

Getting Past the Panic: Mend capital availability, then capital costs



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Panic of '23: It's hard to put a probability on panic, when it happens risk lingers
The US regional bank panic of 2023 is a significant event with long lasting implications. Like past panics, this one will pass too. But with consequences, lessons and changes for banks, the system, regulation and investors. Some of the issues at hand are centuries old. Even with whatever new changes come, or reversions to old practices, banking will remain risky. How this risk is managed (selected, buffered, distributed and compensated) is crucial to a well-functioning and high productivity economy. How the many private and public players react to this episode will affect US growth and inflation the rest of this decade. It's important to find the right tools and the right balance of policy. It's important to get this right.

US Banks are Safe & Sound: Let's also keep them diverse and energized

US banks are a sound store of wealth. In this note, we present concepts and data on how to evaluate the safety of bank deposits. Securing safety of deposits is the solemn duty of bank managers, regulators and system supporting institutions. But we want banks to be more than vaults. We want a diverse banking system with the ability and resources to gather and efficiently deploy capital. We're champions of capital markets, but we also see US regional and community banks as a powerful engine of US investment at local levels. We think it very important that the Fed do all it can to support its member banks against the risks of panic and the restrictive interest rates it's pursuing to help fight inflation. In our opinion, the Fed should and can provide all necessary support and it's not needed or preferred that Congress guarantee deposits of any size outside of national emergency.

Federal Reserve Act of 1913: Member Owned Federal Reserve Regional Banks

The government is key in regulating and ensuring confidence in a strong banking system. But the banking system has its own institutions to help provide it support in times of need. The Federal Reserve System includes 12 Regional Reserve Banks. These Reserve Banks are owned (albeit not controlled) by member banks. Among the many responsibilities of the Regional Banks is to be lender of last resort. Each Reserve Bank operates a Discount Window. The Discount Rate is set by Regional Banks with Board of Governors approval; not the FOMC, which sets the Federal Funds rate. We believe the FOMC should manage its dual mandate with the Fed Funds rate and the Reserve System should support its member banks with a temporarily lower Discount Rate than the Fed Funds rate. This would allow smaller banks to orderly adjust deposit pricing and asset yields over time. Liquidity buys time, time enhances bank strength and non-penalty interest cost liquidity is quicker.

Deposit's Lines of Defense: 1) Bank profits, 2) Loss reserves, 3) Equity, 4) FDIC
Safety of deposits in US banks is very high. Pre credit cost profitability at US banks is high owing to higher interest rates. Assets held by US banks are high quality, including gov't and highest grade fixed income securities and high quality loans. Healthy asset/equity ratios, show these assets exceed liabilities (including bank debt and other loss absorbing capital). Reported equity includes any losses on available for sale (AFS) securities holdings within the accumulated other comprehensive income (AOCI) account in equity. Hold to maturity (HTM) securities are tested for impairment and while temporary rate change related losses are not in equity, they're disclosed and will mature at book value. See exhibits inside.

In addition to buffers banks provide to protect deposits, FDIC insures all deposits of \$250K per account per person plus \$250K more per dependent named on the account. Currently, about \$9.5trn of about \$17.5trn of total US bank deposits are insured by the FDIC. The FDIC charges premiums and operates to build loss reserves that now total near \$125bn.

Watching weekly bank call reports for deposits, loans, loan book composition

Inside are latest data for deposits and loan growth as reported weekly to FDIC. Banks report loan loss provisions, charge-offs and net loan loss reserves in financial reports. We present data inside with implied yield on assets and yield on loan book. Profitability remains healthy, but if smaller banks must pay interest on loans and deposits near 5% it hits profits hard until when they will be able to reprice loan books and let lower yield securities mature.

What's the appropriate cost of debt and cost of equity for Banks, small and big?

This is the question that investors are wrestling with right now and ever since the financial crisis. Deposits are very safe, debt is very likely safe, equity is at risk and rarely rescued. In order for debt and equity to be willing to provide possible loss absorption, there must be an adequate probable return. Deciding what's adequate will depend on how the Federal Reserve system responds to this latest challenge, how regulators and the FDIC react and price insurance and the general support and cooperation of law makers and government.

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**)

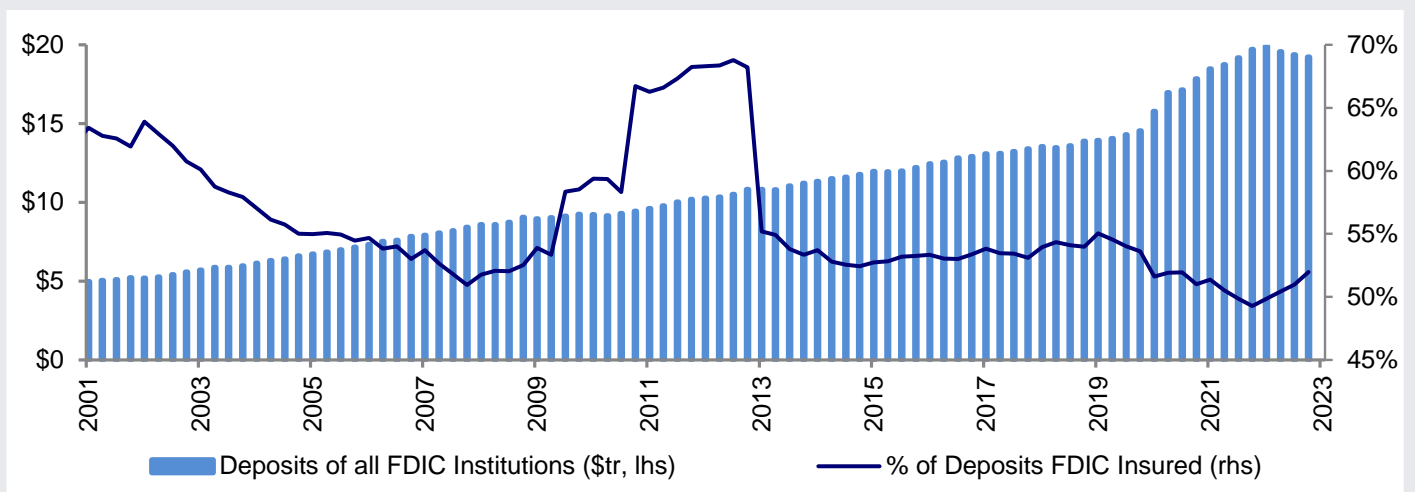
Taxable U.S. Investor Asset Allocations		
Asset Class	Long-term	Current
Fixed Income/Cash	30-35%	36.5%
Equities	55-60%	54.0%
US Equities	40%	35.0%
S&P 500	35%	32.0%
Small Caps	0-10%	3.0%
Foreign DM	10-15%	11.5%
Foreign EM	0-10%	7.5%
Alternatives	10%	9.5%

Key CIO Views		
Macro signal:	Mar 2023	Mar 2024F
U.S. Fed Funds rate	4.50%-4.75%	5.25%-5.50%
10yr Treasury yield	3.55%	4.30%
US IG Corp Spreads	195bp	110bp
US High Yield Spreads	540bp	450bp
Crude Oil (WTI) \$/bbl	68	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%

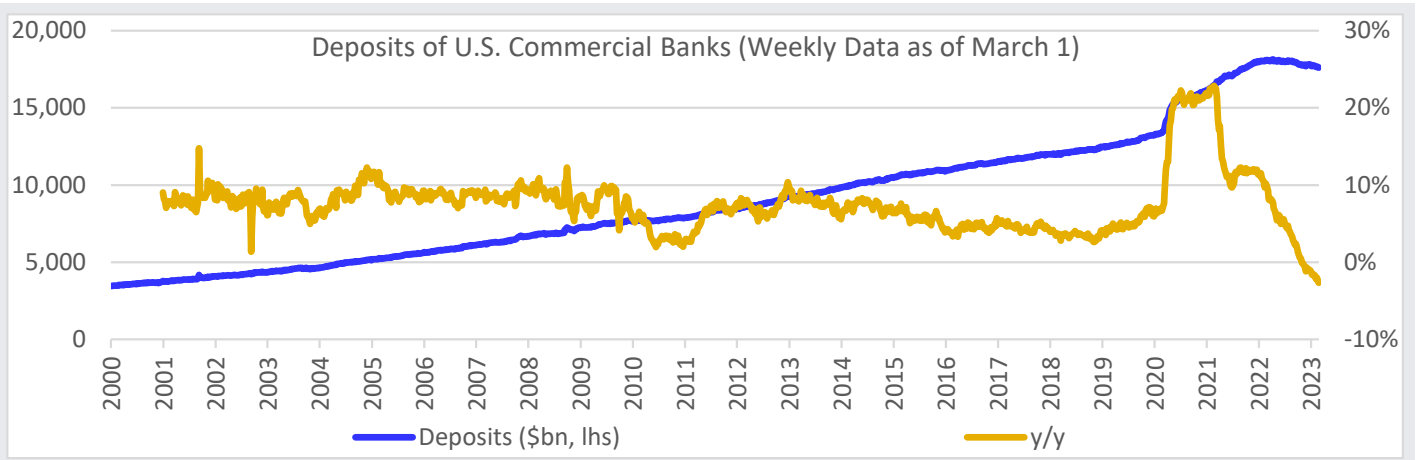
* Q4/Q4 GDP growth.
EPS = Earnings Per Share
GDP = Gross Domestic Product
FX = Foreign Exchange
TIPs – Treasury Inflation Protected Securities
Source: DWS Investment Management GmbH. All opinions and claims are based upon data on 3/17/2023 and may not come to pass. This information is subject to change 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.

FDIC institutions: % of deposits insured



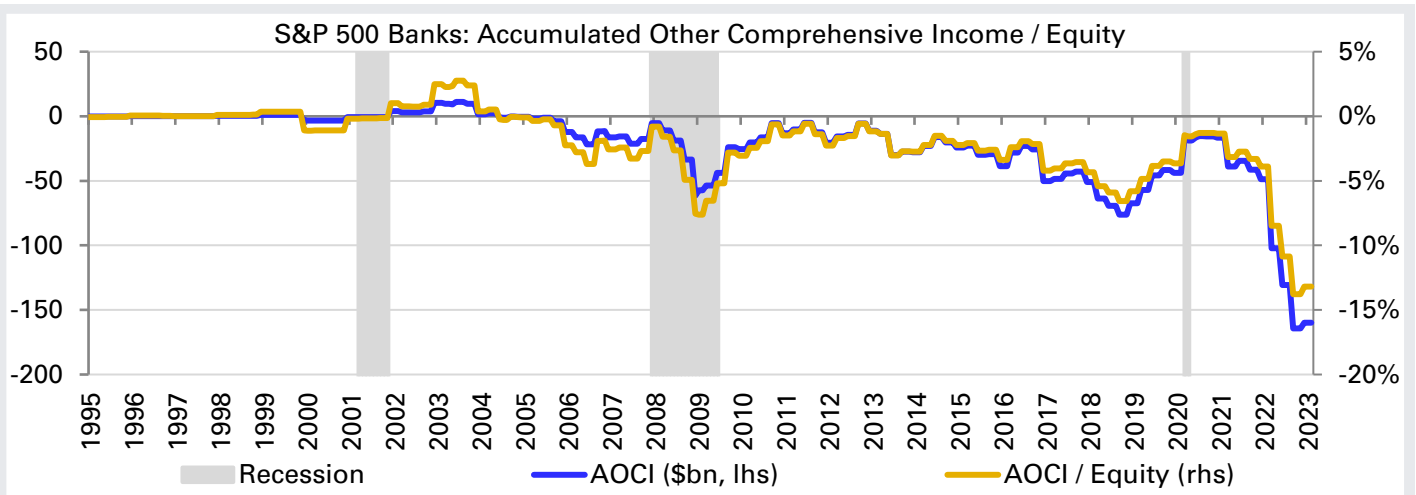
Source: FRB, Haver, DWS Investment GmbH as of 4Q2022. Past performance may not be indicative of future results.

U.S. commercial banks deposits (weekly data, latest data point as of March 1)



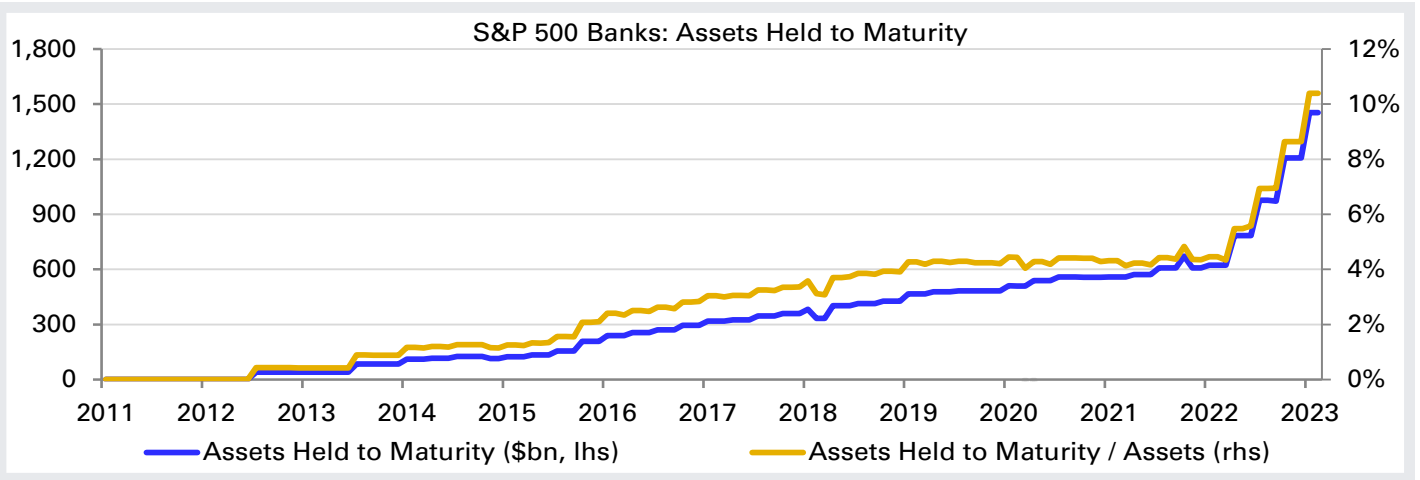
Source: FRB, Haver, DWS Investment GmbH as of 3/1/2023. Past performance may not be indicative of future results.

S&P 500 Banks: accumulated other comprehensive income / equity



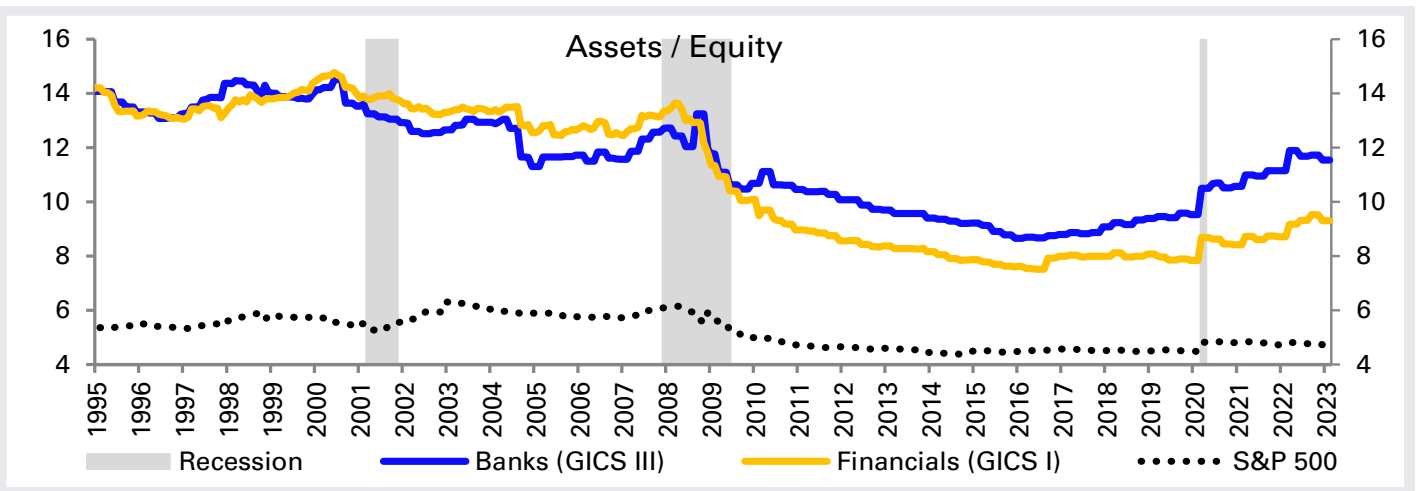
Source: Compustat, Clarifi, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

S&P 500 Banks: assets held to maturity



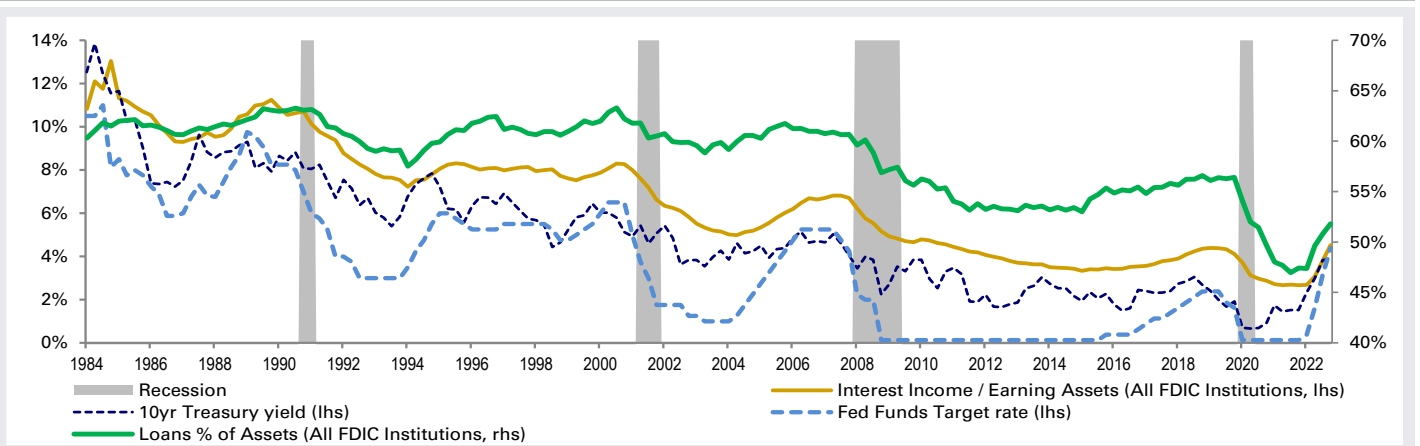
Source: Compustat, Clarifi, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

S&P 500 banks asset / equity



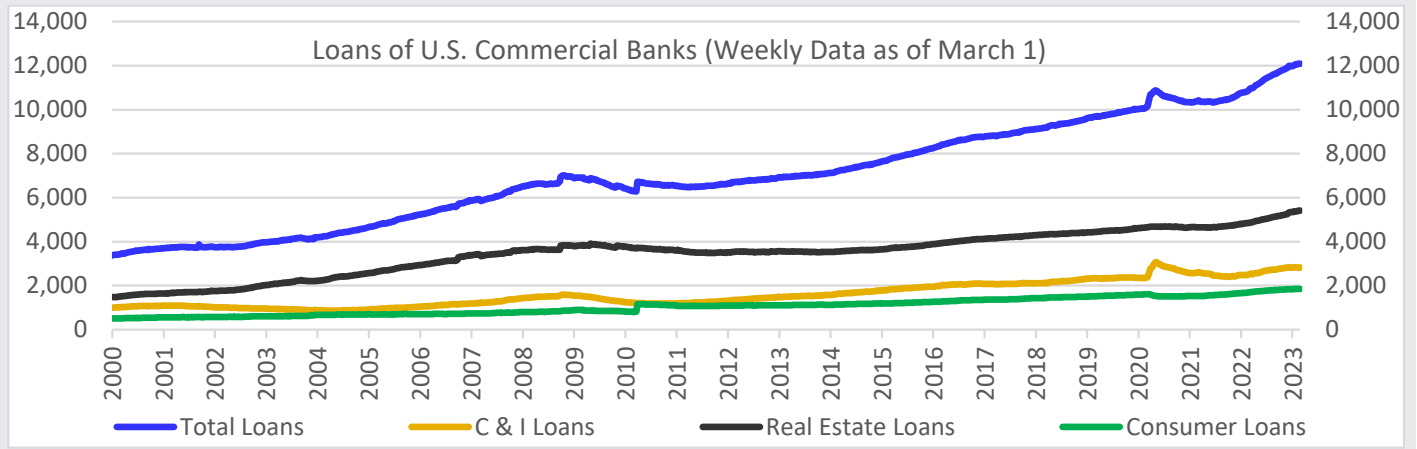
Source: Compustat, Clarifi, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

U.S. banks loan yield



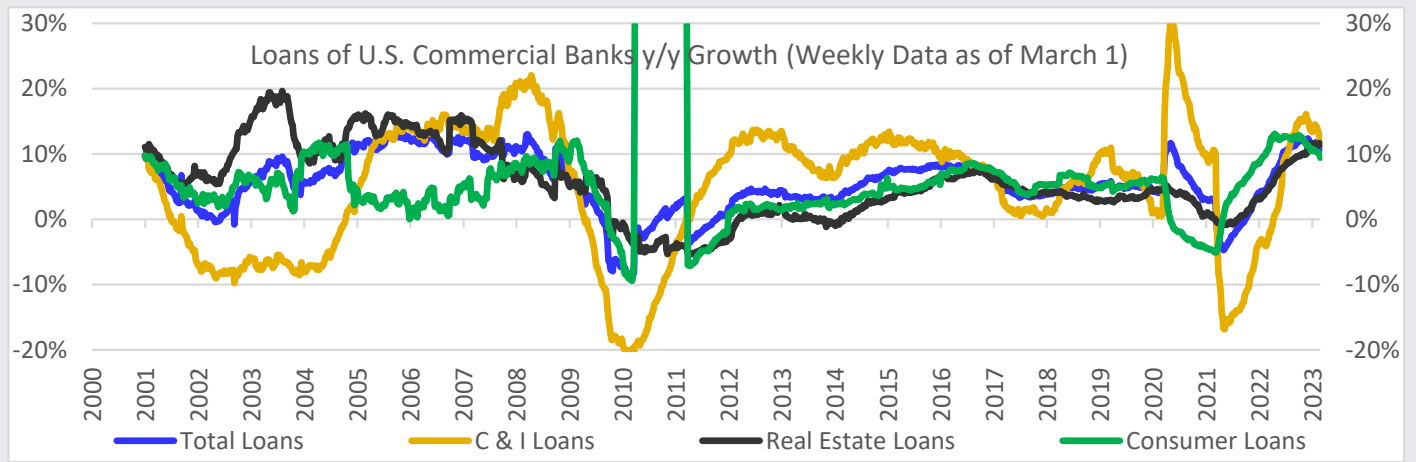
Source: Haver, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

U.S. commercial banks loans (weekly data, latest data point as of March 1)



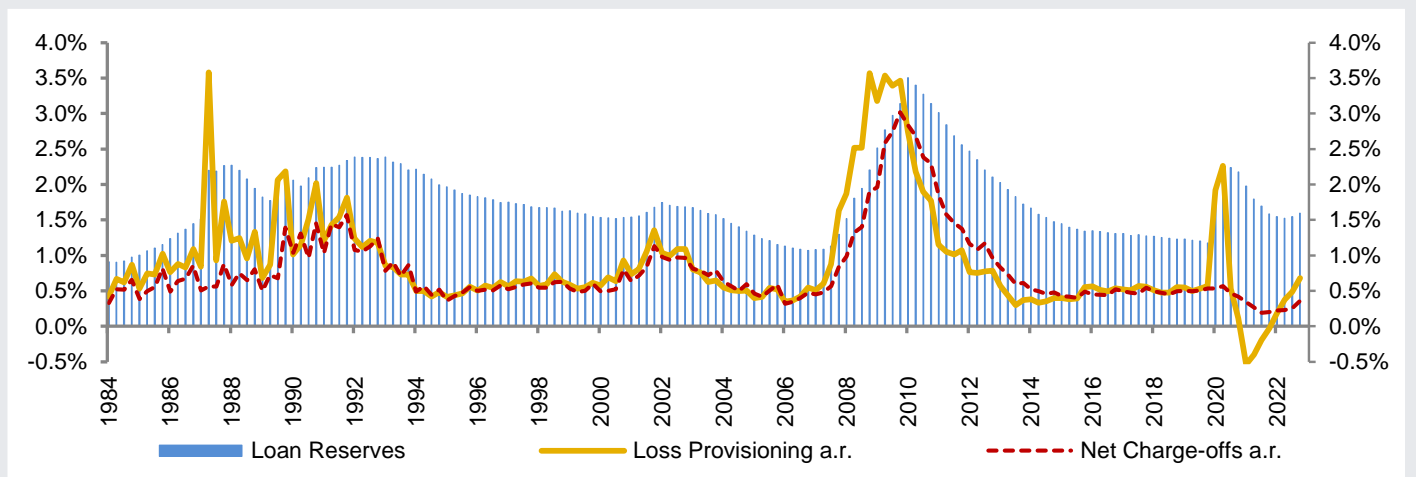
Source: FRB, Haver, DWS Investment GmbH as of 3/1/2023. Past performance may not be indicative of future results.

U.S. commercial banks loans y/y growth (weekly data, latest data point as of March 1)



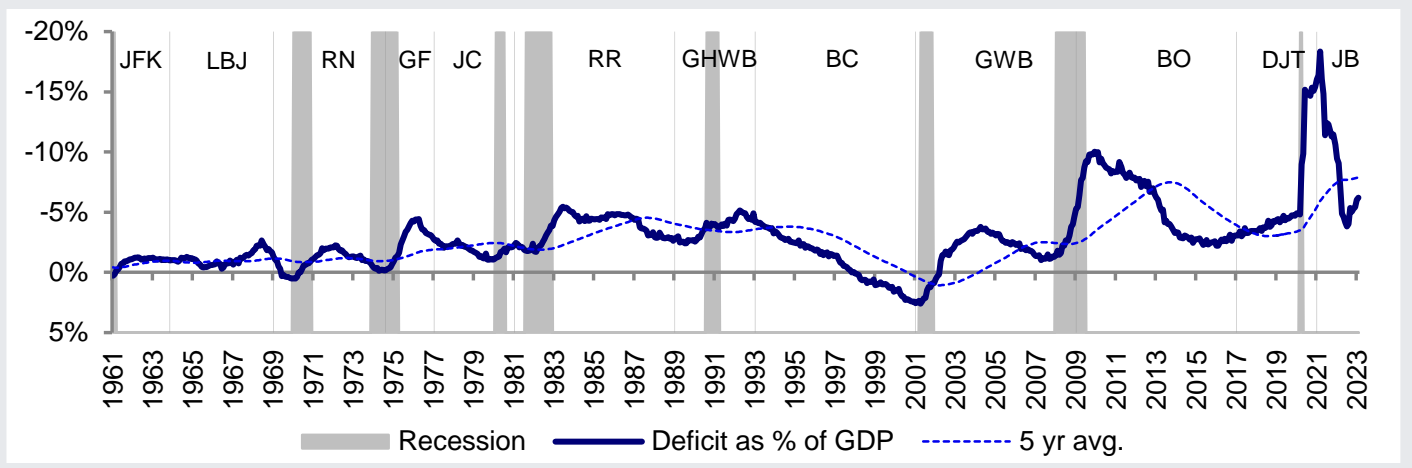
Source: FRB, Haver, DWS Investment GmbH as of 3/1/2023. Past performance may not be indicative of future results.

FDIC institutions: loan reserves, loan loss provisioning and net charge-offs



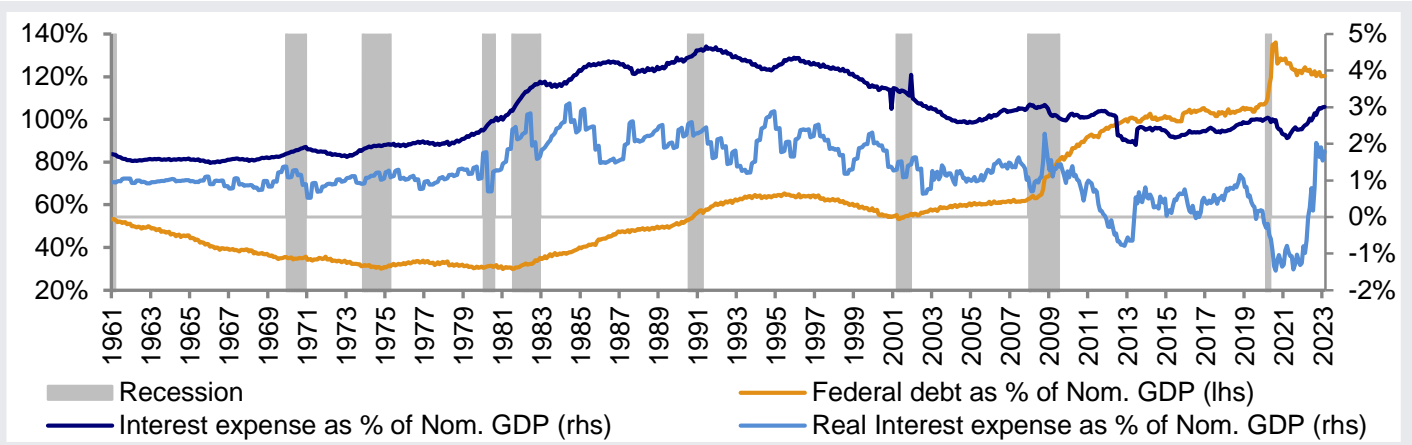
Source: FDIC, Haver, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

U.S. federal deficit as % of GDP



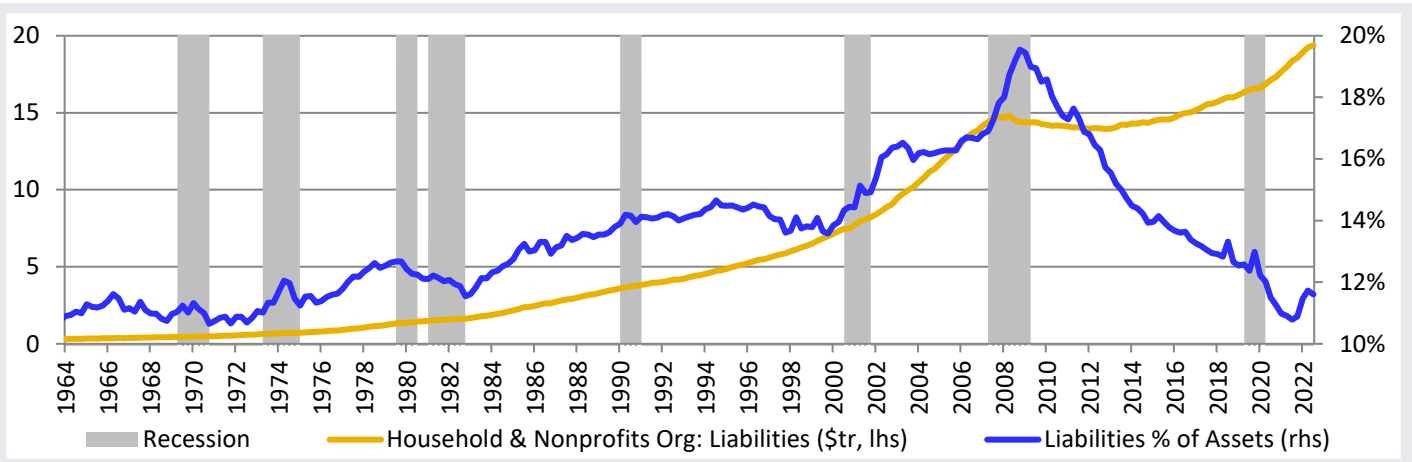
Source: Haver, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

U.S. federal debt, nominal and real interest expense as % of GDP



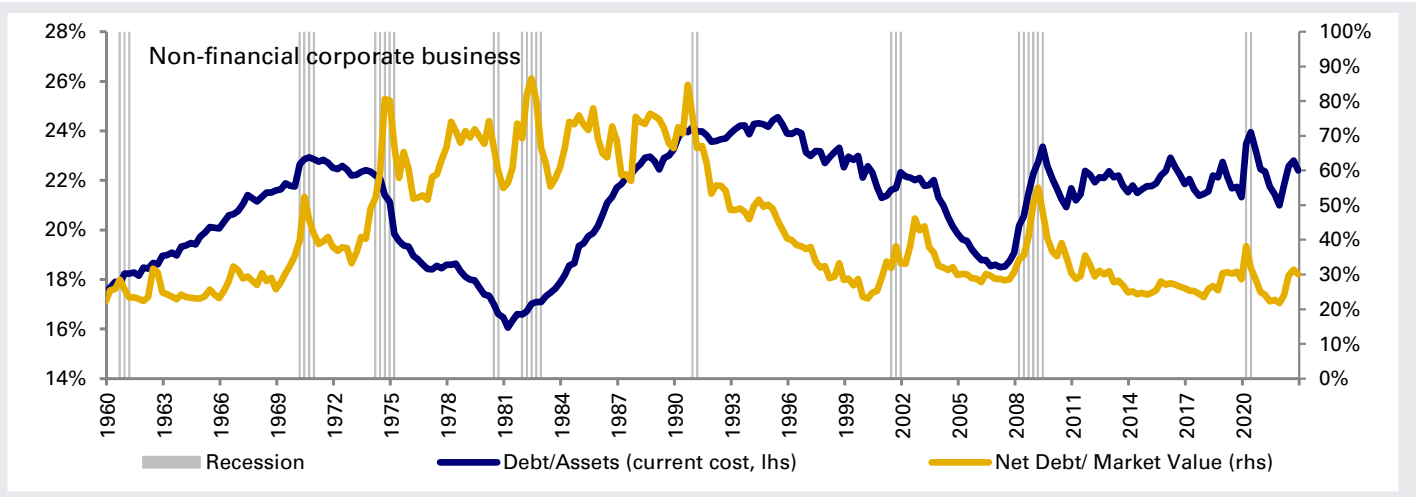
Source: Haver, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

U.S. household liabilities % of assets



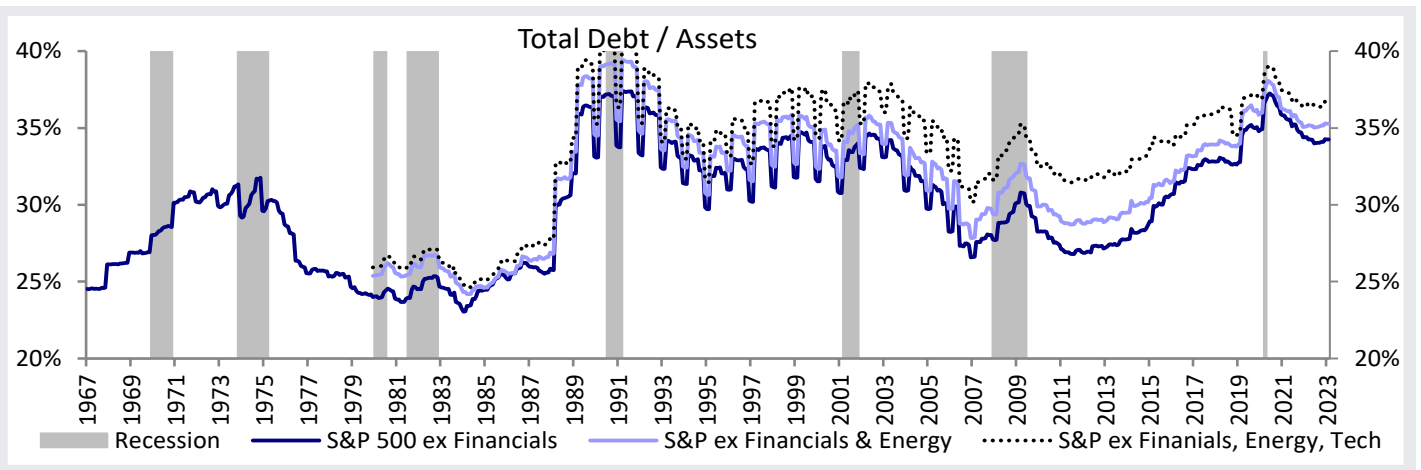
Source: Haver, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

U.S. non-financial corporate business debt / assets and net debt / market value



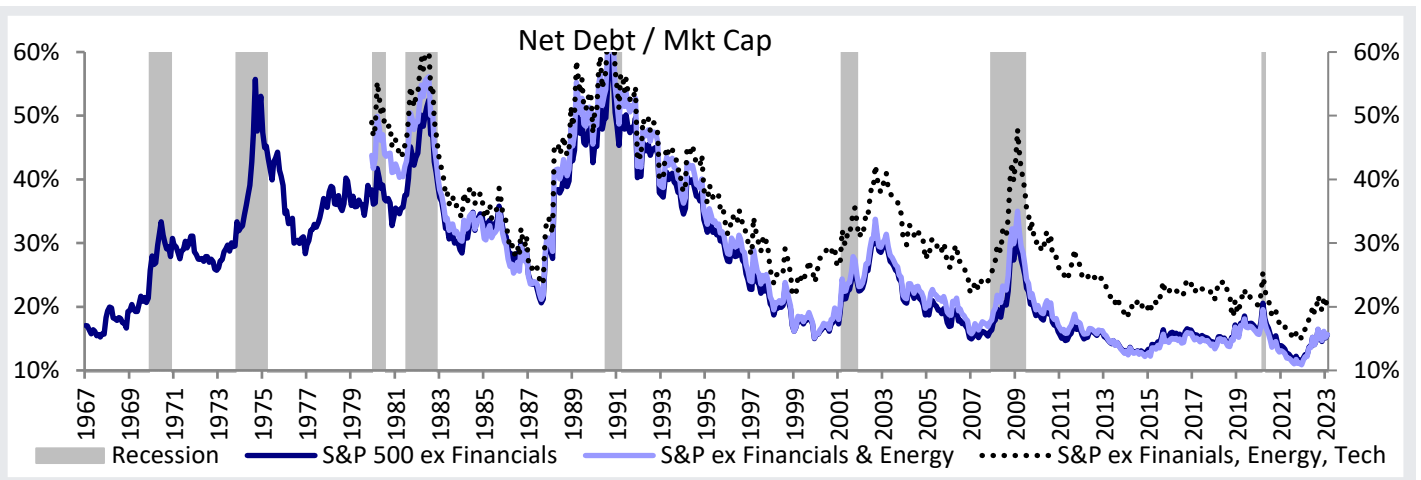
Source: Haver, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

S&P 500 total debt / assets



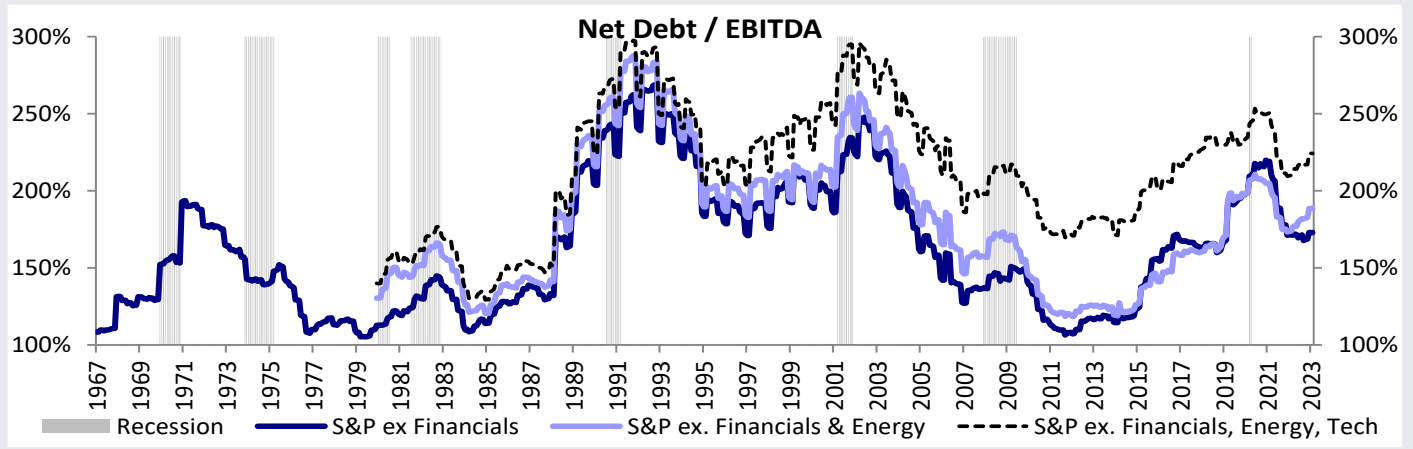
Source: Compustat, Clarifi, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.

S&P 500 net debt / market cap



Source: Compustat, Clarifi, DWS Investment GmbH as of February 2023. Past performance may not be indicative of future results.
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S&P 500 net debt / EBITDA



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

First Republic Bank: MD&A report from 2022 10K report

(\$ in millions)	Amount	Yield	Contractual Principal—Remaining Maturity							
			Within 1 Year		After 1 Through 5 Years		After 5 Through 10 Years		After 10 Years	
			Amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield
Available-for-sale:										
Agency residential MBS	\$ 2,160	2.27%	\$ —	—%	\$ 0	2.06%	\$ —	—%	\$ 2,160	2.27%
Other residential MBS	10	5.80%	—	—%	—	—%	—	—%	10	5.80%
Agency commercial MBS	1,130	4.07%	—	—%	30	4.71%	937	4.31%	163	2.68%
Securities of U.S. states and political subdivisions—taxable	47	5.78%	—	—%	—	—%	—	—%	47	5.78%
Total carrying value of available-for-sale debt securities	<u>\$ 3,347</u>		<u>\$ —</u>		<u>\$ 30</u>		<u>\$ 937</u>		<u>\$ 2,380</u>	
Held-to-maturity:										
U.S. Government-sponsored agency securities	\$ 165	2.05%	\$ —	—%	\$ 65	2.75%	\$ 50	1.57%	\$ 50	1.61%
Agency residential MBS	2,003	2.34%	—	—%	3	2.72%	—	—%	2,000	2.34%
Other residential MBS	8	2.61%	—	—%	—	—%	—	—%	8	2.61%
Agency commercial MBS	5,331	2.36%	—	—%	—	—%	—	—%	5,331	2.36%
Securities of U.S. states and political subdivisions:										
Tax-exempt municipal securities ⁽¹⁾	17,644	3.97%	340	5.95%	371	4.82%	116	5.81%	16,817	3.90%
Tax-exempt nonprofit debentures ⁽¹⁾	69	5.13%	—	—%	—	—%	—	—%	69	5.13%
Taxable municipal securities	1,726	3.06%	—	—%	—	—%	—	—%	1,726	3.06%
Corporate debt securities	1,413	2.89%	—	—%	—	—%	—	—%	1,413	2.89%
Total carrying value of held-to-maturity debt securities	<u>\$28,359</u>		<u>\$ 340</u>		<u>\$ 439</u>		<u>\$ 166</u>		<u>\$27,414</u>	
Estimated fair value of held-to-maturity debt securities	<u>\$23,587</u>		<u>\$ 345</u>		<u>\$ 444</u>		<u>\$ 167</u>		<u>\$22,632</u>	

⁽¹⁾ Weighted average yield on tax-exempt municipal securities and tax-exempt nonprofit debentures has been adjusted to the fully taxable-equivalent basis using the statutory federal income tax rate.

Recently lower Treasury yields will likely help to improve HTM market/carry values.

Source: Factset, DWS Investment GmbH as of 3/17/2023. 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%	\$222.13	6.8%	\$224.16	0.9%	\$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%	174.3	8.6%	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%	139.1	3.9%	147.7	6.2%	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%	108.9	3.6%	113.1	3.8%	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%	166.1	-18.1%	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%	306.8	12.1%	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%	140.0	28.4%	155.0	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%	405.0	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%	62.8	7.3%	53.2	-15.3%	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	1.7%	51.1	6.7%	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%	1887.1	6.8%	1904.4	0.9%	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%	1684.3	-0.3%	1738.2	3.2%	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%	1495.5	8.0%	1499.3	0.3%	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 3/17/2023. 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 %	2023 End Upside vs. S&P 500
Communication Services	2,716	16.2	167.5	95%	159.0	-8%	146.3	15%	5.60%	2,612	0%	2,612	1.0%	2,809	17.7	3%	6%
Consumer Discretionary	3,541	24.3	145.5	103%	149.4	-8%	137.5	12%	5.50%	2,499	15%	2,864	1.1%	3,075	20.6	-13%	-10%
<i>ex. Auto & Internet Retail</i>	1,948	19.9	98.0	100%	98.0	-8%	90.2	17%	5.50%	1,639	7%	1,754	1.7%	1,873	19.1	-4%	-1%
Consumer Staples	2,265	20.6	110.0	100%	110.0	-7%	102.3	13%	5.00%	2,046	0%	2,046	2.7%	2,154	19.6	-5%	-2%
Energy	1,470	8.6	170.5	84%	143.8	-15%	122.2	16%	6.00%	2,037	-20%	1,629	3.2%	1,723	12.0	17%	20%
Financials	3,439	11.7	295.0	99%	291.1	-10%	262.0		6.40%	4,093	-10%	3,684	2.5%	3,939	13.5	15%	17%
Banks	1,075	8.3	130.0	100%	130.0	-10%	117.0		6.75%	1,733	-15%	1,473	3.9%	1,559	12.0	45%	48%
Health Care	4,731	16.3	290.0	99%	288.2	-8%	265.1	9%	5.40%	4,910	0%	4,910	1.6%	5,244	18.2	11%	14%
Industrials	2,817	19.0	148.5	101%	150.1	-8%	138.1	18%	5.60%	2,465	0%	2,465	1.8%	2,632	17.5	-7%	-4%
Information Technology	9,601	24.2	396.0	100%	396.0	-5%	376.2	2%	5.55%	6,778	10%	7,456	1.0%	8,020	20.3	-16%	-14%
Materials	865	16.2	53.5	99%	52.8	-10%	47.5	17%	5.80%	819	0%	819	1.9%	876	16.6	1%	4%
Real Estate	803	16.4	49.0	97%	47.5	-8%	43.7	29%	5.25%	832	0%	832	3.8%	869	18.3	8%	11%
Utilities	925	18.1	51.1	100%	51.1	-8%	47.0	60%	5.25%	895	0%	895	3.3%	939	18.4	2%	4%
S&P 500 (\$ bn)	33,173	17.7	1876.6	98%	1838.8	-8.2%	1687.8		5.59%	29,987	0.8%	30,212	1.7%	32,280	17.6	-3%	0%
S&P 500 Index (\$/sh)	3917	17.6	222.0	99%	220.0	-8.2%	202.0	11%	5.60%	3607	0.0%	3607	1.7%	3847	17.5	-2%	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 3/17/2023. 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	3,541	24.3	145.5	103%	149.4	-8%	137	12%	5.50%	2,499	15%	2,864	1.1%	3,075	20.6	-13%	-10%
Auto Components	40,064	16.7	2,400	105%	2,520	-8%	2,318	11%	5.75%	40,320	5%	42,336	0.4%	45,875	18.2	15%	17%
Automobiles	561,737	22.5	25,000	100%	25,000	-12%	22,000	19%	6.50%	338,462	30%	440,000	0.5%	479,629	19.2	-15%	-12%
Distributors	52,447	16.9	3,100	100%	3,100	-8%	2,852	13%	5.75%	49,600	0%	49,600	1.8%	53,026	17.1	1%	4%
Hotels Restaurants & Leisure	593,515	27.6	21,500	110%	23,650	-7%	21,995	27%	5.00%	439,890	15%	505,874	1.5%	538,813	22.8	-9%	-7%
Household Durables	126,031	11.5	11,000	95%	10,450	-15%	8,883	14%	6.50%	136,654	-15%	116,156	1.6%	125,348	12.0	-1%	2%
Internet & Direct Marketing Retail	1,030,954	45.8	22,500	110%	24,750	-7%	23,018	1%	5.50%	418,500	60%	669,600	0.1%	726,154	29.3	-30%	-27%
Leisure Products	6,216	10.4	600	90%	540	-8%	497	27%	6.00%	8,280	-20%	6,624	5.8%	6,833	12.7	10%	13%
Multiline Retail	159,985	20.8	7,700	100%	7,700	-8%	7,084	12%	5.25%	134,933	0%	134,933	1.6%	143,969	18.7	-10%	-7%
Specialty Retail	789,005	17.5	45,000	100%	45,000	-7%	41,850	13%	5.25%	797,143	0%	797,143	1.9%	847,895	18.8	7%	10%
Textiles Apparel & Luxury Goods	180,641	27.0	6,700	100%	6,700	-7%	6,231	1%	5.25%	118,686	10%	130,554	1.4%	139,490	20.8	-23%	-20%
CONSUMER STAPLES	2,265	20.6	110.0	100%	110.0	-7%	102	13%	5.00%	2,046	0%	2,046	2.7%	2,154	19.6	-5%	-2%
Beverages	598,409	23.9	25,000	100%	25,000	-7%	23,250	13%	4.80%	484,375	15%	557,031	2.5%	586,472	23.5	-2%	1%
Food & Staples Retailing	515,092	21.5	24,000	100%	24,000	-6%	22,560	8%	5.00%	451,200	0%	451,200	1.5%	480,396	20.0	-7%	-4%
Food Products	371,034	17.3	21,500	100%	21,500	-8%	19,780	24%	5.25%	376,762	-5%	357,924	2.6%	378,216	17.6	2%	5%
Household Products	493,533	24.7	20,000	100%	20,000	-8%	18,400	9%	5.00%	368,000	10%	404,800	2.6%	426,741	21.3	-14%	-11%
Personal Products	55,343	36.9	1,500	100%	1,500	-8%	1,380	2%	4.75%	29,053	20%	34,863	1.1%	37,184	24.8	-33%	-30%
Tobacco	231,326	12.9	18,000	100%	18,000	-8%	16,560	20%	5.00%	331,200	-30%	231,840	6.3%	235,883	13.1	2%	5%
Energy	1,470	8.6	170.5	84%	143.8	-15%	122	16%	6.00%	2,037	-20%	1,629	3.2%	1,723	12.0	17%	20%
Energy Equipment & Services	111,500	13.1	8,500	100%	8,500	-8%	7,820	20%	6.00%	130,333	3%	134,243	2.4%	143,090	16.8	28%	31%
Oil Gas & Consumable Fuels	1,358,618	8.4	162,000	84%	135,270	-15%	114,980	16%	6.00%	1,916,325	-22%	1,494,734	4.0%	1,568,832	11.6	15%	18%
FINANCIALS	3,439	11.7	295.0	99%	291.1	-10%	262	0%	6.40%	4,093	-10%	3,684	2.5%	3,939	13.5	15%	17%
Capital Markets	917,014	15.8	58,000	95%	55,100	-10%	49,590	2%	6.50%	762,923	-5%	724,777	2.4%	776,013	14.1	-15%	-13%
Banks	1,074,919	8.3	130,000	100%	130,000	-10%	117,000	N/A	6.75%	1,733,333	-15%	1,473,333	3.6%	1,564,463	12.0	46%	48%
Consumer Finance	183,291	8.9	20,500	95%	19,475	-15%	16,554	N/A	7.00%	236,482	-10%	212,834	1.8%	230,226	11.8	26%	28%
Diversified Financial Services	545,401	19.1	28,500	100%	28,500	-7%	26,505	3%	5.50%	481,909	0%	481,909	0.0%	522,871	18.3	-4%	-1%
Insurance	718,368	12.4	58,000	100%	58,000	-8%	53,360	N/A	6.00%	889,333	-10%	800,400	1.8%	857,763	14.8	19%	22%
Health Care	4,731	16.3	290.0	99%	288.2	-8%	265	9%	5.40%	4,910	0%	4,910	1.6%	5,244	18.2	11%	14%
Biotechnology	762,009	14.5	52,500	100%	52,500	-8%	48,300	14%	5.50%	878,182	-5%	834,273	2.4%	884,932	16.9	16%	19%
Health Care Equipment & Supplies	1,066,305	23.2	46,000	100%	46,000	-8%	42,320	9%	5.25%	806,095	20%	967,314	1.1%	1,036,917	22.5	-3%	0%
Health Care Providers & Services	1,081,183	14.7	73,800	98%	72,324	-8%	66,538	8%	5.25%	1,267,392	-5%	1,204,022	1.4%	1,286,797	17.8	19%	22%
Life Sciences Tools & Services	414,524	25.1	16,500	98%	16,170	-8%	14,876	10%	5.50%	270,480	20%	324,576	0.2%	351,502	21.7	-15%	-13%
Pharmaceuticals	1,406,935	14.1	100,000	100%	100,000	-8%	92,000	8%	5.50%	1,672,727	-8%	1,538,909	2.7%	1,628,133	16.3	16%	18%

Source: IBES, DWS Investment GmbH as of 3/17/2023. 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	2,817	19.0	148.5	101%	150.1	-8%	138	18%	5.60%	2,465	0%	2,465	1.8%	2,632	17.5	-7%	-4%
Aerospace & Defense	619,005	22.5	27,500	103%	28,325	-8%	26,059	22%	5.25%	496,362	10%	545,998	1.5%	582,896	20.6	-6%	-3%
Air Freight & Logistics	223,979	16.6	13,500	100%	13,500	-8%	12,420	8%	6.00%	207,000	-10%	186,300	2.9%	197,732	14.6	-12%	-9%
Airlines	65,162	7.7	8,500	115%	9,775	-15%	8,309	69%	8.00%	103,859	0%	103,859	0.6%	114,613	11.7	76%	79%
Building Products	160,007	18.8	8,500	100%	8,500	-8%	7,820	15%	5.75%	136,000	0%	136,000	1.8%	145,416	17.1	-9%	-6%
Commercial Services & Supplies	140,107	29.2	4,800	100%	4,800	-8%	4,416	12%	5.25%	84,114	0%	84,114	1.4%	89,885	18.7	-36%	-33%
Construction & Engineering	36,506	19.2	1,900	105%	1,995	-8%	1,835	18%	5.50%	33,371	0%	33,371	0.5%	36,049	18.1	-1%	1%
Electrical Equipment	182,640	20.3	9,000	103%	9,270	-8%	8,528	11%	5.50%	155,062	5%	162,815	1.8%	173,709	18.7	-5%	-2%
Industrial Conglomerates	330,997	21.6	15,300	103%	15,759	-8%	14,498	11%	5.50%	263,605	0%	263,605	2.0%	280,735	17.8	-15%	-12%
Machinery	585,481	17.2	34,000	97%	32,980	-8%	30,342	21%	5.50%	551,665	0%	551,665	1.7%	589,427	17.9	1%	3%
Professional Services	98,523	28.1	3,500	100%	3,500	-8%	3,220	19%	5.25%	61,333	0%	61,333	0.6%	66,014	18.9	-33%	-30%
Road & Rail	287,212	16.9	17,000	98%	16,660	-8%	15,327	18%	5.50%	278,676	0%	278,676	1.9%	296,952	17.8	3%	6%
Trading Companies & Distributors	87,689	17.5	5,000	100%	5,000	-8%	4,600	14%	5.50%	83,636	0%	83,636	1.7%	89,324	17.9	2%	5%
INFORMATION TECHNOLOGY	9,601	24.2	396.0	100%	396.0	-5%	376	2%	5.55%	6,778	10%	7,456	1.0%	8,020	20.3	-16%	-14%
Communications Equipment	310,615	15.2	20,500	100%	20,500	-7%	19,065	-3%	6.00%	317,750	-5%	301,863	2.4%	321,908	15.7	4%	6%
Technology Hardware Storage & Periphe	2,516,368	24.1	104,500	100%	104,500	-5%	99,275	3%	5.50%	1,805,000	5%	1,895,250	0.7%	2,044,021	19.6	-19%	-16%
Electronic Equipment Instruments & Com	195,058	19.5	10,000	100%	10,000	-7%	9,300	11%	6.00%	155,000	0%	155,000	1.2%	167,053	16.7	-14%	-12%
IT Services	1,451,841	20.2	72,000	100%	72,000	-5%	68,400	7%	5.50%	1,243,636	5%	1,305,818	1.3%	1,399,311	19.4	-4%	-1%
Semiconductors & Semiconductor Equipr	2,063,788	25.8	80,000	100%	80,000	-7%	74,400	2%	6.00%	1,240,000	10%	1,364,000	1.2%	1,470,117	18.4	-29%	-26%
Software	3,063,356	28.1	109,000	100%	109,000	-5%	103,550	0%	5.25%	1,972,381	20%	2,366,857	0.8%	2,543,475	23.3	-17%	-14%
MATERIALS	865	16.2	53.5	99%	52.8	-10%	48	17%	5.80%	819	0%	819	1.9%	876	16.6	1%	4%
Chemicals	602,759	16.3	37,000	100%	37,000	-10%	33,300	15%	5.75%	579,130	3%	596,504	2.1%	636,350	17.2	6%	8%
Construction Materials	41,407	27.6	1,500	95%	1,425	-10%	1,283	19%	6.00%	21,375	0%	21,375	0.9%	23,102	16.2	-44%	-42%
Containers & Packaging	86,790	13.4	6,500	98%	6,370	-10%	5,733	36%	5.75%	99,704	-10%	89,734	3.1%	94,772	14.9	9%	12%
Metals & Mining	134,415	15.8	8,500	94%	7,990	-10%	7,191	5%	6.00%	119,850	-5%	113,858	2.0%	121,795	15.2	-9%	-7%
REAL ESTATE	803	16.4	49.0	97%	47.5	-8%	44	29%	5.25%	832	0%	832	3.8%	869	18.3	8%	11%
Equity Real Estate Investment Trusts (RE	778,666	16.5	47,200	97%	45,784	-8%	42,121	30%	5.25%	802,310	0%	802,310	3.9%	837,269	18.3	8%	10%
Real Estate Management & Development	24,819	13.8	1,800	95%	1,710	-8%	1,573	4%	5.75%	27,360	0%	27,360	0.0%	29,754	17.4	20%	23%
COMMUNICATION SERVICES	2,716	16.2	167.5	95%	159.0	-8%	146	15%	5.60%	2,612	0%	2,612	1.0%	2,809	17.7	3%	6%
Diversified Telecommunication Services	276,601	7.7	35,700	90%	32,130	-15%	27,311	105%	5.50%	496,555	-30%	347,588	6.8%	353,480	11.0	28%	30%
Entertainment	438,281	22.5	19,500	100%	19,500	-5%	18,525	9%	5.50%	336,818	25%	421,023	0.2%	456,086	23.4	4%	7%
Interactive Media & Services	1,647,715	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%	6%
Media	267,597	11.1	24,000	90%	21,600	-12%	19,008	60%	6.00%	316,800	-25%	237,600	2.5%	253,033	11.7	-5%	-3%
Wireless Telecommunication Services	85,365	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%	-14%
UTILITIES	925	18.1	51.1	100%	51.1	-8%	47	60%	5.25%	895	0%	895	3.3%	939	18.4	2%	4%
Electric Utilities	591,035	18.7	31,600	100%	31,600	-8%	29,072	60%	5.25%	553,752	5%	581,440	3.4%	609,714	19.3	3%	6%
Gas Utilities	14,940	18.7	800	100%	800	-8%	736	46%	5.25%	14,019	0%	14,019	2.8%	14,786	18.5	-1%	2%
Independent Power and Renewable Elect	21,974	9.6	2,300	100%	2,300	-15%	1,955	113%	7.00%	27,929	0%	27,929	3.6%	29,729	12.9	35%	38%
Multi-Utilities	271,328	17.5	15,500	100%	15,500	-8%	14,260	59%	5.25%	271,619	-5%	258,038	3.6%	270,092	17.4	0%	2%
Water Utilities	25,779	30.3	850	100%	850	-5%	808	38%	4.25%	19,000	0%	19,000	1.8%	20,029	23.6	-22%	-20%

Source: IBES, DWS Investment GmbH as of 3/17/2023. 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%	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	2.61%	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	3.61
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 PE =(inc ROE-g)/(inc real ROE*(real CoE-real g))	17.9
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%	Implied S&P 500 fair value of book at 2023 start	3607
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%	Steady-state PB = normal agg. ROE / real CoE	3.61
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%	Confirmed by fair steady-state PE = 1 / real CoE	17.9
				= Total long-term return at constant PE	8.60%		
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

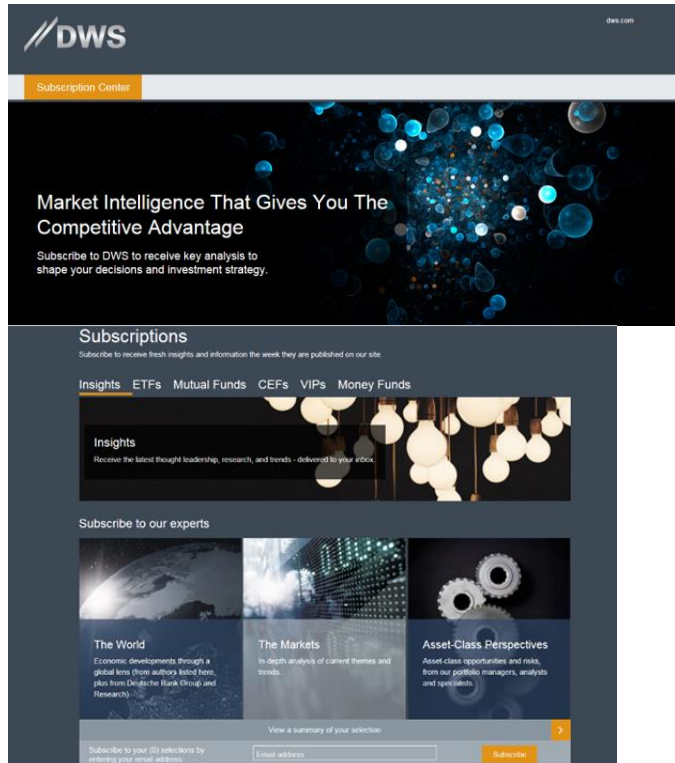
Optimistic 2023 end 10yr yield outlook: 2.5% inflation expectation + 1% overnight real rate + 0.75% inflation risk premium - 0.5% risk asset hedge = 3.75%

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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