-1.3%	6.1%	8.8%	-11.0%	-0.8%	5.3%	8.8%	-11.9%	0.2%	4.8%	8.8%	-11.0%
Oct	1.1%	5.9%	16.3%	-21.8%	3.9%	6.1%	16.3%	-9.2%	2.9%	5.0%	8.6%	-9.2%	1.6%	5.9%	16.3%	-16.9%	1.6%	3.7%	8.6%	-9.2%
Nov	1.4%	4.4%	10.2%	-11.4%	2.5%	4.1%	10.2%	-5.3%	2.6%	3.9%	10.2%	-4.0%	1.9%	4.6%	10.2%	-8.0%	1.8%	4.1%	10.2%	-8.0%
Dec	1.5%	3.1%	11.2%	-6.0%	1.1%	3.4%	6.5%	-6.0%	0.8%	3.6%	6.5%	-6.0%	1.0%	3.0%	6.5%	-6.0%	0.8%	3.0%	6.5%	-6.0%
Q1	2.3%	7.7%	21.6%	-12.1%	0.1%	6.7%	13.5%	-8.6%	2.0%	6.9%	13.5%	-6.2%	0.5%	6.9%	13.9%	-9.9%	2.6%	6.5%	13.9%	-6.5%
Q2	1.4%	7.4%	16.9%	-21.3%	-4.2%	9.3%	7.1%	-21.3%	-3.4%	9.4%	7.1%	-21.3%	-1.1%	8.0%	11.9%	-21.3%	-0.8%	7.4%	10.4%	-21.3%
Q3	0.2%	8.3%	15.8%	-26.1%	-2.1%	12.3%	15.8%	-26.1%	-1.5%	9.3%	10.7%	-17.6%	-0.3%	9.4%	15.8%	-26.1%	0.5%	6.9%	10.7%	-17.6%
Q4	4.0%	7.7%	20.9%	-23.2%	7.6%	6.7%	20.9%	-6.3%	6.4%	7.3%	20.9%	-6.3%	4.5%	8.1%	20.9%	-22.6%	4.3%	6.3%	20.9%	-8.1%
Jan - Apr	3.6%	7.9%	27.3%	-11.4%	-0.6%	7.8%	14.6%	-11.4%	2.1%	7.5%	14.6%	-8.8%	0.6%	7.0%	14.6%	-11.4%	3.1%	6.2%	14.6%	-8.8%
May - Sep	0.6%	9.7%	21.1%	-29.6%	-6.0%	11.3%	5.9%	-29.6%	-5.3%	10.1%	5.9%	-24.3%	-1.8%	10.2%	18.0%	-29.6%	-0.9%	8.1%	5.9%	-24.3%
Oct - Dec	4.0%	7.2%	20.9%	-23.2%	7.6%	6.7%	20.9%	-6.3%	6.4%	7.3%	20.9%	-6.3%	4.5%	8.1%	20.9%	-22.6%	4.3%	6.3%	20.9%	-8.1%
Whole Year	8.1%	16.0%	34.1%	-38.5%	0.6%	16.2%	26.7%	-29.7%	3.0%	15.5%	26.7%	-23.4%	3.6%	16.1%	26.7%	-38.5%	6.5%	12.6%	26.7%	-23.4%

Source: Haver, DWS Investment GmbH as of September 2022. 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 2022	
										2022E	y/y	2023E	y/y	2022E	y/y	2023E	y/y	(\$)	% of 2022
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)	\$116.42	\$117.01	\$117.19	\$129.10	\$156.06	\$161.46	\$143.82	\$209.53	47.3%	\$227.14	8.4%	\$243.06	7.0%	\$227	7.3%	\$235	3.4%	\$225	99%
Sector (\$ bn)																			
Communication Services	69.3	79.9	92.7	100.3	125.7	133.3	136.4	189.2	38.7%	173.7	-8.2%	194.0	11.7%	176.0	-7.0%	190.0	8.0%	174.0	99%
Consumer Discretionary	64.5	74.8	83.3	85.9	103.5	102.1	83.2	146.2	75.8%	144.6	-1.1%	171.8	18.8%	145.0	-0.8%	156.5	7.9%	151.3	104%
Automobiles	9.7	15.0	15.4	13.4	13.8	11.6	13.9	22.1	60%	28.8	30.3%	30.0	4.0%	24.0	8.5%	25.5	6.3%		
Internet & Direct Marketing Retail	5.6	6.2	8.1	8.6	16.2	17.7	20.0	23.9	19.9%	21.1	-12.0%	29.7	40.7%	25.0	4.4%	28.0	12.0%		
CD ex Auto & Internet Retail	49.3	53.7	59.8	63.9	73.5	72.8	49.3	100.1	102.9%	94.7	-5.5%	112.1	18.5%	96.0	-4.1%	103.0	7.3%		
Consumer Staples	77.5	75.9	78.2	82.4	89.2	89.6	93.4	102.7	9.9%	105.3	2.6%	111.9	6.2%	105.0	2.3%	107.5	2.4%	105.0	100%
Energy	95.9	40.0	10.8	37.7	71.1	50.3	-5.7	79.2	1490%	199.0	151.2%	176.5	-11.3%	165.5	108.9%	132.0	-20.2%	117.5	71%
Financials	171.4	186.3	188.0	195.4	242.2	249.2	198.7	328.5	65.4%	286.7	-12.7%	322.9	12.6%	290.0	-11.7%	311.0	7.2%	292.1	101%
Health Care	137.9	153.1	158.1	172.3	189.4	207.5	227.4	294.3	29.4%	308.8	4.9%	306.6	-0.7%	310.0	5.3%	322.5	4.0%	301.2	97%
Industrials	99.9	103.8	97.5	106.1	129.5	123.7	63.4	108.1	70.5%	144.2	33.5%	168.1	16.5%	142.5	31.8%	153.0	7.4%	146.9	103%
Airlines	10.9	17.6	13.3	10.9	11.5	13.2	-28.8	-14.2	50.5%	3.2	122.5%	9.0	179.7%	3.5	124.6%	7.0	100.0%		
Information Technology	177.1	184.3	193.9	228.7	266.8	265.0	297.5	380.7	28.0%	400.1	5.1%	446.0	11.5%	411.5	8.1%	442.5	7.5%	414.5	101%
Materials	24.6	23.7	22.5	28.3	35.2	33.6	31.9	58.2	82.3%	67.1	15.1%	61.4	-8.5%	65.0	11.6%	56.0	-13.8%	55.0	85%
Real Estate	23.1	26.3	29.2	31.6	34.6	36.2	35.6	42.2	18.4%	46.6	10.4%	49.1	5.5%	46.0	9.0%	47.5	3.3%	44.0	96%
Utilities	31.3	31.6	33.8	35.3	38.9	42.9	44.2	47.2	6.8%	49.8	5.4%	52.5	5.5%	50.0	5.9%	53.0	6.0%	50.0	100%
S&P 500 (\$ bn)	972.6	979.6	987.9	1104.2	1326.0	1333.4	1206.0	1776.6	47.3%	1925.9	8.4%	2060.8	7.0%	1906.5	7.3%	1971.5	3.4%	1851.4	97%
S&P ex. Energy (\$bn)	876.7	939.6	977.0	1066.5	1254.9	1283.1	1211.7	1697.3	40.1%	1726.9	1.7%	1884.3	9.1%	1741.0	2.6%	1839.5	5.7%	1733.9	100%
S&P ex. Tech (\$bn)	795.6	795.3	793.9	875.4	1059.3	1068.4	908.5	1395.9	53.6%	1525.8	9.3%	1614.8	5.8%	1495.0	7.1%	1529.0	2.3%	1436.9	96%
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	227	55	58	56	58
2023E	235	56	58	58	61

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 3/31/2022.

Source: Factset, DWS Investment GmbH as of 9/22/2022. Past performance may not be indicative of future results.

S&P 500 2022 and 2023 EPS outlook scenarios

	<u>Previous S&P EPS outlook</u>				<u>Current S&P EPS outlook</u>				<u>Material possibility</u>			
	Stalled growth or slight recession 4Q22/1Q23				Small recession 4Q22/1Q23				Average US & EU recessions 2023			
	4% CPI 2023, oil \$110/bbl, euro \$1.10				3-4% CPI 2023, oil \$100/bbl, euro \$1.05				3% CPI, oil \$80/bbl, euro \$1.00			
	EPS year	qtrly	annualized	x18.0	EPS year	qtrly	annualized	x18.0	EPS year	qtrly	annualized	x18.5
2022E	225	55	220	3960	227	55	220	3960	222	55	220	4070
		55	220	3960		58	232	4176		58	232	4292
		56	224	4032		56	224	4032		55	220	4070
		59	236	4248		58	232	4176		54	216	3996
2023E	235	57	228	4104	233	56	224	4032	214	50	200	3700
		58	232	4176		58	232	4176		52	208	3848
	3Q23	59	236	4248	3Q23	58	232	4176	3Q23	55	220	4070
		61	244	4392		61	244	4392		57	228	4218

Source: DWS Investment GmbH as of September 2022. 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 2022 PE	2022E Earnings (\$bn)	Normal Ratio	Normal 2022E Earnings	Accounting Quality Adjustment	Fully Adjusted Earnings	Net Debt / Market Cap	Real CoE	Steady State Value	Growth Premium	2022 Start Fair Value (\$bn)	2021E Dividend Yield	2022 End Fair Value (\$bn)	PE on Normal 2022E EPS	2022 end Upside %
Communication Services	2,591	14.7	176.0	99%	174.0	-8%	160.1	15%	5.50%	2,911	-5%	2,765	1.7%	2,954	17.0	14%
Consumer Discretionary	3,723	25.7	145.0	104%	151.3	-8%	139.2	12%	5.50%	2,530	31%	3,323	1.1%	3,571	23.6	-4%
<i>Automobiles</i>	826	34.4	24.0	110%	26.4	-10%	23.8	19%	6.00%	396	60%	634	0.3%	688	26.1	-17%
<i>Internet & Direct Marketing Retail</i>	1,146	45.8	25.0	100%	25.0	-8%	23.0	1%	5.50%	418	140%	1,004	0.0%	1,088	43.5	-5%
<i>CD ex Auto & Internet Retail</i>	1,752	18.2	96.0	100%	96.0	-8%	88.3	17%	5.50%	1,606	5%	1,686	1.8%	1,799	18.7	3%
Consumer Staples	2,173	20.7	105.0	100%	105.0	-6%	98.7	13%	4.75%	2,078	0%	2,078	2.6%	2,185	20.8	1%
Energy	1,471	8.9	165.5	71%	117.5	-10%	105.8	16%	6.00%	1,763	-15%	1,498	3.8%	1,576	13.4	7%
Financials	3,528	12.2	290.0	101%	292.1	-8%	268.7		6.50%	4,134	-5%	3,927	2.1%	4,216	14.4	20%
Banks	1,210	9.7	125.0	105%	131.3	-8%	120.8		7.00%	1,725	-5%	1,639	3.5%	1,745	13.3	44%
Health Care	4,688	15.1	310.0	97%	301.2	-10%	271.1	9%	5.25%	5,164	0%	5,164	1.6%	5,506	18.3	17%
Industrials	2,540	17.8	142.5	103%	146.9	-8%	135.1	18%	5.50%	2,457	0%	2,457	1.5%	2,629	17.9	4%
Information Technology	8,442	20.5	411.5	101%	414.5	-6%	389.6	2%	5.50%	7,083	10%	7,792	1.1%	8,370	20.2	-1%
Materials	801	12.3	65.0	85%	55.0	-10%	49.5	17%	5.75%	861	-5%	818	2.2%	871	15.8	9%
Real Estate	805	17.5	46.0	96%	44.0	-7%	40.9	29%	4.50%	910	0%	910	3.3%	948	21.5	18%
Utilities	1,019	20.4	50.0	100%	50.0	-10%	45.0	60%	4.50%	1,000	0%	1,000	3.0%	1,045	20.9	3%
S&P 500 (\$ bn)	31,780		1906.5	97%	1851.4	-8.0%	1703.6		5.49%	30889	2.7%	31731	1.7%	33870.6	18.3	7%
S&P 500 Index (\$/sh)	3758	16.6	227.0	99%	225.0	-8.0%	207.0	11%	5.50%	3764	0.0%	3764	1.7%	4016	17.8	7%

	>5%
	between -5% and 5%
	<-5%

Source: IBES, DWS Investment GmbH as of 9/22/2022. 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 3/31/2022.

The estimated 2022 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 2022E S&P 500 EPS	\$227.00	DWS 2022E S&P 500 DPS	\$68.00	DWS 2022E S&P 500 aggregate ROE	21.6%	Fair long-term nominal return on S&P 500 index	8.50%
		2022E dividend payout ratio	30%	2021E end S&P 500 book value per share	\$1,050	Components of estimated fair S&P 500 return:	
DWS "normal 2022E" S&P 500 EPS	\$225.00	DWS "normal 2022E" S&P 500 DPS	\$68.00	DWS "normal 2022E" S&P 500 aggregate ROE	19.7%	+ Long-term real risk free interest rate	0.50%
"Normal 2022E" EPS / 2022E EPS	99%	Normal dividend payout ratio	33%			+ Long-term fair S&P 500 equity risk premium*	5.00%
Accounting quality adjustment to pro forma EPS	-\$18.00	EPS directed to net share repurchases	\$39.00	S&P EPS retained for true reinvestment	48%	= 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 2022E S&P 500 EPS fair to capitalize	\$207	Total payout of S&P 500 EPS	\$107.00	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	52%	Sources of long-term earnings growth:		* S&P 500 ERP usually 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	2.66%	2021E end S&P 500 book value per share	\$1,050
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	3.58
S&P 500 intrinsic value at 2022 start	3764	S&P 500 intrinsic value at 2022 start	3764	= Long-term earnings growth	5.66%	Fair PE =(inc ROE-g)/(inc real ROE*(real CoE-real g))	18.2
S&P 500 intrinsic value at 2022 end	4016	S&P 500 intrinsic value at 2022 end	4016	+ Growth from net share repurchases	1.04%	Implied S&P 500 fair value of book at 2022 start	3764
Implied fair fwd PE in early 2022 on 2022E \$227 EPS	16.6	Implied fair forward yield on 2022E DPS of \$68.0	1.81%	= Long-term S&P 500 EPS/DPS growth	6.69%	Steady-state PB = normal agg. ROE / real CoE	3.58
Implied fair trailing PE at 2022 end on 2022E \$227 EPS	17.7	Implied fair trailing yield on 2022E DPS of \$68.0	1.69%	= 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)	3764	DPS discount model using true DPS (all payout)	3764	Value added growth premium in fair value est.	0%	Normal 2022E economic profit per share	\$149.25

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

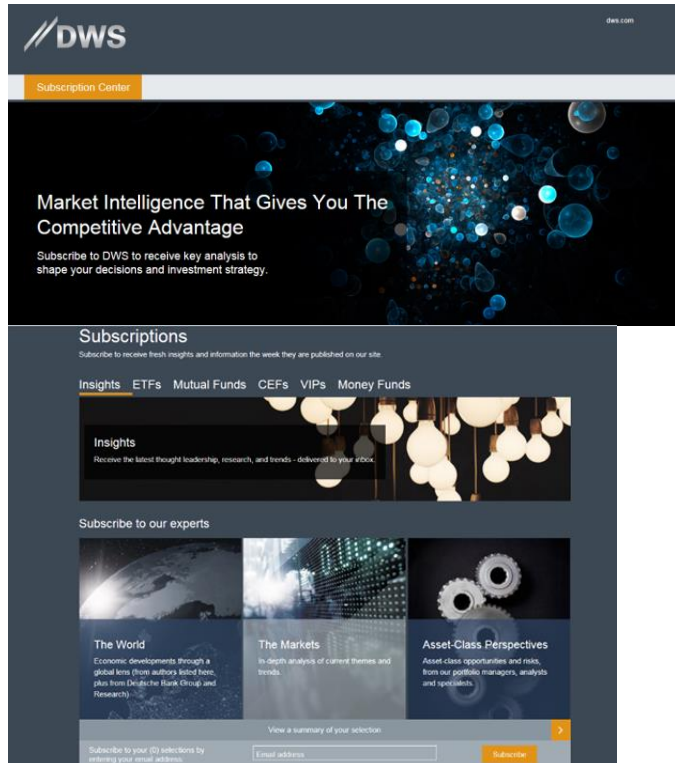
		Normal 2022E S&P 500 EPS				
		\$215	\$220	\$225	\$230	\$235
Real	5.00%	4578	4720	4864	5009	5156
Real	5.25%	4163	4281	4399	4518	4637
cost of	5.50%	3818	3917	4016	4114	4213
equity	5.75%	3526	3610	3694	3777	3861
	6.00%	3276	3349	3421	3492	3563

Source: DWS Investment Management GmbH

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