

Washer set to deep clean: Beware alternating rotations, drain could reopen



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Still washing out easy money in the real economy and exuberance in valuations
Investors will probably remember 2023 as a year of washing out excessive pandemic fiscal/monetary policies and inflated asset values. The Fed hiked rates near 500bp over the past 12-months and asset values are soaking in rising capital costs and weaker earnings ahead. While asset values and inflation are well below their 2022 highs, the rinse isn't finished. This washer now appears set to the deep clean cycle with long and alternating spinning. A cleanse for goods and services inflation as well as rich digital and real asset valuations. This setting is likely locked in and the door can't be opened until finished. In an emergency, the wash can be pulled out by cracking the glass door; but because the cleaning pros are exhausted by two years of messy blotches, with new tints emerging in the whites and darks, they will likely set-it and forget it. Will this wash finish with a brilliant shine or faded colors?

Disinflation now from brakes and scrapes: Terminal rate on hold until recession
Inflation fighting remains priority one for the Fed. As the biggest stain on this tainted expansion is 2+ years of inflation at 40-year highs. While the Fed clearly acknowledged funding challenges facing smaller banks, the Fed appears to expect and is willing to accept tightening credit conditions from these challenges. We take this as a willingness to accept some small accidents stance from the Fed in its fight against inflation. While we believe backstop institutions can effectively contain accidents, we think we've entered a new phase of more aggressive monetary policy tightening that is dangerous for risk assets. We do not believe the Fed will act to stop a recession. It's only likely to act to stop a deep recession.

Panic of '23: Deposit flight for some banks, higher cost of deposits for all
The issue of rapidly rising deposit base costs is a challenge as big as deposit flight. While the latter is acute for some banks, the former is the bigger challenge for most banks. Which is why we think the Fed should cut the Discount rate, especially if further Fed Funds hikes. We discuss this idea more inside and point out that before 2003 the Discount rate was below the Fed Funds rate. The spread was quite large in 1980-81 when the Fed attacked inflation with efforts to cut credit availability, before it resorted to deep recession in 1982.

Financial system regulators and supervisors are on edge, tough exams ahead
If the Fed accepts credit tightening and small banks losing share as a channel of its inflation fighting policies, it's unlikely to wince at a 20-30% downturn from peak in equities this summer with sympathetic signals of sooner cuts. Financial institutions are preparing for stricter supervision and regulation and high-risk asset investment or intermediation will be scrutinized. It will also be interesting to watch tensions between Treasury, Congress and Fed officials heat up this summer around debt ceiling fights given a backdrop of the Fed slipping from profitability. The Fed might see time (reserve carry) moving against them.

Investor concerns about the Fed "running out of bullets" might return
The Fed's ability to "fund" further rate hikes to fight inflation or set-up special facilities to relieve strains at some banks or elsewhere might be called into question as the Fed swings to full year operating losses. Losses from cost of liabilities (including interest paid on reserves) exceeding return on assets. While profitability should be considered, as Treasury and Congress will, we think the ultimate asset or liability, albeit off balance sheet, of a central bank is whether inflation is below or above its target. When inflation is below target, it can cut the Fed Funds rate, as paid on reserves, and/or increase non-interest bearing cash in circulation. When inflation is above target it must raise rates and/or reduce cash in circulation even if it leads to losses (financial asset shrinkage), otherwise it risks impairing its crown asset of inflation management credibility. We don't think the Fed is out of inflation fighting bullets and it still has ability to provide liquidity and borrowing cost relief.

Financials stumble badly; Tech laces up again, but a springtime rally is unlikely
The commodity/goods inflation plays are worn out. The reopening plays are stretch injured. Digital plays are too expensive to keep all on field. Defensives defeated by fixed income. And the moment Financials stepped on to the field they stumbled on basic non-forced error. At over 3950, the S&P 500 is broadly overvalued despite being nearly 20% below its record high. Sticky inflation is making the Fed turn to heavy detergents and rapidly rising bank deposit costs turns the odds against a springtime rally as it hobbles bank's ability to be the next leg. All of this raises the chances of a moderate recession this year to about 50%, in our view. We've taken shelter and position for next cycle leadership with Health Care, Communications, Aerospace & Defense, Rails, Electric Equip., Utilities and big Banks.

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**)

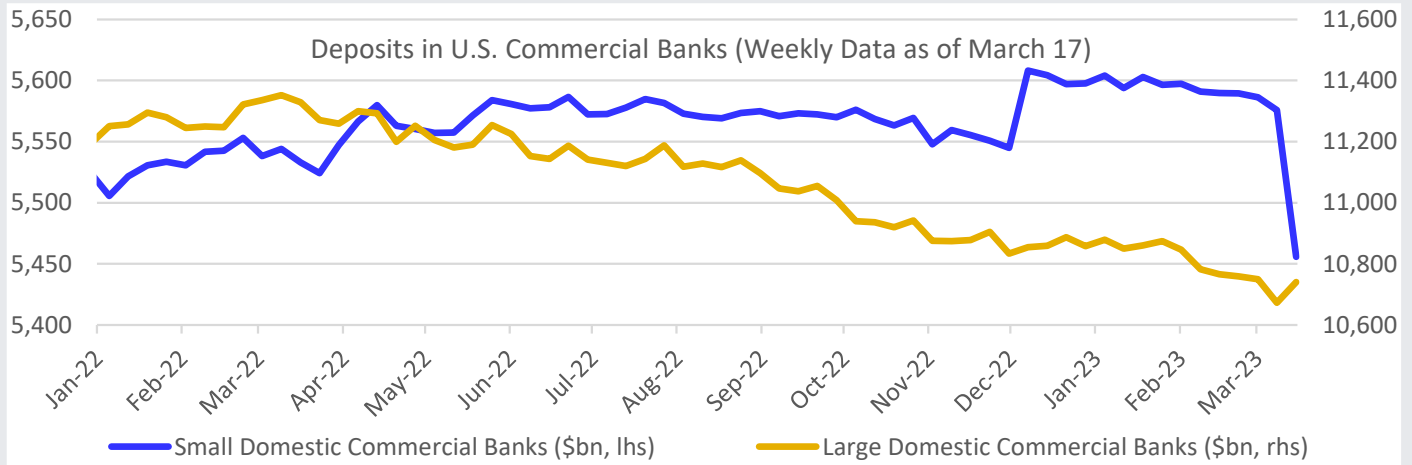
Taxable U.S. Investor Asset Allocations		
Asset Class	Long-term	Current
Fixed Income/Cash	30-35%	37.5%
Equities	55-60%	54.0%
US Equities	40%	35.5%
S&P 500	35%	33.0%
Small Caps	0-10%	2.5%
Foreign DM	10-15%	11%
Foreign EM	0-10%	7.5%
Alternatives	10%	8.5%

Key CIO Views		
Macro signal:	Mar 2023	Mar 2024F
U.S. Fed Funds rate	4.75%-5.00%	5.25%-5.50%
10yr Treasury yield	3.40%	4.30%
US IG Corp Spreads	185bp	110bp
US High Yield Spreads	555bp	450bp
Crude Oil (WTI) \$/bbl	69	100
EUR / USD FX rate	1.07	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%

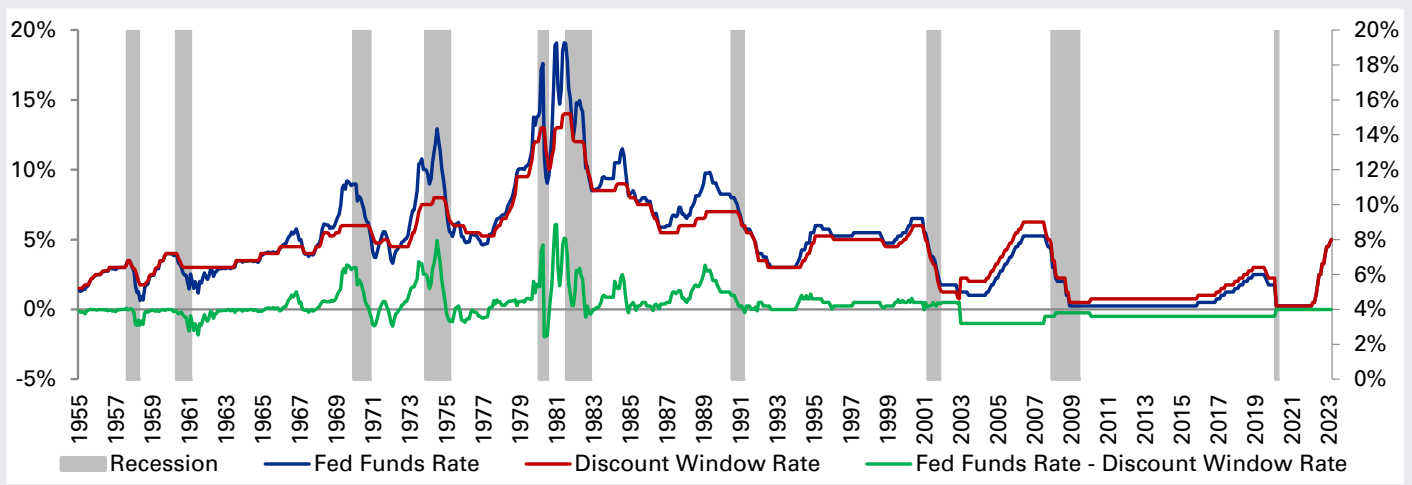
* Q4/Q4 GDP growth.
EPS = Earnings Per Share
GDP = Gross Domestic Product
FX = Foreign Exchange
TIPS = Treasury Inflation Protected Securities
Source: DWS Investment Management GmbH. All opinions and claims are based upon data on 3/29/2023 and may not come to pass. This information is subject to change 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.

Deposits in U.S. commercial banks (Weekly data as of March 17)



Source: FRB, Haver, DWS Investment GmbH as of 3/17/2023.

Fed funds rate vs. discount window rate

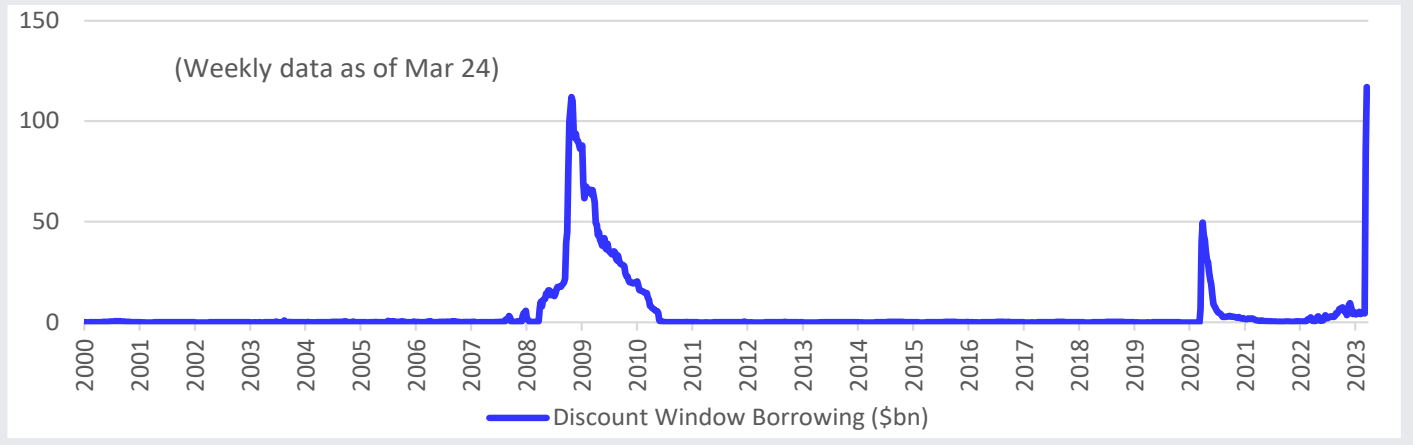


Source: FRB, Haver, St Louis Fed (FRED), DWS Investment GmbH, March 2023.

From 1914 to 2003, the Fed generally kept the Discount rate below the Federal Funds rate, because it believed that banks that legitimately needed Discount Window funds should not face a punitive rate. This was seen as an important safety valve for banks to protect against deposits runs and interest rate volatility. Source: NY Federal Reserve Bank, Liberty St. Research.

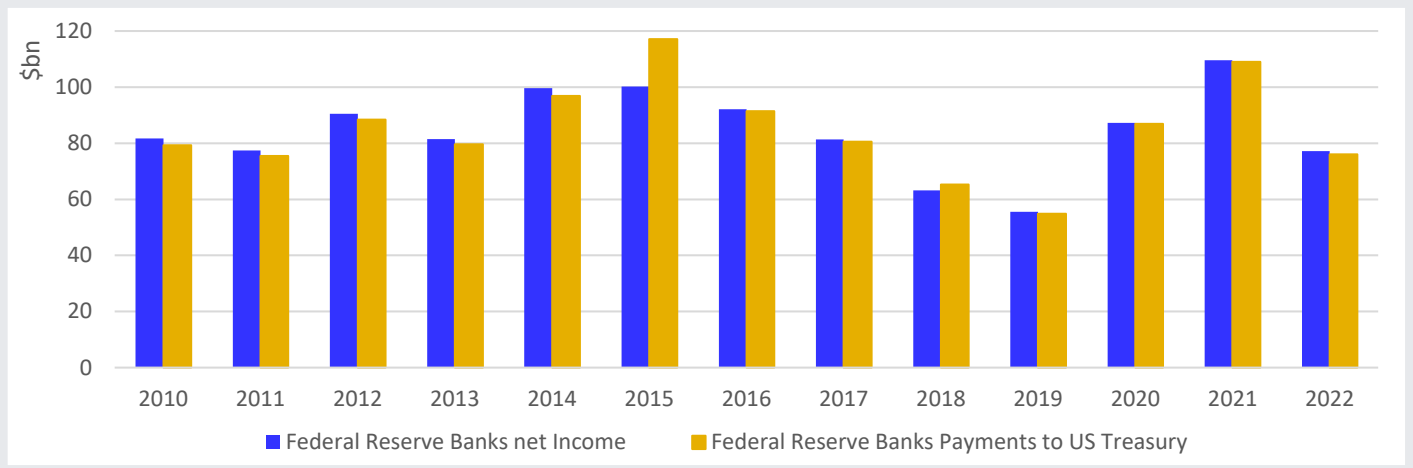
We think the Fed should cut the Discount rate, especially if any further Fed Funds rate hikes. This would give banks under strain some cheaper and readily available liquidity vs. having to pay up aggressively to keep deposits. A 5%+ Fed Funds rate and 3% Discount rate would allow the Fed to fight inflation and protect smaller banks. Per regulation, a bank can't approach the Window without a need for liquidity. Thus, big banks with excess reserves clearly wouldn't be able to tap a lower Discount rate. Moreover, because the Fed now pays the Fed Funds rate (top end of range less 10bp) on bank reserves, a lower Discount rate won't affect Treasury bill or commercial paper markets. The Fed Funds rate will stay the floor interest rate in the real economy, but banks with liquidity or liquidity cost pressures could temporarily access cheaper funding via the Discount rate. Perhaps a year or two until banks roll their loan and securities books to higher yields. If Discount window lending surged \$1 trillion with a 200bps spread between the Fed Funds and Discount rate it would cost the Fed \$20bn a year if deposits dispossessed by window borrowings showed up as reserves at other banks. If window lending results in higher cash in circulation, the Fed could sterilize it with QT. Cheap policy versus more bank failures or insuring all deposits.

Discount window borrowing (weekly data as of Mar 24)



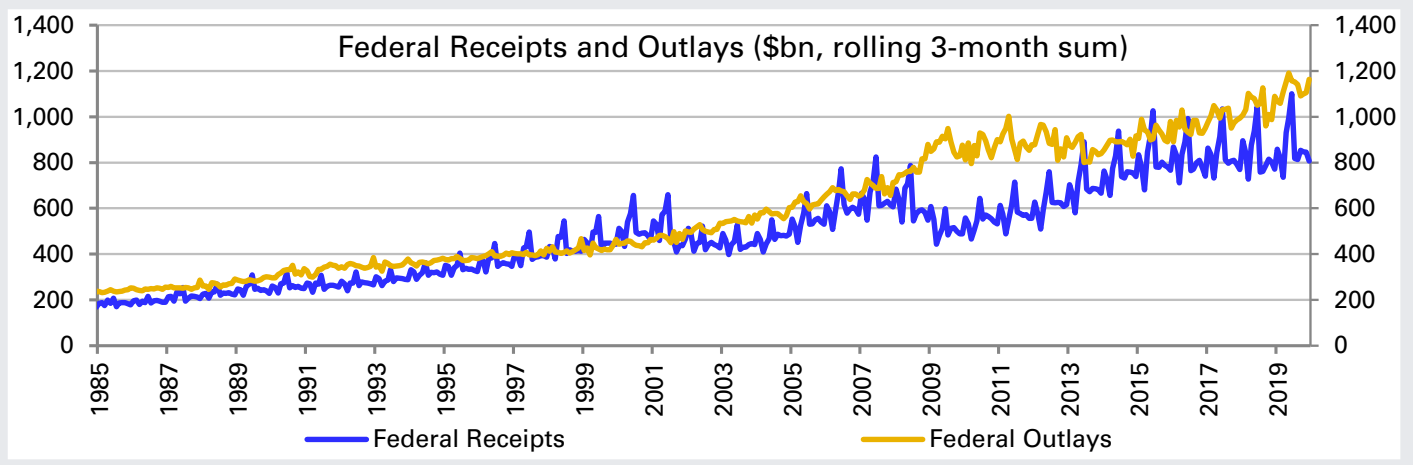
Source: FRB, Haver, DWS Investment GmbH as of 3/24/2023.

Federal Reserve banks net income and payments to US Treasury



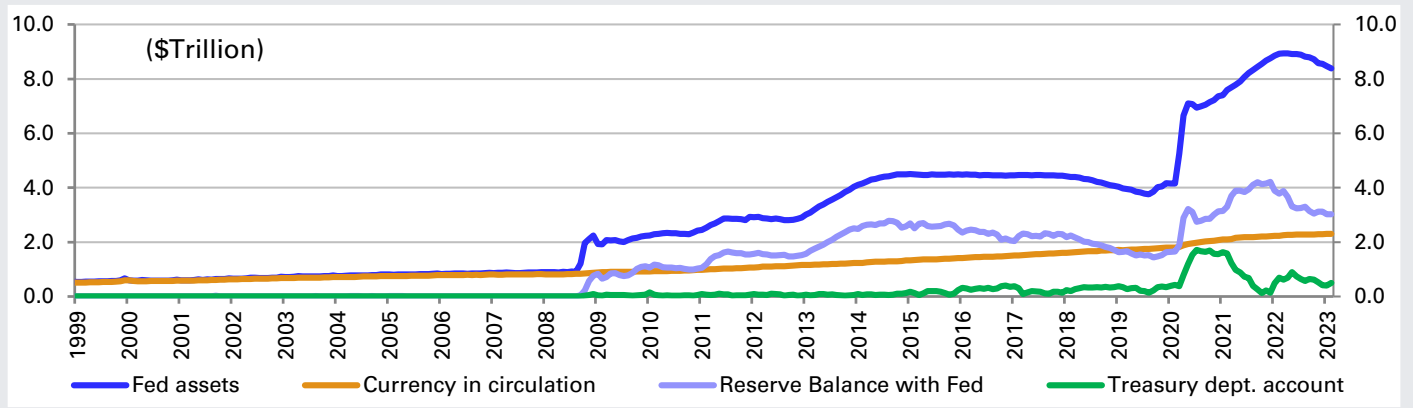
Source: FRB, Haver, DWS Investment GmbH as of February 2023.

Federal receipts and outlays



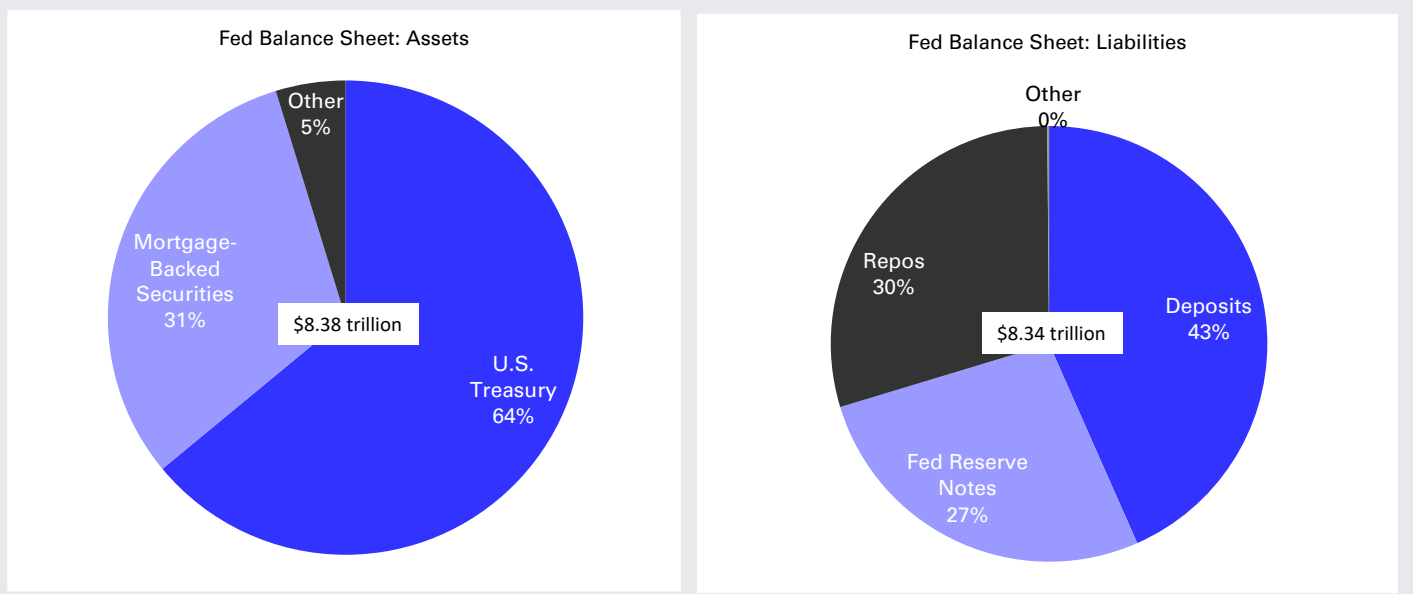
Source: Treasury, Haver, DWS Investment GmbH as of February 2023.

Fed balance sheet



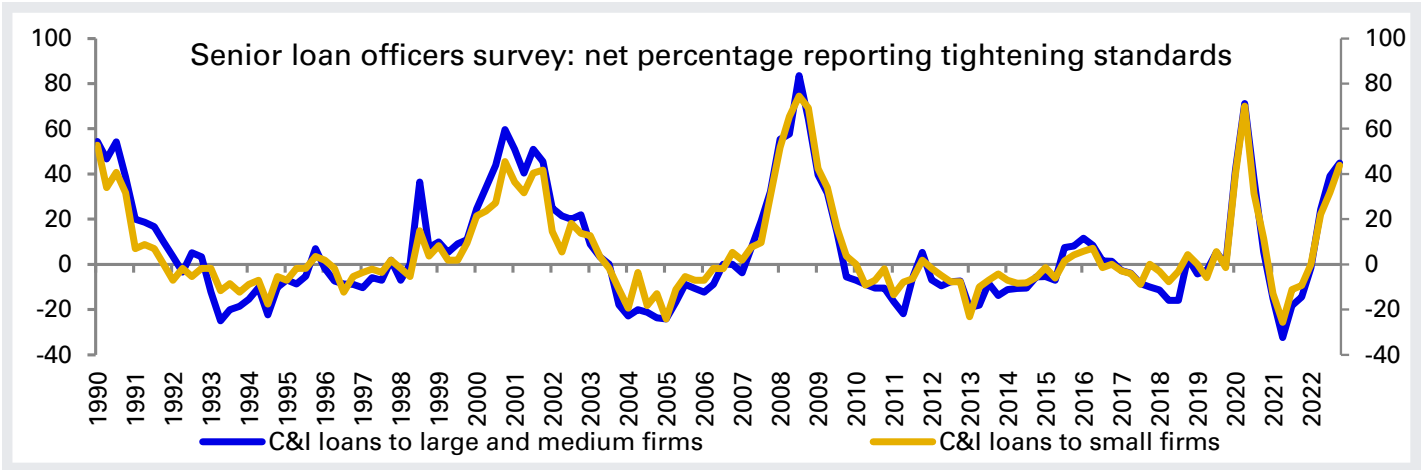
Source: FRB, Haver, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

Fed balance sheet



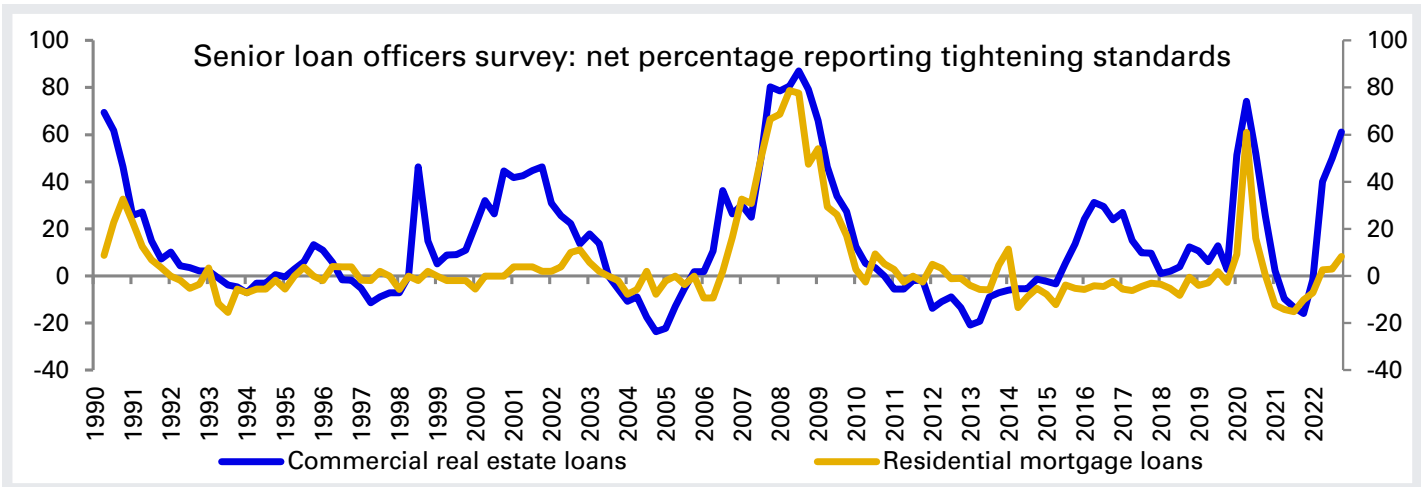
Source: FRB, Haver, DWS Investment GmbH as of February 2023.

Senior loan officers survey: C&I loans



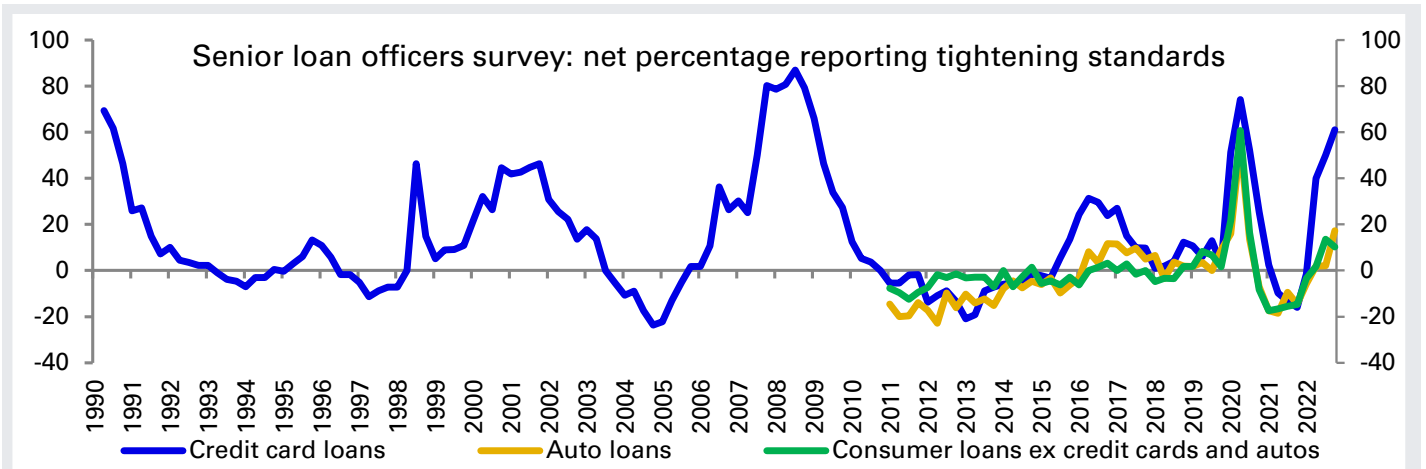
Source: FRB, Haver, DWS Investment GmbH as of 1Q2023. Past performance may not be indicative of future results.

Senior loan officers survey: real estate loans



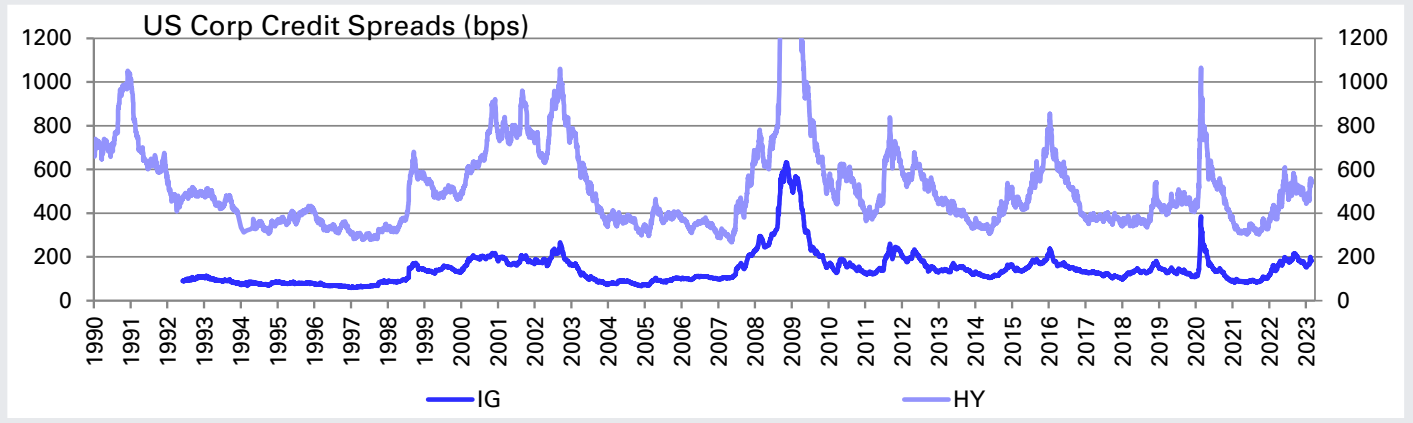
Source: FRB, Haver, DWS Investment GmbH as of 1Q2023. Past performance may not be indicative of future results.

Senior loan officers survey: consumer loans



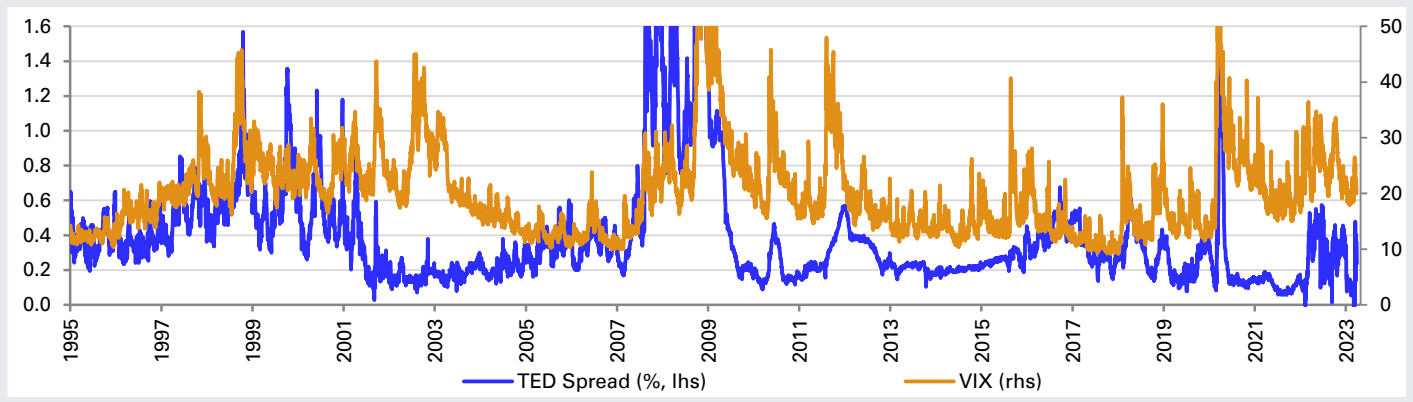
Source: FRB, Haver, DWS Investment GmbH as of 1Q2023. Past performance may not be indicative of future results.

U.S. corporate credit spreads: IG and HY



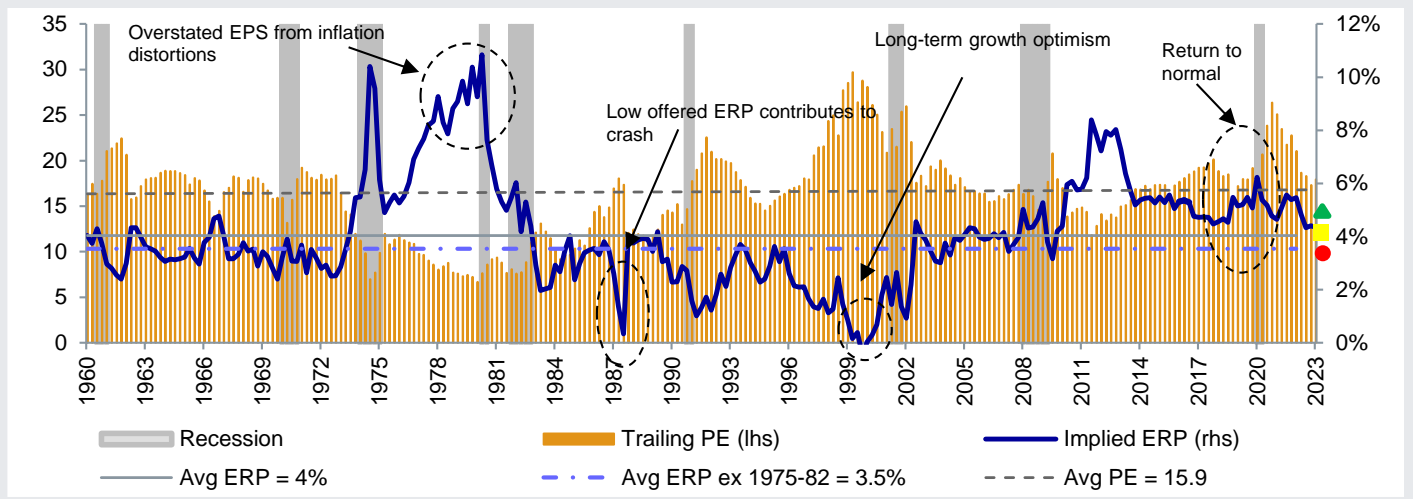
Source: Haver, DWS Investment GmbH as of 3/28/2023. Past performance may not be indicative of future results.

TED spread vs. VIX



Source: Bloomberg Finance LP, DWS Investment GmbH as of 3/28/2023. Past performance may not be indicative of future results.

S&P 500 PE and implied ERP



Red circle: ERP=3.6% implied by PE on our 2023 EPS estimate of \$222 and 2% assumed real 10 year interest rate
 Yellow square: ERP=4.1% implied by PE on our 2023 EPS estimate of \$222 and 1.5% assumed real 10 year interest rate
 Green triangle: ERP=4.6% implied by PE on our 2023 EPS estimate of \$222 and 1% assumed real 10 year interest rate
 Source: S&P, Haver, DWS Investment GmbH as of 3/28/2023. 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%	\$222.10	6.8%	\$223.66	0.7%	\$222	6.7%	\$222	0.0%	\$220	99%
Sector (\$ bn)																			
Communication Services	67.9	78.3	90.9	96.7	123.4	130.8	134.1	185.4	38.3%	160.5	-13.4%	174.4	8.7%	160.5	-13.4%	167.5	4.4%	159.0	95%
Consumer Discretionary	64.5	75.3	84.1	88.2	104.0	101.9	80.4	133.9	66.6%	139.2	3.9%	147.7	6.1%	138.0	3.0%	145.5	5.4%	149.4	103%
Consumer Staples	78.7	77.0	79.4	84.1	90.8	91.5	95.4	105.2	10.2%	108.5	3.2%	112.5	3.7%	108.5	3.2%	110.0	1.4%	110.0	100%
Energy	94.3	39.6	10.8	37.3	69.6	49.6	-5.1	78.4	1632%	202.8	158.6%	164.1	-19.1%	200.5	155.6%	170.5	-15.0%	143.8	84%
Financials	172.4	187.1	188.7	195.8	242.5	249.5	198.2	328.9	65.9%	273.7	-16.8%	305.1	11.5%	275.5	-16.2%	295.0	7.1%	291.1	99%
Health Care	137.9	153.0	157.8	172.2	189.2	207.3	227.4	294.1	29.4%	311.0	5.7%	282.9	-9.0%	311.3	5.8%	290.0	-6.8%	288.2	99%
Industrials	99.9	103.4	97.4	106.2	129.8	124.1	65.1	109.0	67.4%	140.1	28.5%	155.3	10.8%	140.0	28.4%	148.5	6.1%	150.1	101%
Information Technology	177.8	185.2	194.7	229.7	268.1	266.1	298.2	382.0	28.1%	391.6	2.5%	404.8	3.4%	391.2	2.4%	396.0	1.2%	396.0	100%
Materials	24.5	23.6	22.4	28.2	35.2	33.6	32.0	58.5	82.9%	62.7	7.3%	53.2	-15.2%	63.0	7.7%	53.5	-15.1%	52.8	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%	49.0	0.4%	48.0	8.1%	49.0	2.1%	47.5	97%
Utilities	31.2	31.5	33.7	35.1	38.7	42.7	44.1	47.1	6.8%	47.9	1.8%	51.0	6.5%	48.1	2.2%	51.1	6.1%	51.1	100%
S&P 500	972.5	980.6	989.4	1106.1	1327.4	1334.7	1207.1	1767.0	46.4%	1886.9	6.8%	1900.1	0.7%	1884.6	6.7%	1876.6	-0.4%	1838.8	98%
S&P ex. Energy (\$bn)	878.2	941.0	978.6	1068.8	1257.8	1285.1	1212.3	1688.6	39.3%	1684.1	-0.3%	1736.0	3.1%	1684.1	-0.3%	1706.1	1.3%	1695.1	99%
S&P ex. Tech (\$bn)	794.8	795.4	794.7	876.3	1059.3	1068.6	908.9	1385.0	52.4%	1495.3	8.0%	1495.3	0.0%	1493.4	7.8%	1480.6	-0.9%	1442.8	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
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 9/30/2022.

Source: Factset, DWS Investment GmbH as of 3/28/2023. 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
Communication Services	2,750	16.4	167.5	95%	159.0	-8%	146.3	15%	5.60%	2,612	0%	2,612	1.0%	2,809	17.7	2%	6%
Consumer Discretionary	3,557	24.4	145.5	103%	149.4	-8%	137.5	12%	5.50%	2,499	15%	2,864	1.1%	3,075	20.6	-14%	-10%
<i>ex. Auto & Internet Retail</i>	1,949	19.9	98.0	100%	98.0	-8%	90.2	17%	5.50%	1,639	7%	1,754	1.8%	1,872	19.1	-4%	0%
Consumer Staples	2,297	20.9	110.0	100%	110.0	-7%	102.3	13%	5.00%	2,046	0%	2,046	2.7%	2,155	19.6	-6%	-2%
Energy	1,559	9.1	170.5	84%	143.8	-15%	122.2	16%	6.00%	2,037	-20%	1,629	3.1%	1,726	12.0	11%	15%
Financials	3,500	11.9	295.0	99%	291.1	-10%	262.0		6.40%	4,093	-10%	3,684	2.4%	3,940	13.5	13%	16%
Banks	1,085	8.3	130.0	100%	130.0	-10%	117.0		6.75%	1,733	-15%	1,473	3.9%	1,560	12.0	44%	48%
Health Care	4,794	16.5	290.0	99%	288.2	-8%	265.1	9%	5.40%	4,910	0%	4,910	1.6%	5,245	18.2	9%	13%
Industrials	2,876	19.4	148.5	101%	150.1	-8%	138.1	18%	5.60%	2,465	0%	2,465	1.8%	2,633	17.5	-8%	-5%
Information Technology	9,674	24.4	396.0	100%	396.0	-5%	376.2	2%	5.55%	6,778	10%	7,456	1.0%	8,020	20.3	-17%	-13%
Materials	894	16.7	53.5	99%	52.8	-10%	47.5	17%	5.80%	819	0%	819	1.8%	876	16.6	-2%	2%
Real Estate	787	16.1	49.0	97%	47.5	-8%	43.7	29%	5.25%	832	0%	832	3.9%	868	18.3	10%	14%
Utilities	918	18.0	51.1	100%	51.1	-8%	47.0	60%	5.25%	895	0%	895	3.3%	939	18.4	2%	6%
S&P 500 (\$ bn)	33,606	17.9	1876.6	98%	1838.8	-8.2%	1687.8		5.59%	29,987	0.8%	30212	1.7%	32,288	17.6	-4%	0%
S&P 500 Index (\$/sh)	3971	17.9	222.0	99%	220.0	-8.2%	202.0	11%	5.60%	3607	0.0%	3607	1.7%	3847	17.5	-3%	0%

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

Source: IBES, DWS Investment GmbH as of 3/28/2023. 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 %	2023 End Upside vs. S&P 500
CONSUMER DISCRETIONARY	3,557	24.4	145.5	103%	149.4	-8%	137	12%	5.50%	2,499	15%	2,864	1.1%	3,075	20.6	-14%	-10%
Auto Components	40,740	17.0	2,400	105%	2,520	-8%	2,318	11%	5.75%	40,320	5%	42,336	0.4%	45,873	18.2	13%	17%
Automobiles	587,696	23.5	25,000	100%	25,000	-12%	22,000	19%	6.50%	338,462	30%	440,000	0.5%	479,633	19.2	-18%	-14%
Distributors	52,099	16.8	3,100	100%	3,100	-8%	2,852	13%	5.75%	49,600	0%	49,600	1.9%	53,005	17.1	2%	6%
Hotels Restaurants & Leisure	602,932	28.0	21,500	110%	23,650	-7%	21,995	27%	5.00%	439,890	15%	505,874	1.5%	538,817	22.8	-11%	-7%
Household Durables	125,439	11.4	11,000	95%	10,450	-15%	8,883	14%	6.50%	136,654	-15%	116,156	1.6%	125,315	12.0	0%	4%
Internet & Direct Marketing Retail	1,020,596	45.4	22,500	110%	24,750	-7%	23,018	1%	5.50%	418,500	60%	669,600	0.1%	726,156	29.3	-29%	-25%
Leisure Products	6,537	10.9	600	90%	540	-8%	497	27%	6.00%	8,280	-20%	6,624	5.6%	6,852	12.7	5%	9%
Multiline Retail	161,009	20.9	7,700	100%	7,700	-8%	7,084	12%	5.25%	134,933	0%	134,933	1.6%	143,938	18.7	-11%	-7%
Specialty Retail	782,538	17.4	45,000	100%	45,000	-7%	41,850	13%	5.25%	797,143	0%	797,143	1.9%	847,582	18.8	8%	12%
Textiles Apparel & Luxury Goods	177,753	26.5	6,700	100%	6,700	-7%	6,231	1%	5.25%	118,686	10%	130,554	1.4%	139,455	20.8	-22%	-18%
CONSUMER STAPLES	2,297	20.9	110.0	100%	110.0	-7%	102	13%	5.00%	2,046	0%	2,046	2.7%	2,155	19.6	-6%	-2%
Beverages	592,017	23.7	25,000	100%	25,000	-7%	23,250	13%	4.80%	484,375	15%	557,031	2.6%	586,217	23.4	-1%	3%
Food & Staples Retailing	525,071	21.9	24,000	100%	24,000	-6%	22,560	8%	5.00%	451,200	0%	451,200	1.5%	480,509	20.0	-8%	-5%
Food Products	387,836	18.0	21,500	100%	21,500	-8%	19,780	24%	5.25%	376,762	-5%	357,924	2.5%	378,515	17.6	-2%	2%
Household Products	506,523	25.3	20,000	100%	20,000	-8%	18,400	9%	5.00%	368,000	10%	404,800	2.5%	426,978	21.3	-16%	-12%
Personal Products	56,728	37.8	1,500	100%	1,500	-8%	1,380	2%	4.75%	29,053	20%	34,863	1.1%	37,189	24.8	-34%	-31%
Tobacco	228,681	12.7	18,000	100%	18,000	-8%	16,560	20%	5.00%	331,200	-30%	231,840	6.4%	235,539	13.1	3%	7%
Energy	1,559	9.1	170.5	84%	143.8	-15%	122	16%	6.00%	2,037	-20%	1,629	3.1%	1,726	12.0	11%	15%
Energy Equipment & Services	117,381	13.8	8,500	100%	8,500	-8%	7,820	20%	6.00%	130,333	3%	134,243	2.4%	143,164	16.8	22%	26%
Oil Gas & Consumable Fuels	1,441,284	8.9	162,000	84%	135,270	-15%	114,980	16%	6.00%	1,916,325	-22%	1,494,734	3.9%	1,571,478	11.6	9%	13%
FINANCIALS	3,500	11.9	295.0	99%	291.1	-10%	262	0%	6.40%	4,093	-10%	3,684	2.4%	3,940	13.5	13%	16%
Capital Markets	928,026	16.0	58,000	95%	55,100	-10%	49,590	2%	6.50%	762,923	-5%	724,777	2.5%	775,823	14.1	-16%	-12%
Banks	1,085,484	8.3	130,000	100%	130,000	-10%	117,000	N/A	6.75%	1,733,333	-15%	1,473,333	3.7%	1,562,619	12.0	44%	48%
Consumer Finance	186,005	9.1	20,500	95%	19,475	-15%	16,554	N/A	7.00%	236,482	-10%	212,834	1.9%	230,159	11.8	24%	28%
Diversified Financial Services	561,772	19.7	28,500	100%	28,500	-7%	26,505	3%	5.50%	481,909	0%	481,909	0.0%	522,871	18.3	-7%	-3%
Insurance	739,188	12.7	58,000	100%	58,000	-8%	53,360	N/A	6.00%	889,333	-10%	800,400	1.9%	857,583	14.8	16%	20%
Health Care	4,794	16.5	290.0	99%	288.2	-8%	265	9%	5.40%	4,910	0%	4,910	1.6%	5,245	18.2	9%	13%
Biotechnology	790,982	15.1	52,500	100%	52,500	-8%	48,300	14%	5.50%	878,182	-5%	834,273	2.4%	885,373	16.9	12%	16%
Health Care Equipment & Supplies	1,084,360	23.6	46,000	100%	46,000	-8%	42,320	9%	5.25%	806,095	20%	967,314	1.1%	1,036,933	22.5	-4%	0%
Health Care Providers & Services	1,083,189	14.7	73,800	98%	72,324	-8%	66,538	8%	5.25%	1,267,392	-5%	1,204,022	1.4%	1,286,644	17.8	19%	23%
Life Sciences Tools & Services	416,353	25.2	16,500	98%	16,170	-8%	14,876	10%	5.50%	270,480	20%	324,576	0.2%	351,490	21.7	-16%	-12%
Pharmaceuticals	1,419,247	14.2	100,000	100%	100,000	-8%	92,000	8%	5.50%	1,672,727	-8%	1,538,909	2.7%	1,627,984	16.3	15%	19%

Source: IBES, DWS Investment GmbH as of 3/28/2023. 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
INDUSTRIALS	2,876	19.4	148.5	101%	150.1	-8%	138	18%	5.60%	2,465	0%	2,465	1.8%	2,633	17.5	-8%	-5%
Aerospace & Defense	631,676	23.0	27,500	103%	28,325	-8%	26,059	22%	5.25%	496,362	10%	545,998	1.5%	582,900	20.6	-8%	-4%
Air Freight & Logistics	224,520	16.6	13,500	100%	13,500	-8%	12,420	8%	6.00%	207,000	-10%	186,300	2.8%	197,787	14.7	-12%	-8%
Airlines	65,050	7.7	8,500	115%	9,775	-15%	8,309	69%	8.00%	103,859	0%	103,859	0.7%	114,602	11.7	76%	80%
Building Products	163,405	19.2	8,500	100%	8,500	-8%	7,820	15%	5.75%	136,000	0%	136,000	1.8%	145,405	17.1	-11%	-7%
Commercial Services & Supplies	142,380	29.7	4,800	100%	4,800	-8%	4,416	12%	5.25%	84,114	0%	84,114	1.4%	89,886	18.7	-37%	-33%
Construction & Engineering	37,807	19.9	1,900	105%	1,995	-8%	1,835	18%	5.50%	33,371	0%	33,371	0.5%	36,050	18.1	-5%	-1%
Electrical Equipment	188,443	20.9	9,000	103%	9,270	-8%	8,528	11%	5.50%	155,062	5%	162,815	1.8%	173,739	18.7	-8%	-4%
Industrial Conglomerates	336,349	22.0	15,300	103%	15,759	-8%	14,498	11%	5.50%	263,605	0%	263,605	2.0%	280,731	17.8	-17%	-13%
Machinery	604,863	17.8	34,000	97%	32,980	-8%	30,342	21%	5.50%	551,665	0%	551,665	1.6%	589,553	17.9	-3%	1%
Professional Services	99,603	28.5	3,500	100%	3,500	-8%	3,220	19%	5.25%	61,333	0%	61,333	0.6%	66,015	18.9	-34%	-30%
Road & Rail	292,530	17.2	17,000	98%	16,660	-8%	15,327	18%	5.50%	278,676	0%	278,676	1.9%	296,966	17.8	2%	5%
Trading Companies & Distributors	88,898	17.8	5,000	100%	5,000	-8%	4,600	14%	5.50%	83,636	0%	83,636	1.7%	89,306	17.9	0%	4%
INFORMATION TECHNOLOGY	9,674	24.4	396.0	100%	396.0	-5%	376	2%	5.55%	6,778	10%	7,456	1.0%	8,020	20.3	-17%	-13%
Communications Equipment	313,349	15.3	20,500	100%	20,500	-7%	19,065	-3%	6.00%	317,750	-5%	301,863	2.3%	321,968	15.7	3%	7%
Technology Hardware Storage & Periphe	2,558,126	24.5	104,500	100%	104,500	-5%	99,275	3%	5.50%	1,805,000	5%	1,895,250	0.6%	2,044,149	19.6	-20%	-16%
Electronic Equipment Instruments & Com	196,890	19.7	10,000	100%	10,000	-7%	9,300	11%	6.00%	155,000	0%	155,000	1.2%	167,040	16.7	-15%	-11%
IT Services	1,490,206	20.7	72,000	100%	72,000	-5%	68,400	7%	5.50%	1,243,636	5%	1,305,818	1.3%	1,399,635	19.4	-6%	-2%
Semiconductors & Semiconductor Equipr	2,063,150	25.8	80,000	100%	80,000	-7%	74,400	2%	6.00%	1,240,000	10%	1,364,000	1.2%	1,469,993	18.4	-29%	-25%
Software	3,052,005	28.0	109,000	100%	109,000	-5%	103,550	0%	5.25%	1,972,381	20%	2,366,857	0.8%	2,543,824	23.3	-17%	-13%
MATERIALS	894	16.7	53.5	99%	52.8	-10%	48	17%	5.80%	819	0%	819	1.8%	876	16.6	-2%	2%
Chemicals	621,471	16.8	37,000	100%	37,000	-10%	33,300	15%	5.75%	579,130	3%	596,504	2.0%	636,494	17.2	2%	6%
Construction Materials	43,932	29.3	1,500	95%	1,425	-10%	1,283	19%	6.00%	21,375	0%	21,375	0.9%	23,107	16.2	-47%	-43%
Containers & Packaging	89,800	13.8	6,500	98%	6,370	-10%	5,733	36%	5.75%	99,704	-10%	89,734	3.1%	94,822	14.9	6%	10%
Metals & Mining	139,175	16.4	8,500	94%	7,990	-10%	7,191	5%	6.00%	119,850	-5%	113,858	1.9%	121,927	15.3	-12%	-8%
REAL ESTATE	787	16.1	49.0	97%	47.5	-8%	44	29%	5.25%	832	0%	832	3.9%	868	18.3	10%	14%
Equity Real Estate Investment Trusts (RE	763,589	16.2	47,200	97%	45,784	-8%	42,121	30%	5.25%	802,310	0%	802,310	4.1%	835,770	18.3	9%	13%
Real Estate Management & Development	22,998	12.8	1,800	95%	1,710	-8%	1,573	4%	5.75%	27,360	0%	27,360	0.0%	29,754	17.4	29%	33%
COMMUNICATION SERVICES	2,750	16.4	167.5	95%	159.0	-8%	146	15%	5.60%	2,612	0%	2,612	1.0%	2,809	17.7	2%	6%
Diversified Telecommunication Services	285,744	8.0	35,700	90%	32,130	-15%	27,311	105%	5.50%	496,555	-30%	347,588	6.6%	354,178	11.0	24%	28%
Entertainment	455,511	23.4	19,500	100%	19,500	-5%	18,525	9%	5.50%	336,818	25%	421,023	0.2%	456,108	23.4	0%	4%
Interactive Media & Services	1,651,651	19.4	85,000	97%	82,450	-5%	78,328	-8%	5.50%	1,424,136	10.0%	1,566,550	0.0%	1,699,707	20.6	3%	7%
Media	271,227	11.3	24,000	90%	21,600	-12%	19,008	60%	6.00%	316,800	-25%	237,600	2.5%	253,069	11.7	-7%	-3%
Wireless Telecommunication Services	85,569	25.9	3,300	100%	3,300	-5%	3,135	42%	5.25%	59,714	10%	65,686	0.0%	71,105	21.5	-17%	-13%
UTILITIES	918	18.0	51.1	100%	51.1	-8%	47	60%	5.25%	895	0%	895	3.3%	939	18.4	2%	6%
Electric Utilities	585,755	18.5	31,600	100%	31,600	-8%	29,072	60%	5.25%	553,752	5%	581,440	3.4%	609,364	19.3	4%	8%
Gas Utilities	14,337	17.9	800	100%	800	-8%	736	46%	5.25%	14,019	0%	14,019	2.9%	14,771	18.5	3%	7%
Independent Power and Renewable Elect	22,602	9.8	2,300	100%	2,300	-15%	1,955	113%	7.00%	27,929	0%	27,929	3.5%	29,735	12.9	32%	35%
Multi-Utilities	269,877	17.4	15,500	100%	15,500	-8%	14,260	59%	5.25%	271,619	-5%	258,038	3.6%	269,929	17.4	0%	4%
Water Utilities	25,672	30.2	850	100%	850	-5%	808	38%	4.25%	19,000	0%	19,000	1.9%	20,025	23.6	-22%	-18%

Source: IBES, DWS Investment GmbH as of 3/28/2023. 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	\$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

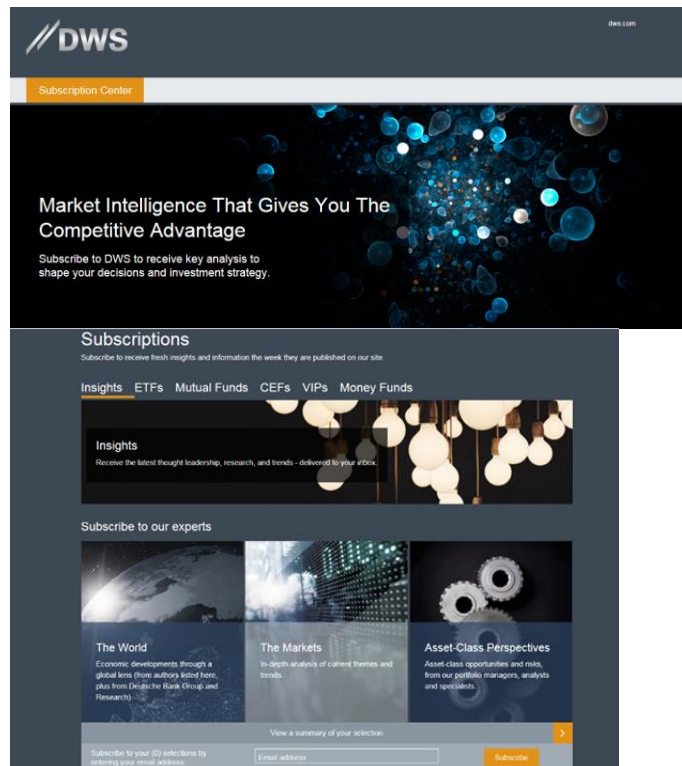
Optimistic 2023 end 10yr yield outlook: 2.5% inflation expectation + 1% overnight real rate + 0.75% inflation risk premium - 0.5% risk asset hedge = 3.75%

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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