

S&P 500 Relative Value Cheat Sheet

Another case for cyclicals and beta

S&P 500 is almost as expensive as bonds

After the recent rally, the S&P 500 P/E is closer to 19x than 18x, is now statistically expensive on every metric we track (Exhibit 7) and is trading at a historical premium to every asset class except 10yr Tsy bonds (whose valuation it has been rapidly approaching). The S&P 500 premium converging with the bond premium is not a coincidence: the S&P 500 resembles a long duration, low coupon bond – its composition is dominated by mega cap, long term growth stocks that typically don't pay dividends but flourished during QE. Both asset classes will likely do well if real rates fall from here.

Why real rates could move higher from here

Investor positioning underscores expectations for real rates to fall: bond/stock allocations at GFC levels, growth overweight vs. value. But the case for rates to rise from here is, in our view, compelling. Rate cycles last for a long time - recall the last 40+ years of falling rates – and we are just off of all time lows. A demand vacuum for bonds has been created by Fed, China, and now BoJ stepping away. Potential for higher growth down the road from today's productivity and efficiency spend could drive 10yr yields higher. If real rates rise, equity risk premia (ERP) tend to fall (Exhibit 2). And we see other reasons for lower ERP (see the report [“The question nobody is asking”](#).)

Rates up, ERP down? Own beta, sell duration & defensives

If equity risk premia fall and real rates rise, the benefit to higher beta stocks relative to lower beta stocks is directly implied by Finance 101's capital asset pricing model. Moreover, high beta cyclicals are inexpensive as they have seen risk premia spike on recession/credit concerns (Exhibit 4). But long duration, lower beta equities would be the relative losers. Here, concentration risk is high – note that Apple's market capitalization has now crossed above that of the entire Russell 2000 (Exhibit 3). Our tactical framework likes some higher beta, shorter duration sectors – Media and Household Durables rank high. Some long duration, lower beta groups rank poorly – e.g., internet (broadline) retail ranks well below brick & mortar retail. But Financials, a high beta, shorter duration sector that would be helped by a move higher in real yields and a drop in the equity risk premium - ranks last in our model from weak momentum and revisions. We are overweight Financials for the full year, but our quant model suggests that it is too early to buy for a shorter time horizon.

Market internals still more compelling than the index

Our bull market signposts suggest the S&P 500 may not break out just yet: 50% are triggered vs. 80-90% ahead of prior S&P 500 market bottoms. For short-term investors, opportunities for generating returns from stock and sector selection are more compelling, in our view, than the overall index.

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What if real rates rise....

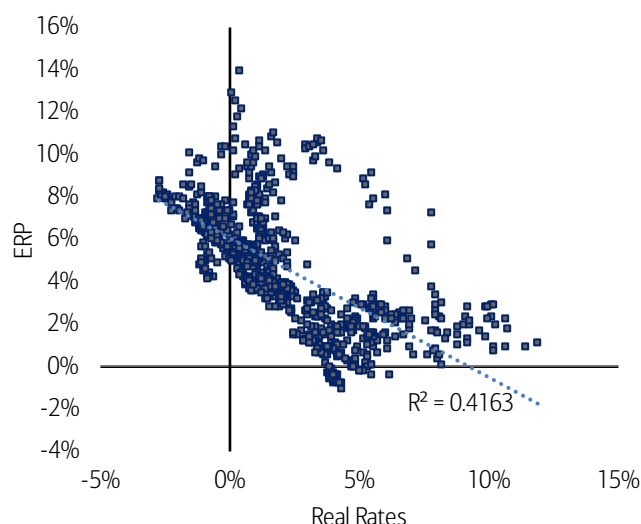
Exhibit 1: S&P 500 duration risk close to record highs
S&P 500 duration based on our DDM framework (as of 4/23)



Source: BofA US Equity & Quant Strategy

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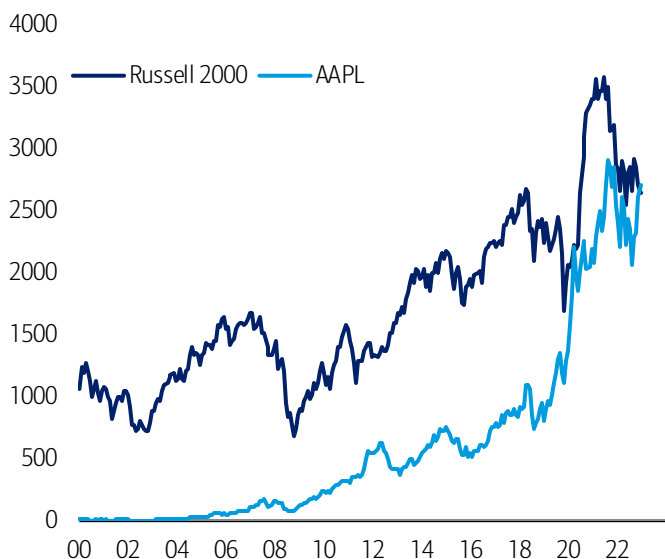
Exhibit 2: If real rates rise, equity risk premia tend to fall
Relationship between real rates and ERP (1953-4/23)



Source: FactSet, Global Financial Data, Bloomberg, BofA US Equity & Quant Strategy
ERP = trailing earnings yield – 10-yr real rates; 10-yr real rates prior to 1999 are based on actual forward 10-year CPI

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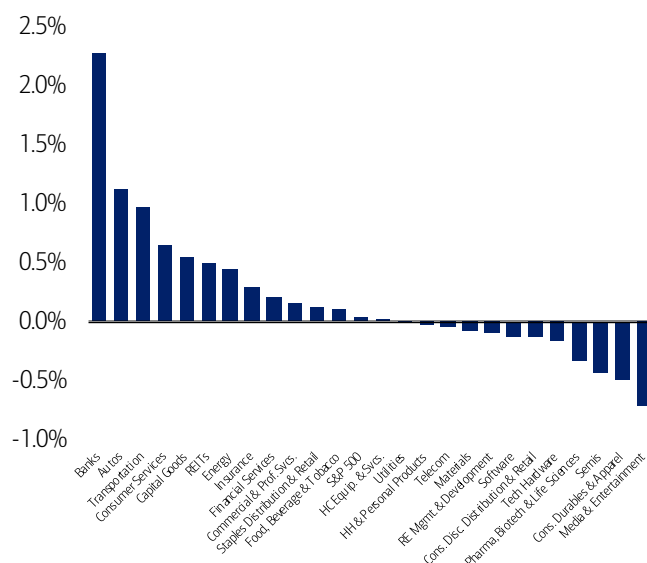
Exhibit 3: AAPL is now bigger than the Russell 2000
Market cap of Russell 2000 vs. AAPL (\$B; 2000-5/16/23)



Source: Bloomberg, BofA US Equity & Quant Strategy

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Exhibit 4: Risk premia are highest in cyclicals, lowest in TMT & defensives
Change in ERP since Feb 2023 (as of 4/23)



Source: FactSet, Bloomberg, BofA US Equity & Quant Strategy; ERP = trailing earnings yield – 10-yr real rates

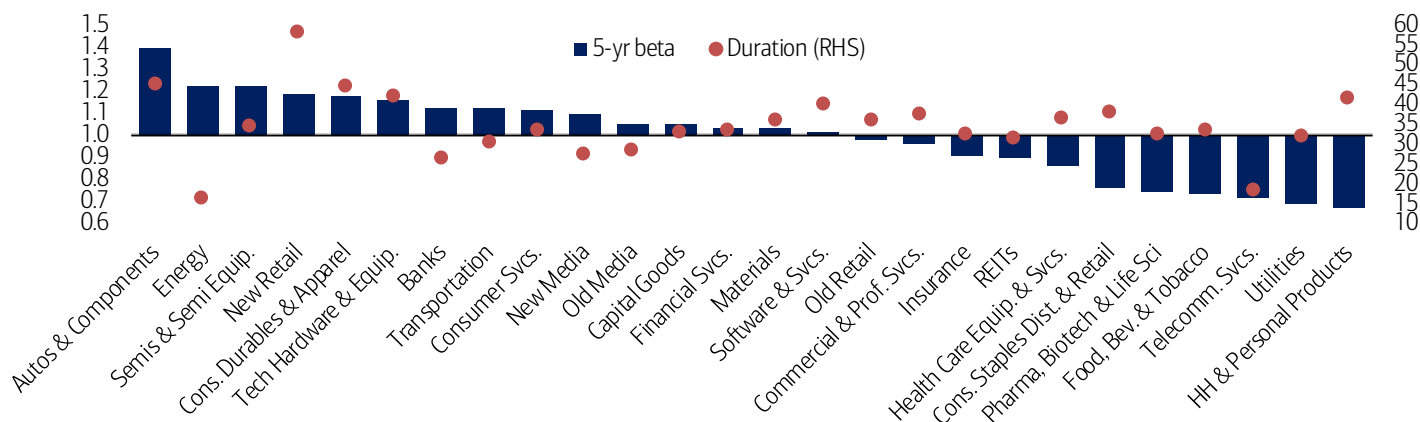
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Based on the Capital Asset Pricing Model (CAPM, below), high beta stocks enjoy a lower cost of capital from falling equity risk premia than low beta stocks.

$$CAPM: E(r) = \beta * \text{Equity Risk Premium} + \text{risk-free rate}$$

Exhibit 5: High beta, shorter duration stocks like Energy and Banks would benefit most from falling ERP and rising real rates

5-yr beta and equity duration (based on a dividend discount model framework) for S&P 500 industry groups and select industries* (as of 4/30/2023)



Source: BofA US Equity & Quant Strategy, FactSet

*New media includes the Interactive Media & Services industry and Entertainment industry; Old Media includes the Media industry. New Retail includes the Broadline Retail industry (AMZN, EBAY, ETSY); Old Retail includes the Specialty Retail industry.

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Bull market signposts update: 50% triggered

Our bull market signposts are a composite of 10 indicators that have historically signaled market bottoms in seven prior bear markets. All indicators are calculated on a month-end basis. See definitions of signposts in Appendix of this note and a deep dive on our [bull market signposts \(note\)](#) for more information.

As of the latest month-end (April 2023), 50% of signposts have been triggered, down from 60% in March. Historically, 80% were triggered before prior market bottoms.

Exhibit 6: 50% of signposts triggered vs. over 80% before prior market bottoms

List of indicators that have typically occurred before market bottom

Signpost	Past market troughs								LTM of current bear market															
	Sep-74	Jul-82	Nov-87	Oct-90	Sep-02	Feb-09	Mar-20		May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23				
Fed cutting rates (prior 12m)	☑	☑	☑	☑	☑	☑	☑		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐				
Unemployment rates rise (vs. 12-mo. low)	☑	☑	☐	☑	☑	☑	☑		☐	☐	☐	☑	☐	☑	☑	☐	☐	☑	☑	☐				
More bears than bulls (AAII)			☐	☑	☑	☑	☑		☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑				
ERP increases by >75bps vs. 12-mo. low	☑	☑	☑	☑	☑	☑	☑		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐				
50bps+ decline in the 2-yr yield (vs. 6-mo. high)	☑	☑	☑	☑	☑	☑	☑		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐				
Sell Side Indicator Buy Signal (prior 3m)			☑	☑	☐	☑	☑		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐				
Yield curve steepens (vs. 6-mo. low)		☑	☑	☑	☑	☑	☑		☑	☑	☐	☐	☐	☑	☐	☑	☑	☑	☑	☑				
5% bear market rallies (prior 3m)	☑	☐	☑	☐	☑	☑	☑		☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑				
Rule of 20	☑	☑	☑	☑	☑	☑	☑		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐				
PMI improves (vs. 12-mo. YoY low)	☐	☑	☑	☑	☑	☑	☑		☑	☐	☑	☑	☐	☐	☐	☑	☑	☑	☑	☑				
% triggered	83%	88%	80%	90%	90%	100%	90%		50%	30%	30%	40%	20%	40%	30%	40%	40%	40%	60%	50%				
S&P 500	64	107	230	304	815	735	2585		4132	3785	4130	3955	3586	3872	4080	3840	4077	3970	4109	4169				

Source: BofA US Equity & Quant Strategy, Bloomberg, FactSet, Haver Analytics. See Appendix for definitions and methodology

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S&P 500: cheap or expensive?

Exhibit 7: S&P 500 Valuations – shading indicates that metric is statistically expensive relative to history (as of 4/23)

S&P 500 valuation metrics

Metric	Current	Average	Avg. ex. Tech		Max	% Above (below) avg	Z-Score	History
			Bubble	Min				
Trailing PE	18.8	16.5	15.9	6.7	30.5	13.8%	0.5	1960-present
Trailing GAAP PE	24.1	15.1	14.8	4.2	122.4	60.0%	1.0	1832-present
Forward Consensus PE	18.7	15.7	14.9	9.8	25.1	19.4%	0.9	1986-present
Trailing Normalized PE	21.3	18.9	17.6	9.2	34.5	12.7%	0.5	9/1987-present
Median Forward P/E	17.4	15.5	15.2	9.7	22.0	12.3%	0.8	1986-present
Shiller PE	28.9	17.4	16.8	4.8	44.2	66.5%	1.6	1881-present
P/BV	4.17	2.65	2.47	0.98	5.34	57.6%	1.5	1978-present
EV/EBITDA	13.7	10.5	10.2	6.0	17.1	30.7%	1.4	1986-present
Trailing PEG	2.54	1.65	1.61	1.07	2.90	54.5%	2.9	1986-present
Forward PEG	2.53	1.41	1.38	0.92	3.36	79.9%	3.5	1986-present
P/OCF	15.6	11.2	10.7	5.4	19.6	38.7%	1.3	1986-present
P/FCF	28.3	27.9	25.0	12.9	65.7	1.7%	0.0	1986-present
EV/Sales	2.60	1.97	1.90	0.86	3.38	32.4%	1.1	1986-present
ERP (trailing E/P - real rates)	410	467	493	-102	1398	-12.2%	-0.2	4/1953-present
ERP (Market-Based)	615	504	520	136	880	22.1%	-0.6	11/1980-present
Normalized ERP	513	348	392	-89	938	47.4%	-0.8	1987-present
S&P 500 Div. Yld. vs. 10yr Tsy. Yld.	0.45	1.23	1.25	0.17	4.20	-63.2%	1.3	1792-present
S&P 500 in WTI terms	52.5	26.5	24.2	2.7	175.3	97.7%	1.4	1960-present
S&P 500 in Gold terms	2.10	1.64	1.41	0.17	5.48	28.4%	0.4	1968-present
S&P 500 vs. R2000 Fwd. P/E	1.45	1.03	0.98	0.76	1.70	40.9%	2.2	1986-present
S&P 500 Market Cap/GDP	1.32	0.65	0.62	0.22	1.66	101.3%	2.0	1964-present

*Above average implied equities are attractive relative to bonds. Note: Trailing P/E based on GAAP EPS from 1960-77, Operating EPS from 1978-87, Pro forma EPS 1988-now. Trailing GAAP P/E based on GAAP P/E for entire series. Market-based ERP based on DDM-implied S&P 500 return less AAA corp bond yield. Normalized ERP based on normalized EPS yield less normalized real risk-free rate.

Source: S&P, Compustat, Bloomberg, FactSet/First Call, BofA US Equity & Quant Strategy

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Exhibit 8: Relative valuation (vs. S&P 500) by sector (based on data from 1986 - 4/23)

Relative price to book, price to operating cash flow, price to earnings by sector

Sector	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
S&P 500 (absolute metrics)	4.17	2.94	-30%	15.59	11.20	-28%	18.28	15.75	-14%
Consumer Discretionary	2.06	1.35	-35%	1.24	0.91	-27%	1.36	1.05	-23%
Consumer Staples	1.50	1.69	13%	1.31	1.28	-3%	1.14	1.13	-1%
Energy	0.57	0.78	35%	0.36	0.73	103%	0.58	1.06	82%
Financials	0.46	0.59	29%	N/A	N/A	N/A	0.74	0.77	5%
Health Care	1.18	1.70	44%	0.92	1.57	71%	0.96	1.09	13%
Industrials	1.28	1.16	-10%	1.01	1.01	0%	0.99	1.01	2%
Information Technology	2.33	1.48	-37%	1.49	1.22	-18%	1.34	1.12	-16%
Materials	0.70	0.90	29%	0.79	0.89	13%	0.92	1.04	13%
Real Estate	0.68	0.88	28%	N/A	N/A	N/A	0.92	1.55	68%
Communication Services	0.80	1.00	25%	0.71	0.84	18%	0.90	1.18	31%
Utilities	0.51	0.60	18%	0.83	0.64	-22%	0.99	0.89	-10%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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See page 19 for definitions of valuation measures.

Consumer Discretionary

Exhibit 9: Relative Valuation (vs. S&P 500) for Consumer Discretionary industries (based on data from 1986-4/23)

Consumer Discretionary relative price to book, price to operating cash flow, price to earnings by industry

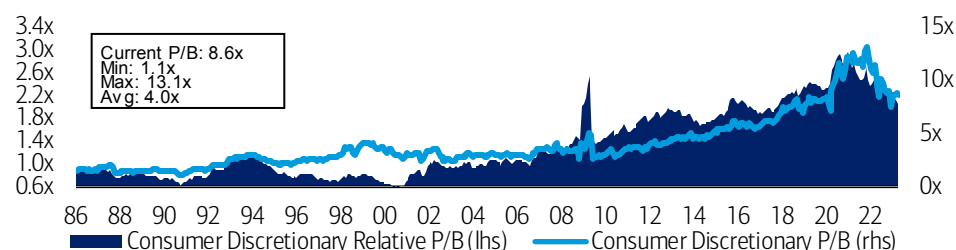
Consumer Discretionary (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Automobile Components (2)	0.59	0.78	33%	0.89	0.78	-12%	0.83	0.82	-2%
Automobiles (3)	0.99	0.84	-15%	1.15	0.28	-75%	1.24	0.67	-46%
Distributors (3)	1.18	1.10	-7%	1.09	1.14	5%	0.95	1.01	6%
Hotels Restaurants & Leisure (17)	98.63	1.50	-98%	1.46	1.14	-22%	1.36	1.22	-10%
Household Durables (8)	0.45	0.74	64%	0.71	1.05	47%	0.59	0.81	37%
Broadline Retail (3)	1.79	1.01	-44%	1.26	1.05	-17%	2.78	1.14	-59%
Leisure Products (1)	0.70	1.15	66%	1.61	0.96	-40%	0.70	0.92	30%
Specialty Retail (12)	34.17	1.64	-95%	1.14	1.28	12%	1.01	1.12	11%
Textiles Apparel & Luxury Goods (4)	2.41	1.21	-50%	2.94	1.32	-55%	1.41	1.01	-29%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 10: Consumer Discretionary P/B at 8.6x vs. 4.0x historical average, 1986-04/23

Consumer Discretionary price-to-book and relative price-to-book vs. S&P 500

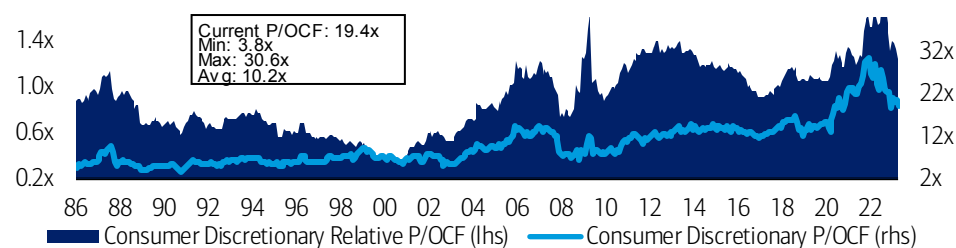


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 11: Consumer Discretionary P/OCF at 19.4x vs. 10.2x historical average, 1986-04/23

Consumer Discretionary price-to-operating cash flow and relative price-to-op. cash flow vs. S&P 500

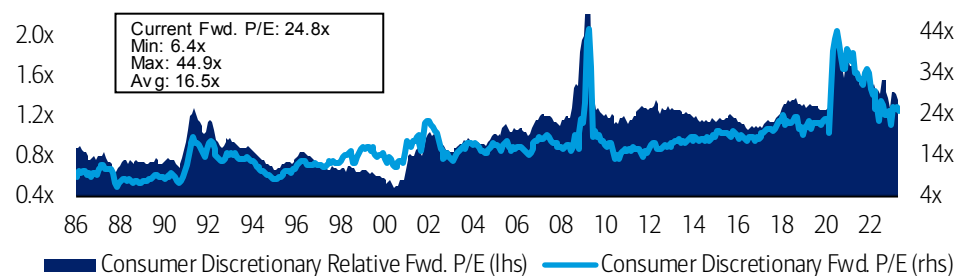


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 12: Consumer Discretionary fwd P/E at 24.8x vs. 16.5x historical average, 1986-04/23

Consumer Discretionary price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Consumer Staples

Exhibit 13: Relative Valuation (vs. S&P 500) for Consumer Staples industries (based on data from 1986-4/23)

Consumer Staples relative price to book, price to operating cash flow, price to earnings by industry

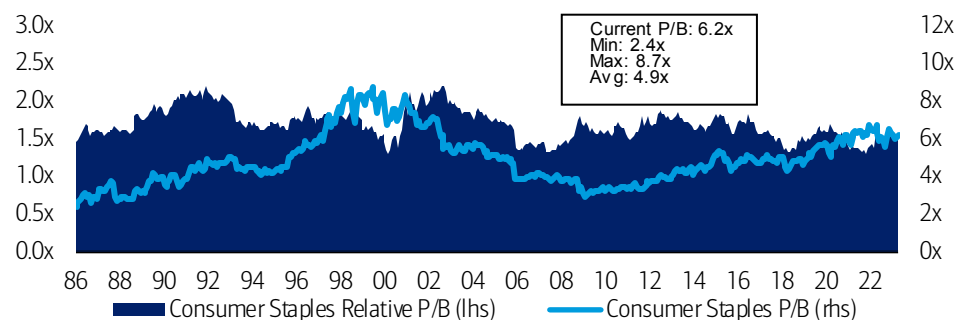
Consumer Staples (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Beverages (7)	1.80	2.08	16%	1.61	1.50	-7%	1.32	1.29	-2%
Consumer Staples Distribution & Retail (8)	1.37	1.38	1%	1.03	1.09	5%	1.17	1.16	-1%
Food Products (14)	0.63	1.21	91%	1.66	1.22	-26%	0.97	1.07	10%
Household Products (5)	2.66	1.79	-33%	1.51	1.35	-10%	1.37	1.18	-14%
Personal Care Products (1)	3.63	2.92	-20%	2.93	1.74	-41%	1.95	1.37	-30%
Tobacco (2)	-4.51	2.44	NM	0.91	0.96	6%	0.68	0.75	9%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 14: Consumer Staples P/B at 6.2x vs. 4.9x historical average, 1986-04/23

Consumer Staples price-to-book and relative price-to-book vs. S&P 500

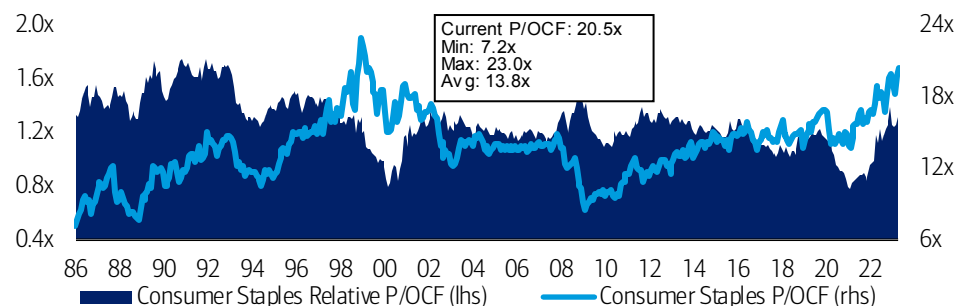


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 15: Consumer Staples P/OCF at 20.5x vs. 13.8x historical average, 1986-04/23

Consumer Staples price-to-op. cash flow and relative price-to-op. cash flow vs. S&P 500

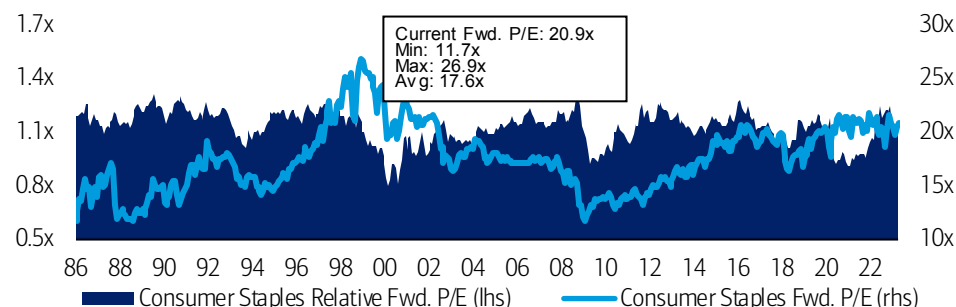


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 16: Consumer Staples fwd P/E at 20.9x vs. 17.6x historical average, 1986-04/23

Consumer Staples price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Energy

Exhibit 17: Relative Valuation (vs. S&P500) for Energy industries (based on data from 1986-4/23)

Energy relative price to book, price to operating cash flow, price to earnings by industry

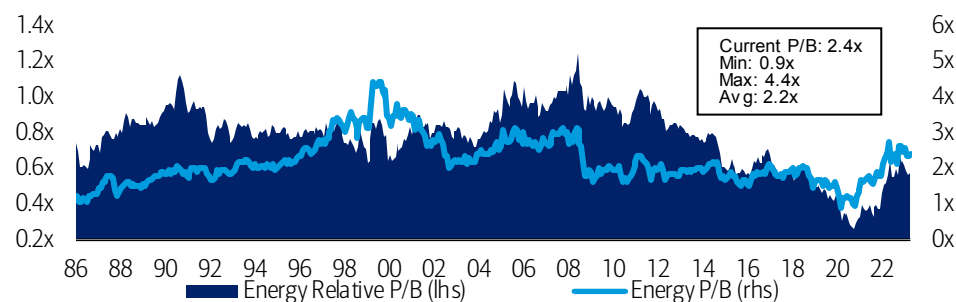
Energy (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Energy Equipment & Services (3)	0.76	0.83	10%	0.97	1.22	26%	0.76	1.32	73%
Oil Gas & Consumable Fuels (20)	0.56	0.71	26%	0.34	0.66	93%	0.57	0.93	62%

Source: Compustat, First Call, BofA US Equity & Quant Strategy

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Exhibit 18: Energy P/B at 2.4x vs. 2.2x historical average, 1986-04/23

Energy price-to-book and relative price-to-book vs. S&P 500

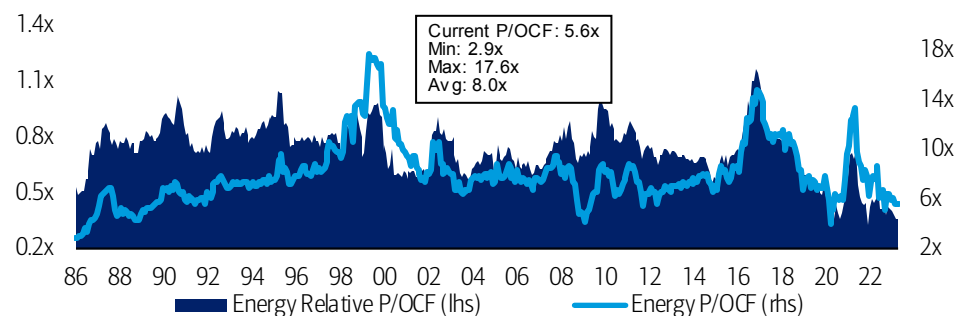


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 19: Energy P/OCF at 5.6x vs. 8.0x historical average, 1986-04/23

Energy price-to-op. cash flow and relative price-to-op. cash flow vs. S&P 500

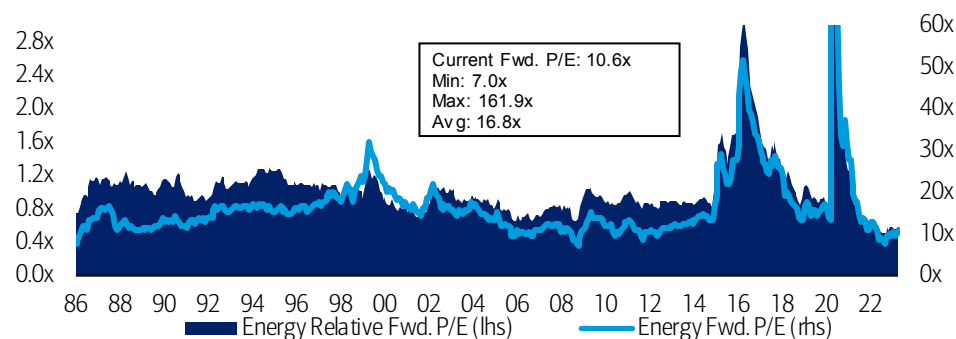


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 20: Energy fwd P/E at 10.6x vs. 16.8x historical average, 1986-04/23

Energy price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Financials

Exhibit 21: Relative Valuation (vs. S&P 500) for Financials industries (based on data from 1986-4/23)

Financials relative price to book, price to operating cash flow, price to earnings by industry

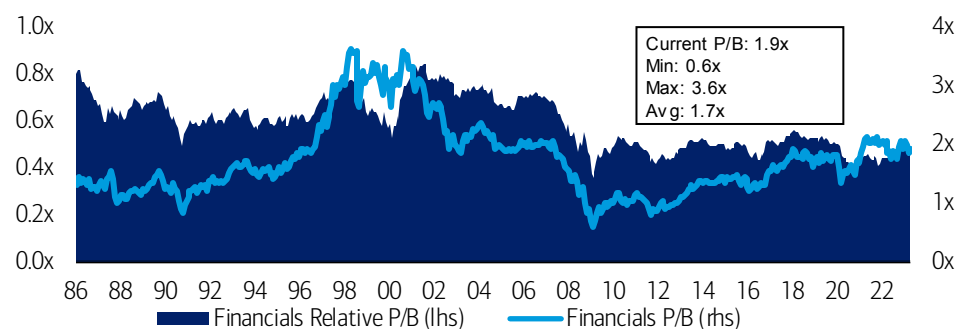
Financials (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Capital Markets (21)	0.54	0.56	4%	N/A	N/A	N/A	0.83	0.75	-9%
Banks (16)	0.25	0.50	103%	N/A	N/A	N/A	0.47	0.69	46%
Consumer Finance (4)	0.48	0.76	57%	N/A	N/A	N/A	0.55	0.80	44%
Financial Services (9)	0.72	0.68	-5%	N/A	N/A	N/A	1.15	0.85	-26%
Insurance (23)	0.58	0.50	-13%	N/A	N/A	N/A	0.68	0.75	9%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 22: Financials P/B at 1.9x vs. 1.7x historical average, 1986-04/23

Financials price-to-book and relative price-to-book vs. S&P 500

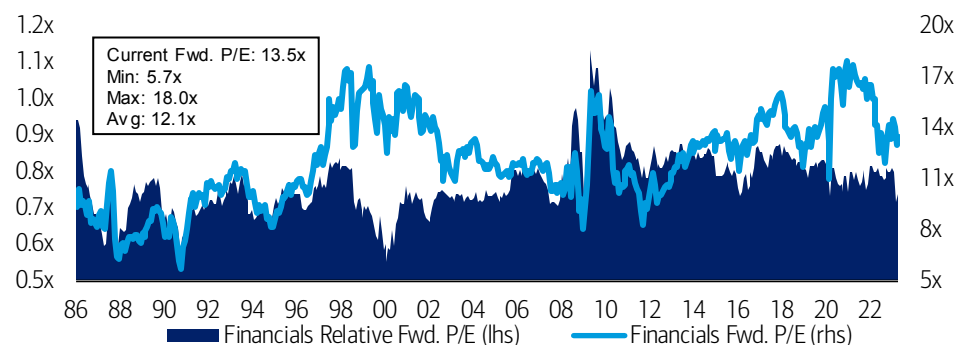


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 23: Financials fwd P/E at 13.5x vs. 12.1x historical average, 1986-04/23

Financials price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Health Care

Exhibit 24: Relative Valuation (vs. S&P 500) for Health Care industries (based on data from 1986 – 4/23)

Health Care relative price to book, price to operating cash flow, price to earnings by industry

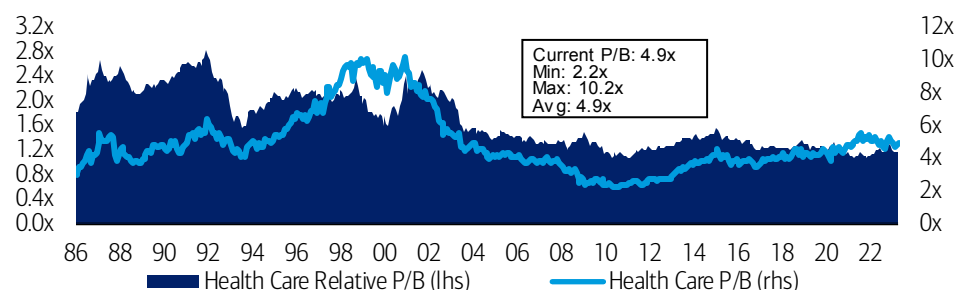
Health Care (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		P/E
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Biotechnology (8)	1.65	2.26	37%	0.98	1.46	48%	0.89	1.15	29%
Health Care Equipment & Supplies (20)	1.16	1.33	15%	2.29	1.63	-29%	1.46	1.22	-16%
Health Care Providers & Services (16)	0.93	1.07	15%	0.59	1.07	80%	0.78	0.90	15%
Life Sciences Tools & Services (12)	1.11	0.94	-15%	1.69	1.42	-16%	1.35	1.13	-16%
Pharmaceuticals (9)	1.29	1.65	28%	0.60	1.47	143%	0.84	1.01	20%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 25: Health Care P/B at 4.9x vs. 4.9x historical average, 1986-04/23

Health Care price-to-book and relative price-to-book vs. S&P 500

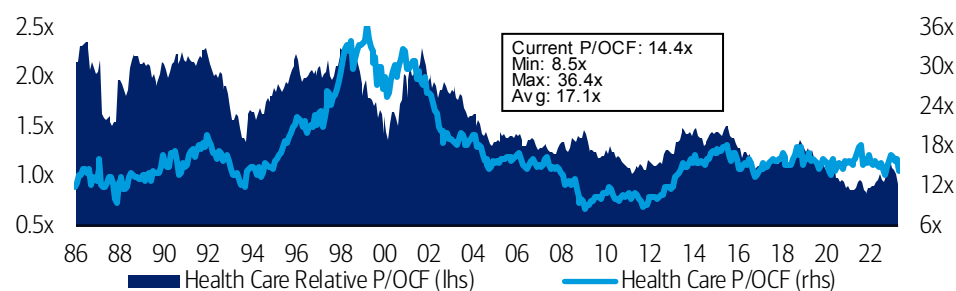


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 26: Health Care P/OCF at 14.4x vs. 17.1x historical average, 1986-04/23

Health Care price-to-op. cash flow and relative price-to-op. cash flow vs. S&P 500

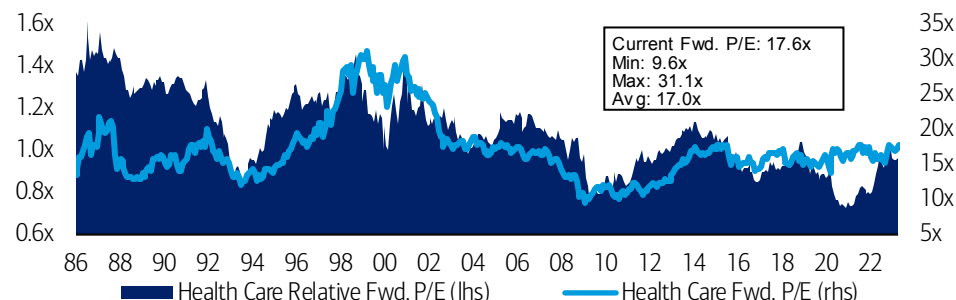


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 27: Health Care fwd P/E at 17.6x vs. 17.0x historical average, 1986-04/23

Health Care price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Industrials

Exhibit 28: Relative Valuation (vs. S&P 500) for Industrials industries (based on data from 1986-4/23)

Industries relative price to book, price to operating cash flow, price to earnings by industry

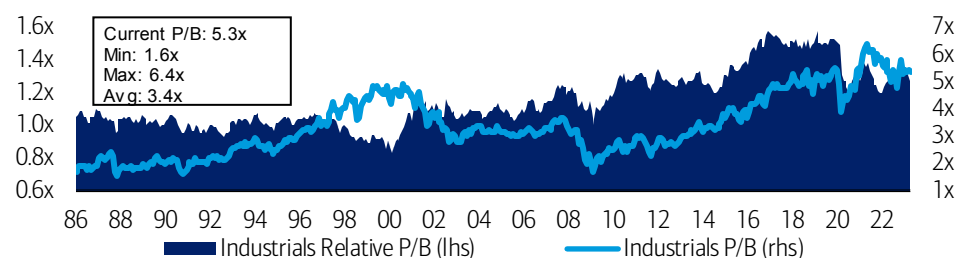
Industrials (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Aerospace & Defense (10)	1.19	1.01	-15%	1.23	1.03	-16%	1.22	0.89	-27%
Air Freight & Logistics (4)	1.21	1.07	-12%	0.63	0.73	16%	0.85	0.99	17%
Passenger Airlines (5)	0.78	0.70	-9%	0.19	0.51	175%	0.33	1.06	221%
Building Products (6)	1.14	1.07	-6%	1.40	1.10	-21%	0.95	0.94	0%
Commercial Services & Supplies (5)	1.99	1.27	-36%	1.31	0.95	-27%	1.62	1.14	-29%
Construction & Engineering (1)	1.12	0.76	-32%	1.42	1.30	-8%	1.25	0.83	-33%
Electrical Equipment (5)	1.11	1.13	2%	1.59	1.23	-23%	1.11	1.03	-7%
Industrial Conglomerates (3)	1.14	1.22	6%	1.17	0.99	-15%	1.16	1.10	-5%
Machinery (17)	1.18	1.00	-16%	1.24	1.03	-17%	0.84	0.91	8%
Professional Services (9)	1.98	1.59	-19%	1.62	1.54	-5%	1.34	1.33	-1%
Ground Transportation (5)	1.54	0.76	-50%	0.80	0.71	-11%	0.94	0.89	-5%
Trading Companies & Distributors (3)	1.67	1.17	-30%	0.83	1.10	32%	0.85	0.98	15%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 29: Industrials P/B at 5.3x vs. 3.4x historical average, 1986-04/23

Industrials price-to-book and relative price-to-book vs. S&P 500

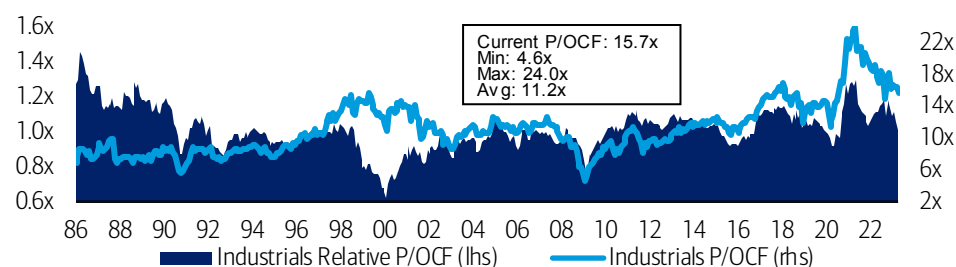


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 30: Industrials P/OCF at 15.7x vs. 11.2x historical average, 1986-04/23

Industrials price-to-op. cash flow and relative price-to-op. cash flow vs. S&P 500

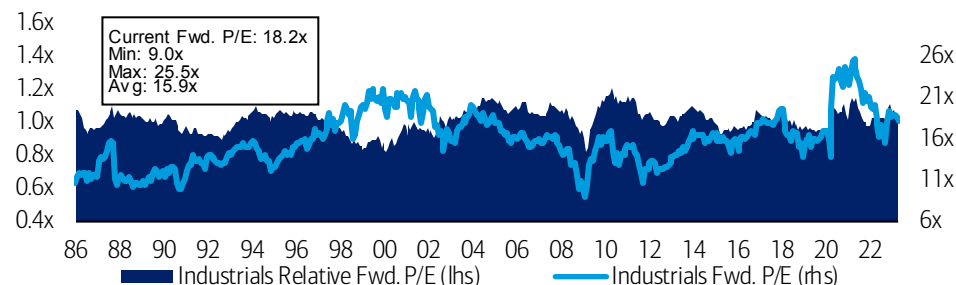


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 31: Industrials fwd P/E at 18.2x vs. 15.9x historical average, 1986-04/23

Industrials price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Information Technology

Exhibit 32: Relative Valuation (vs. S&P500) for information Technology industries (based on data from 1986-4/23)

Information Technology relative price to book, price to operating cash flow, price to earnings by industry

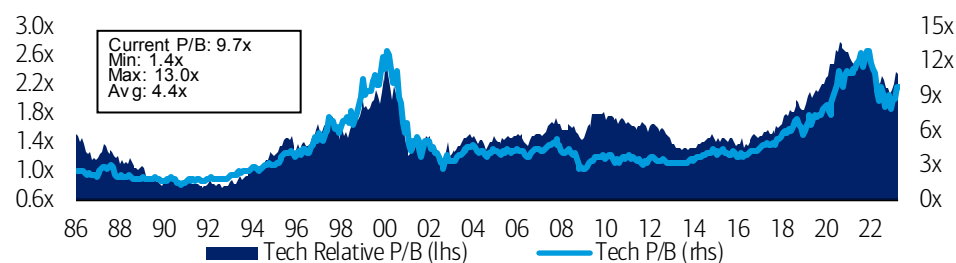
Information Technology (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Communications Equipment (5)	1.41	1.24	-12%	1.06	1.37	30%	0.79	1.16	47%
Electronic Equipment Instruments & Components (8)	0.98	0.97	-1%	1.17	1.30	11%	1.01	1.13	11%
IT Services (8)	1.44	1.38	-4%	0.93	0.87	-7%	0.97	0.92	-4%
Semiconductors & Semiconductor Equipment (21)	1.33	1.24	-7%	1.46	1.11	-24%	1.30	1.08	-17%
Software (18)	2.60	2.13	-18%	1.71	1.61	-6%	1.49	1.30	-13%
Technology Hardware Storage & Peripherals (6)	7.97	1.29	-84%	1.51	1.19	-21%	1.40	1.03	-26%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 33: Tech P/B at 9.7x vs. 4.4x historical average, 1986-04/23

Information Technology price-to-book and relative price-to-book vs. S&P 500

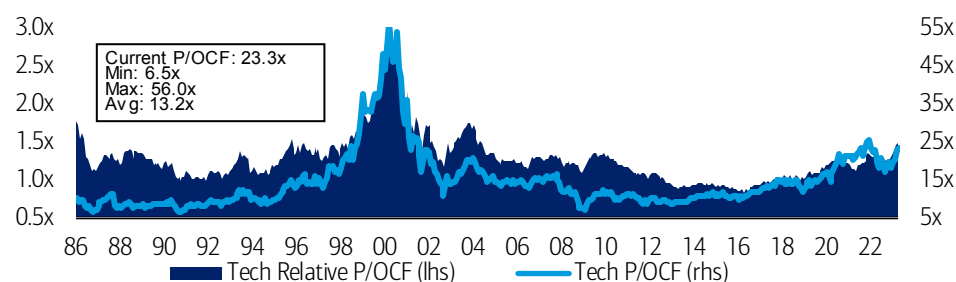


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 34: Tech P/OCF at 23.3x vs. 13.2x historical average, 1986-04/23

Information Technology price-to-op. cash flow and relative price-to-op. cash flow vs. S&P 500

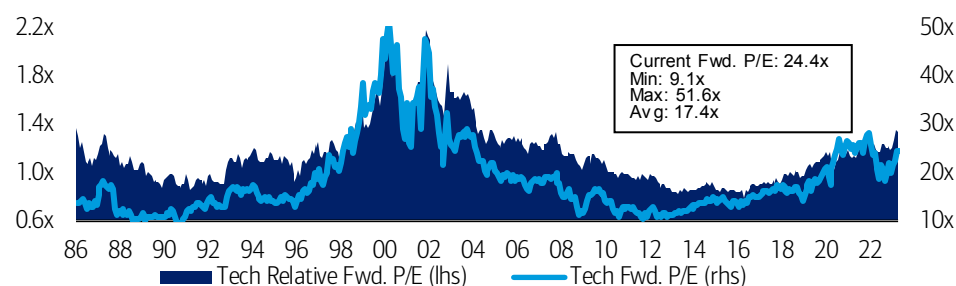


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 35: Tech fwd P/E at 24.4x vs. 17.4x historical average, 1986-04/23

Information Technology price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Materials

Exhibit 36: Relative Valuation (vs. S&P 500) for Materials industries (based on 1986-4/23)

Materials relative price to book, price to operating cash flow, price to earnings by industry

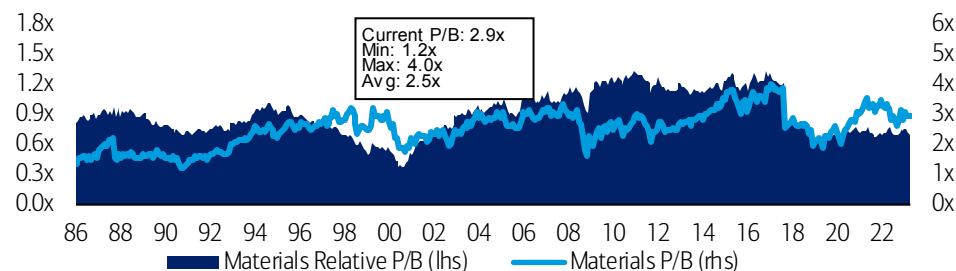
Materials (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Chemicals (16)	0.74	1.04	40%	0.94	0.94	-1%	0.97	1.07	11%
Construction Materials (2)	0.78	0.75	-5%	1.38	1.27	-8%	1.38	1.60	16%
Containers & Packaging (7)	0.61	0.81	32%	0.65	0.77	18%	0.78	0.88	12%
Metals & Mining (4)	0.58	0.62	7%	0.46	0.72	58%	0.74	0.92	24%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 37: Materials P/B at 2.9x vs. 2.5x historical average, 1986-04/23

Materials price-to-book and relative price-to-book vs. S&P 500

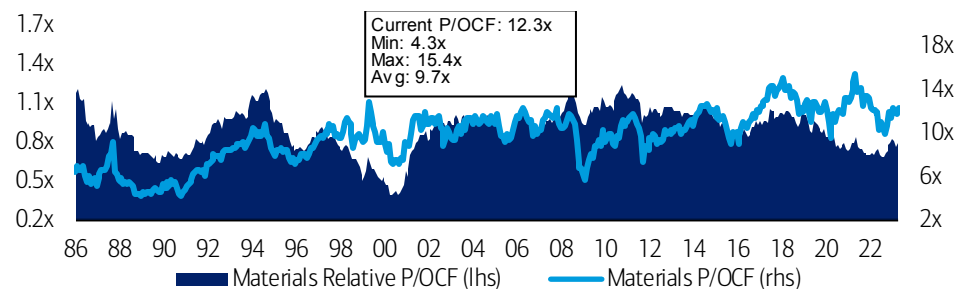


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 38: Materials P/OCF at 12.3x vs. 9.7x historical average, 1986-04/23

Materials price-to-op. cash flow and relative price-to-op. cash flow vs. S&P 500

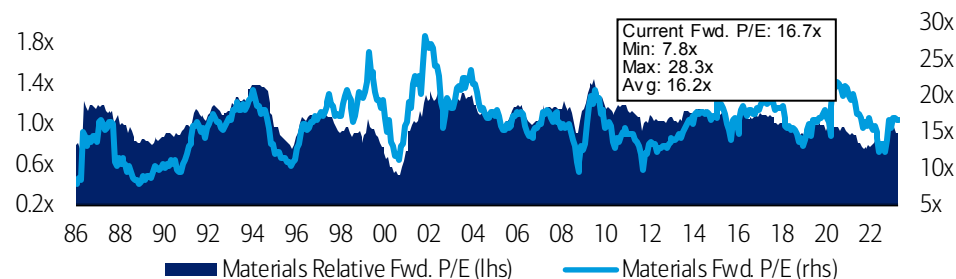


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 39: Materials fwd P/E at 16.7x vs. 16.2x historical average, 1986-04/23

Materials price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Real Estate

Exhibit 40: Relative Valuation (vs. S&P 500) for Real Estate industries (based on data from 2001-4/23)

Real Estate relative price to book, price to operating cash flow, price to earnings by industries

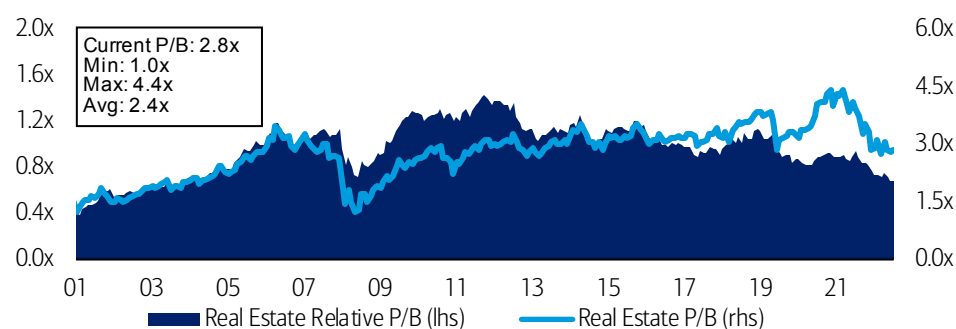
Real Estate (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)**		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Health Care Reits (3)	0.44	0.62	41%	N/A	N/A	N/A	0.96	0.97	0%
Hotel & Resort Reits (1)	0.41	0.73	77%	N/A	N/A	N/A	0.49	1.00	101%
Industrial Reits (1)	0.48	0.53	9%	N/A	N/A	N/A	1.24	1.52	23%
Office Reits (2)	0.28	0.79	186%	N/A	N/A	N/A	0.59	1.11	87%
Real Estate Management & Development (1)	0.75	0.92	22%	N/A	N/A	N/A	0.84	0.99	18%
Residential Reits (7)	0.57	0.82	44%	N/A	N/A	N/A	0.91	1.11	23%
Retail Reits (5)	0.51	1.13	124%	N/A	N/A	N/A	0.66	0.86	30%
Specialized Reits (10)	1.26	0.84	-33%	N/A	N/A	N/A	1.02	1.63	59%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 41: Real Estate P/B at 2.8x vs. 2.4x historical average, 1986-04/23

Real Estate price-to-book and relative price-to-book vs. S&P 500

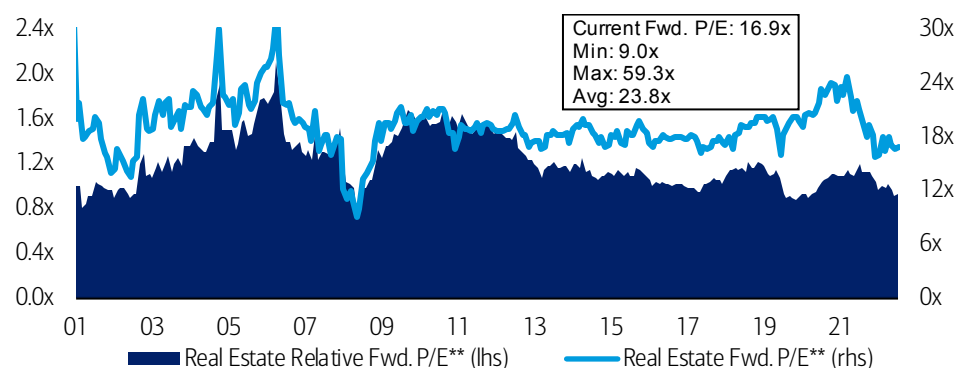


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 42: Real Estate fwd P/E at 16.9x vs. 23.8x historical average, 1986-04/23

Real Estate price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Communication Services

Exhibit 43: Relative Valuation (vs. S&P 500) for Communication Services industries (based on data from 1986-4/23)

Communication Services relative price to book, price to operating cash flow, price to earnings by industry

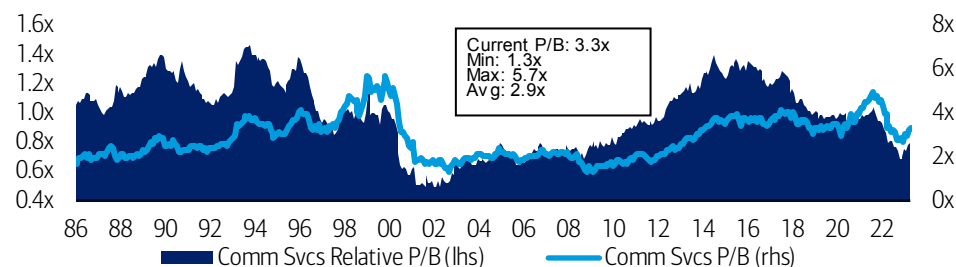
Comm. Svcs (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Diversified Telecommunication Services (2)	0.38	0.79	109%	0.26	0.52	98%	0.42	0.84	98%
Media (8)	0.48	0.92	90%	0.41	0.93	129%	0.61	1.36	122%
Entertainment (7)	0.59	0.90	53%	1.75	1.33	-24%	1.29	1.49	15%
Interactive Media & Services (3)	1.28	1.33	5%	0.92	1.49	63%	1.07	1.73	61%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 44: Communication Services P/B at 3.3x vs. 2.9x historical average, 1986-04/23

Communication Services price-to-book and relative price-to-book vs. S&P 500

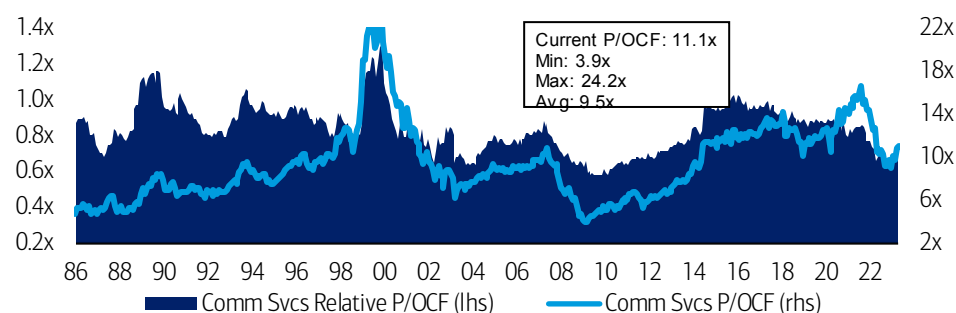


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 45: Communication Services P/OCF at 11.1x vs. 9.5x historical average, 1986-04/23

Communication Services price-to-op. cash flow and relative price-to-op. cash flow vs. S&P 500

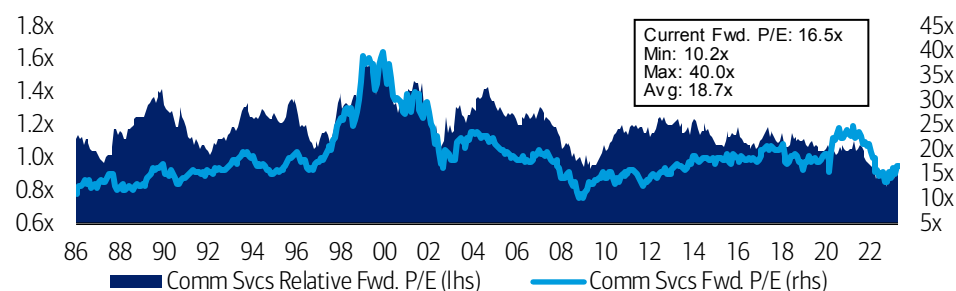


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 46: Communication Services fwd P/E at 16.5x vs. 18.7x historical average, 1986-04/23

Communication Services price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Utilities

Exhibit 47: Relative Valuation (vs. S&P 500) for Utilities industries (based on data from 1986-4/23)

Utilities relative price to book, price to operating cash flow, price to earnings by industry

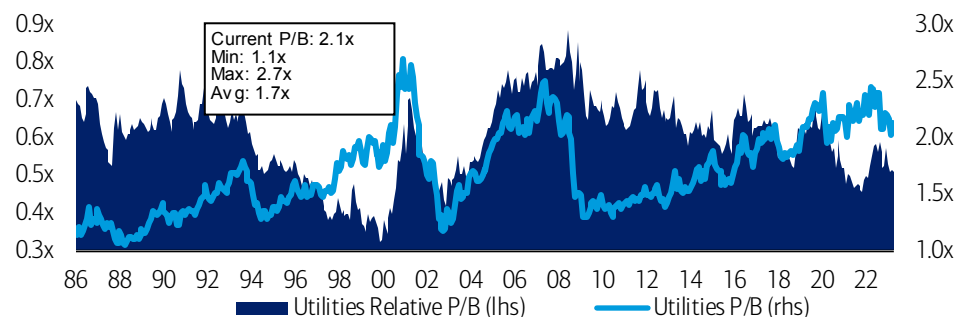
Utilities (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Electric Utilities (17)	0.51	0.56	10%	0.83	0.60	-28%	0.99	0.83	-16%
Independent Power and Renewable Electricity Producers (1)	2.45	0.77	-69%	0.37	0.41	10%	0.72	0.80	11%
Multi-Utilities (10)	0.49	0.61	25%	0.85	0.67	-21%	0.98	0.99	2%

Source: Compustat, First Call, BofA US Equity & US Quant Strategy

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Exhibit 48: Utilities P/B at 2.1x vs. 1.7x historical average, 1986-04/23

Utilities price-to-book and relative price-to-book vs. S&P 500

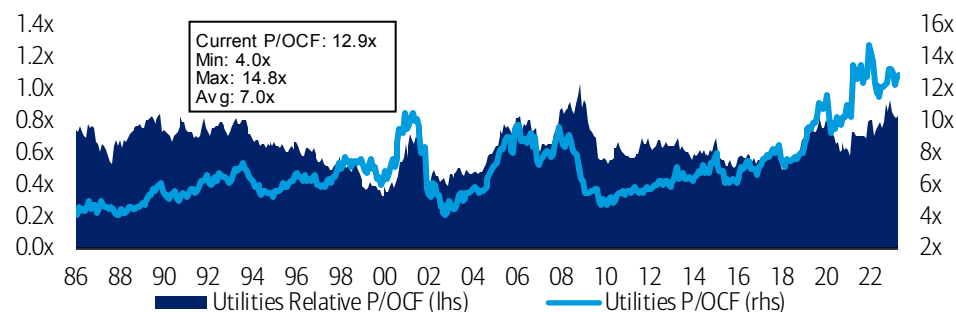


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 49: Utilities P/OCF at 12.9x vs. 7.0x historical average, 1986-04/23

Utilities price-to-op. cash flow and relative price-to-op. cash flow vs. S&P 500

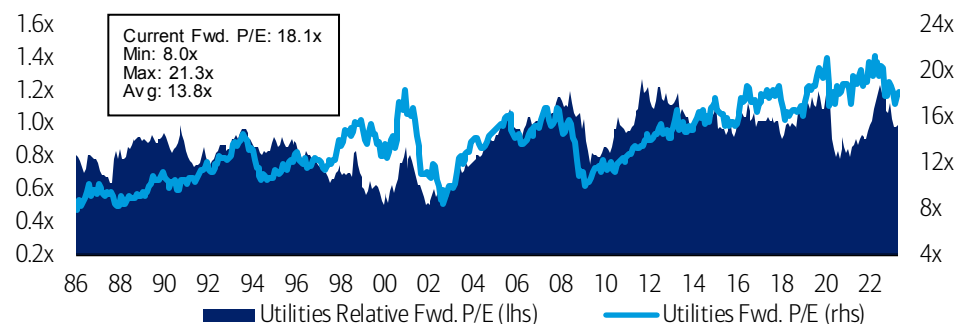


Source: Compustat, BofA US Equity & US Quant Strategy

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Exhibit 50: Utilities fwd P/E at 18.1x vs. 13.8x historical average, 1986-04/23

Utilities price-to-fwd earnings and relative price-to-fwd earnings vs. S&P 500



Source: Compustat, BofA US Equity & US Quant Strategy

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Tactical industry rotation framework

Exhibit 51: S&P 500 Momentum & Value Framework - industry ranks as of 4/23

Industry ranks based on relative price momentum, EPS revision and valuation

Industry	Sector	Combined Rank	Price Momentum Rank	EPS Revision Rank	Valuation Rank	Style Highlight
Interactive Media & Services	Communication Services	29	10	10	9	Opportunity
Communications Equipment	Information Technology	26	8	9	9	Opportunity
Trading Companies & Distributors	Industrials	26	8	10	8	Opportunity
Specialized Reits	Real Estate	25	7	10	8	Opportunity
Household Durables	Consumer Discretionary	25	9	8	8	Opportunity
Media	Communication Services	23	8	5	10	
Hotels Restaurants & Leisure	Consumer Discretionary	22	9	10	3	
Food Products	Consumer Staples	22	9	8	5	
Tobacco	Consumer Staples	22	7	9	6	Opportunity
Passenger Airlines	Industrials	21	1	10	10	
Air Freight & Logistics	Industrials	21	8	5	8	
Beverages	Consumer Staples	21	9	8	4	
Metals & Mining	Materials	20	2	10	8	
Residential Reits	Real Estate	20	6	5	9	
Financial Services	Financials	20	9	9	2	
Entertainment	Communication Services	19	4	9	6	
Software	Information Technology	19	10	7	2	
Construction & Engineering	Industrials	19	10	8	1	
Energy Equipment & Services	Energy	19	1	8	10	
Household Products	Consumer Staples	19	10	6	3	
Machinery	Industrials	18	4	9	5	
Distributors	Consumer Discretionary	18	5	7	6	
Commercial Services & Supplies	Industrials	18	10	7	1	
Multi-Utilities	Utilities	18	6	5	7	
Consumer Finance	Financials	17	2	6	9	
IT Services	Information Technology	17	6	7	4	
Building Products	Industrials	17	4	8	5	
Retail Reits	Real Estate	17	3	5	9	
Health Care Providers & Services	Health Care	17	4	6	7	
Office Reits	Real Estate	17	1	6	10	
Pharmaceuticals	Health Care	17	8	2	7	
Insurance	Financials	16	4	7	5	
Electrical Equipment	Industrials	16	6	7	3	
Health Care Equipment & Supplies	Health Care	16	9	5	2	
Technology Hardware Storage & Peripherals	Information Technology	16	10	4	2	
Biotechnology	Health Care	16	7	1	8	
Leisure Products	Consumer Discretionary	16	7	1	8	
Textiles Apparel & Luxury Goods	Consumer Discretionary	15	5	9	1	
Consumer Staples Distribution & Retail	Consumer Staples	15	8	3	4	
Construction Materials	Materials	15	6	4	5	
Oil Gas & Consumable Fuels	Energy	15	4	1	10	
Electric Utilities	Utilities	15	7	5	3	
Auto Components	Consumer Discretionary	14	3	8	3	
Professional Services	Industrials	14	5	4	5	
Semiconductors & Semiconductor Equipment	Information Technology	14	10	2	2	
Professional Services	Industrials	14	5	4	5	
Banks	Financials	14	1	3	10	Value Trap
Independent Power And Renewable Electricity Producers	Utilities	14	1	6	7	
Specialty Retail	Consumer Discretionary	14	5	3	6	
Industrial Conglomerates	Industrials	14	8	2	4	
Diversified Telecommunication Services	Communication Services	13	2	1	10	Value Trap
Electronic Equipment Instruments & Components	Information Technology	13	3	3	7	Value Trap
Chemicals	Materials	13	6	1	6	
Personal Care Products	Consumer Staples	13	2	10	1	
Aerospace & Defense	Industrials	13	7	4	2	
Hotel & Resort Reits	Real Estate	12	1	2	9	Value Trap
Industrial Reits	Real Estate	12	5	4	3	
Health Care Reits	Real Estate	12	5	3	4	
Life Sciences Tools & Services	Health Care	12	3	6	3	
Capital Markets	Financials	11	3	3	5	
Real Estate Management & Development	Real Estate	11	2	2	7	Value Trap
Ground Transportation	Industrials	11	3	4	4	
Containers & Packaging	Materials	9	2	1	6	Value Trap
Broadline Retail	Consumer Discretionary	9	5	3	1	
Automobiles	Consumer Discretionary	6	3	2	1	

Source: BofA US Equity & US Quant Strategy

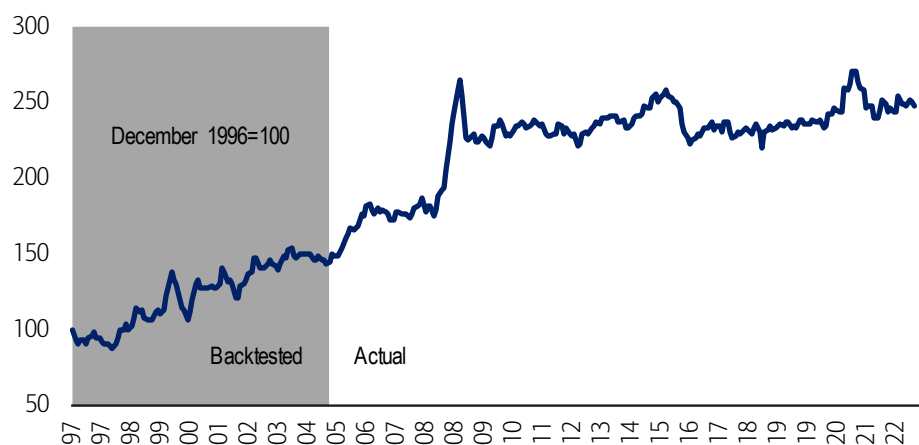
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Industry framework performance

Each month, we track the performance of industries categorized as Opportunities, Value Traps, and Momentum Breakdowns as defined above.

Exhibit 52: “Opportunities” Cumulative Relative Performance, 12/1996-4/2023 (backtested)

Cumulative relative performance of “Opportunities” vs. the equal-weighted S&P industries



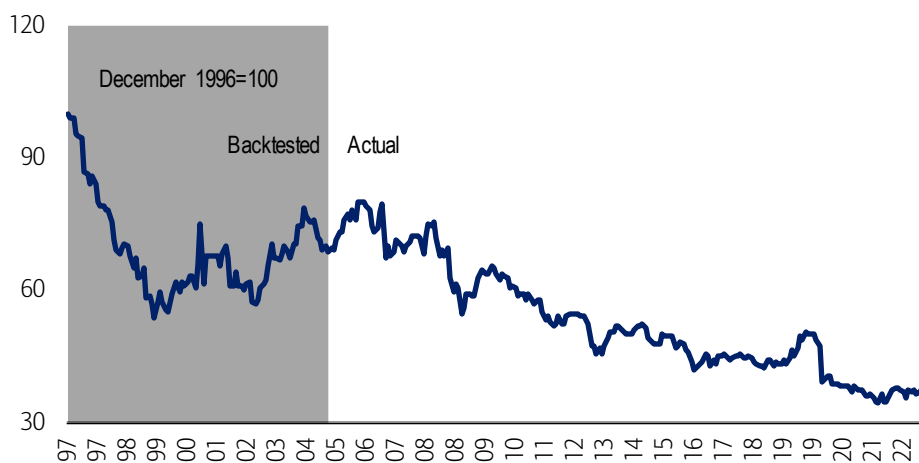
Note: the shaded area shows backtested results during the period from month-end December 1996 to month-end December 2004. The unshaded portion represents actual performance since January 2005. Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is not actual performance and is not intended to be indicative of future performance. The backtested performance results are based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance, and cannot account for all financial risks that may affect the performance of the screen going forward. See Appendix for performance data and calculation methodology.

Source: BofA US Equity & US Quant Strategy

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Exhibit 53: “Value Traps” Cumulative Relative Performance, 12/1996-4/2023 (backtested)

Cumulative relative performance of “Value Traps” vs. the equal-weighted S&P industries



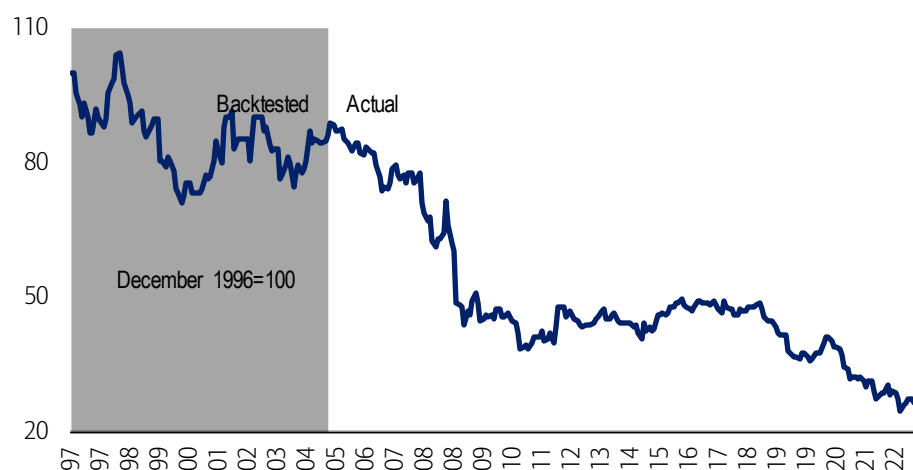
Note: the shaded area shows backtested results during the period from month-end December 1996 to month-end December 2004. The unshaded portion represents actual performance since January 2005. Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is not actual performance and is not intended to be indicative of future performance. The backtested performance results are based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance, and cannot account for all financial risks that may affect the performance of the screen going forward. See Appendix for performance data and calculation methodology.

Source: BofA US Equity & US Quant Strategy

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Exhibit 54: “Momentum Breakdowns” Cumulative Relative Performance, 12/1996-4/2023 (backtested)

Cumulative relative performance of “Momentum Breakdowns” vs. the equal-weighted S&P industries



Note: the shaded area shows backtested results during the period from month-end December 1996 to month-end December 2004. The unshaded portion represents actual performance since January 2005. Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is not actual performance and is not intended to be indicative of future performance. The backtested performance results are based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance, and cannot account for all financial risks that may affect the performance of the screen going forward. See Appendix for performance data and calculation methodology.

Source: BofA US Equity & US Quant Strategy

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Sector ranks

We also use this framework to rank sectors based on price momentum, earnings momentum, and valuation factors. Sectors are sorted from highest (most attractive) to lowest (least attractive) ranks as of the latest month below.

We use this framework as one component in determining our overall S&P 500 sector preferences, but fundamentals, risk and other macro factors are also important drivers. We more heavily utilize this framework in determining our favored industries (though again, other factors also contribute) and in highlighting attractive short-term sector opportunities for more tactical investors.

Exhibit 55: S&P 500 Momentum & Value Framework Sector Ranks as of 4/23

Sector ranks based on relative price momentum, EPS revision and valuation

Sector	Combined Rank	Price Momentum Rank	EPS Revision Rank	Valuation Rank
Communication Services	31	10	11	10
Consumer Staples	23	9	10	4
Industrials	19	5	9	5
Information Technology	18	11	5	2
Real Estate	17	2	6	9
Utilities	17	7	7	3
Health Care	17	8	3	6
Energy	15	3	1	11
Consumer Discretionary	15	6	8	1
Materials	14	4	2	8
Financials	12	1	4	7

Source: BofA US Equity & US Quant Strategy

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Methodology

Definitions of valuation metrics:

- **Price/Book:** month-end market cap divided by latest total common equity.
- **Price/Operating Cash Flow:** Month-end market cap divided by the last twelve months cash flow from operations as of the most recent fiscal quarter.
Note: All industries' multiples are relative to the S&P 500 ex. Fins. for P/OCF.
- **Forward Price/Earnings:** Month-end market cap divided by I/B/E/S consensus next twelve months earnings.

Implied upside is based on comparing the current relative multiple vs. the historical average relative multiple. Industries with <10 yrs of data history are excluded. Boxes highlight sectors/industries with the highest greatest upside and implied downside.

Momentum & Value Model

Our tactical "momentum and value" framework was backtested from January 1997-December 2004, and has been running live since January 2005. We calculate price momentum, earnings momentum and valuation for the S&P 500 GICS sectors and industries relative to the index beginning in January 1997. We exclude industries that have only one company or have less than five years of historical price data. For our backtest, we have used as a market benchmark the portfolio of equal-weighted S&P 500 industries that were eligible for the framework at a given point in time.

Price momentum

The price momentum of an industry is the change in the industry's relative price in the current month vs. three months ago, with relative price defined as the month-end industry price divided by the month-end index level of the S&P 500. Industries are assigned a price momentum rank from 1 to 10, with 10 being the strongest price momentum and 1 being the weakest. Sectors are assigned a price momentum rank from 1 to 11, with 11 being the strongest price momentum and 1 being the weakest.

Earnings momentum

The earnings momentum of an industry is the change in relative forecast EPS between the current month and three months ago. Relative EPS is the ratio of the 12-month rolling forward I/B/E/S consensus earnings forecast of a given industry divided by that of the S&P 500. Industries are assigned an earnings revision rank of 1 to 10, with 10 being the strongest earnings momentum and 1 being the weakest. Sectors are assigned an earnings revision rank of 1 to 11, with 11 being the strongest earnings momentum and 1 being the weakest.

Valuation

We calculate the earnings yield (E/P) of an industry as the ratio of current relative forward (consensus) EPS divided by current relative price. We then calculate the earnings yield relative to its historical average by dividing the current E/P by the average E/P for the industry since the framework's inception in January 1997. For industries introduced after the inception date, at least one year of data is required before an industry is eligible for a rank. Industries are assigned a valuation rank from 1 to 10, with 10 being the highest relative earnings yield (most inexpensive) and 1 being the lowest relative earnings yield (most expensive). Sectors are assigned a valuation rank from 1 to 11, with 11 being the highest relative earnings yield (most inexpensive) and 1 being the lowest relative earnings yield (most expensive). Current data is compared to this average using the following formula: $(\text{Current E/P} - \text{Historical Avg. E/P}) / \text{Abs (Historical Avg. E/P)}$. We calculate both the current and historical average relative to the market because of P/E multiple expansion in the market, and use earnings yield (inverse of P/E) to accommodate industries which have negative aggregate earnings.

Combined rank

The combined rank of an industry is the sum of the three ranks from the price momentum, earnings momentum, and valuation factors above, with 30 ranking the best and 3 ranking the worst. For sectors, 33 ranks the best and 3 ranks the worst.

Opportunities, Value Traps and Momentum Breakdowns

We classify industries based on their framework ranks as follows:

- Opportunities are industries with above avg. (6 or higher) ranks in all three ranks.
- Value Traps are industries that have above avg. ranks in valuation (6 or higher) but are in the bottom tertile in price momentum and earnings momentum (ranks 1-3).
- Momentum Breakdowns are industries with below avg. ranks in valuation (4 or lower), lower price momentum ranks than in the previous month, and below avg. earnings momentum ranks (4 or lower).

Exhibit 56: Relative performance of Opportunities, Value Traps and Momentum Breakdowns (as of 4/23)

Relative performance vs. equal-weighted S&P industries

	1m	3m	6m	12m	YTD	2yr	Ann'zed	3yr	Ann'zed	5yr	Ann'zed
Opportunities	-0.9%	0.2%	-2.7%	-1.4%	-0.7%	-5.5%	-2.8%	6.5%	1.6%	9.5%	1.4%
Value Traps	2.3%	0.2%	6.0%	2.3%	1.6%	0.4%	0.2%	-7.6%	-2.0%	-18.3%	-2.8%
Momentum Breakdown	-2.0%	-0.1%	-2.4%	-6.9%	1.7%	-16.0%	-8.4%	-42.9%	-12.2%	-66.4%	-12.0%

Source: BofA Us Equity & US Quant Strategy

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S&P 500 Company Distribution

Exhibit 57: Latest month's end S&P 500 weights for companies sorted by sectors/industries

Company Distribution of S&P 500 by GICS Sector/Industry Classifications as of 4/30/2023

COMMUNICATION SERVICES	8.28	SPECIALTY RETAIL	2.19	EQT CORPORATION	0.04%	ASSURANT INC	0.02%
DIVERSIFIED TELECOM	0.83	ADVANCE AUTO PARTS INC	0.02	EXXON MOBIL CORP	1.40%	BROWN & BROWN INC	0.04%
AT&T INC	0.36	AUTOZONE INC	0.14	HESS CORP	0.12%	CHUBB LIMITED	0.24%
VERIZON COMMUNICATIONS INC	0.47	BATH & BODY WORKS INC	0.02	KINDER MORGAN INC	0.10%	CINCINNATI FINANCIAL CORP	0.05%
ENTERTAINMENT	1.38	BEST BUY CO INC	0.04	MARATHON OIL CORP	0.04%	EVEREST RE GROUP LTD	0.04%
ACTIVISION BLIZZARD INC	0.16	CARMAX INC	0.03	MARATHON PETROLEUM CORP	0.16%	GLOBE LIFE INC	0.03%
ELECTRONIC ARTS	0.10	HOME DEPOT INC	0.88	OCCIDENTAL PETROLEUM	0.13%	HARTFORD FINL SERVICES GROUP	0.06%
LIVE NATION ENTERTAINMENT INC	0.03	LOWE'S COS INC	0.36	ONEOK INC	0.08%	LINCOLN NATIONAL CORP	0.01%
NETFLIX INC	0.42	O'REILLY AUTOMOTIVE	0.16	PHILLIPS 66	0.13%	LOEWS CORP	0.03%
TAKE-TWO INTERACTIVE SOFTWARE	0.06	ROSS STORES INC	0.11	PIONEER NATURAL RESOURCES	0.15%	MARSH & MCLENNAN COMPANIES	0.26%
WALT DISNEY CO	0.54	TJX COS INC	0.26	TARGA RESOURCES CORP	0.05%	METLIFE INC	0.12%
WARNER BROS DISCOVERY INC	0.09	TRACTOR SUPPLY CO	0.08	THE WILLIAMS COMPANIES INC	0.11%	PRINCIPAL FINANCIAL GROUP	0.05%
INTERACTIVE MEDIA & SERV	5.01	ULTA BEAUTY, INC	0.08	VALERO ENERGY CORP	0.13%	PROGRESSIVE CORP	0.23%
ALPHABET INC A	1.83	TEXTILES APPAREL & LUX	0.52	FINANCIALS	13.10	PRUDENTIAL FINANCIAL INC	0.09%
ALPHABET INC C	1.61	NIKE INC B	0.45	BANKS	3.17%	TRAVELERS COS INC	0.12%
MATCH GROUP, INC	0.03	RALPH LAUREN CORP A	0.01	BANK OF AMERICA CORP	0.59%	WILLIS TOWERS WATSON PLC	0.07%
META PLATFORMS, INC. CLASS A	1.54	TAPESTRY, INC	0.03	CITIGROUP INC	0.26%	WR BERKLEY CORP	0.03%
MEDIA	0.81	VF CORP	0.02	CITIZENS FINANCIAL GROUP INC	0.04%	HEALTH CARE	14.41
CHARTER COMMUNICATIONS INC A	0.11	CONSUMER STAPLES	7.38	COMERICA INC (MI)	0.02%	BIOTECHNOLOGY	2.22%
COMCAST CORP A	0.50	BEVERAGES	1.85	FIFTH THIRD BANCORP (OH)	0.05%	ABBVIE INC	0.77%
DISH NETWORK CORP A	0.01	BROWN-FORMAN CORP B	0.03	FIRST REPUBLIC BANK	0.00%	AMGEN INC	0.37%
FOX CORP A	0.03	COCA-COLA CO	0.72	HUNTINGTON BANCSHARES (OH)	0.05%	BIIGEN INC	0.13%
FOX CORP B	0.01	CONSTELLATION BRANDS	0.11	JP MORGAN CHASE & CO	1.16%	GILEAD SCIENCES INC	0.29%
INTERPUBLIC GROUP COS	0.04	KEURIG DR PEPPER INC	0.08	KEYCORP	0.03%	INCYTE CORP	0.04%
NEWS CORP A	0.02	MOLSON COORS BEVERAGE	0.03	M&T BANK CORP	0.06%	MODERNA, INC	0.13%
NEWS CORP B	0.01	MONSTER BEVERAGE CORP	0.12	PNC FINL SERVICES GROUP	0.15%	REGENERON PHARMACEUTICALS INC	0.25%
OMNICOM GROUP	0.05	PEPSICO INC	0.75	REGIONS FINANCIAL CORP	0.05%	VERTEX PHARMACEUTICALS INC	0.25%
PARAMOUNT GLOBAL CLASS B	0.03	CONSUMER STAPLES DIST	1.97	TRUIST FINANCIAL CORP	0.12%	HEALTH EQUIP & SUPPLIES	3.03%
WIRELESS TELECOM	0.24	COSTCO WHOLESALE CORP	0.64	US BANCORP	0.14%	ABBOTT LABORATORIES	0.55%
T-MOBILE US INC	0.24	DOLLAR GENERAL CORP	0.14	WELLS FARGO & CO	0.43%	ALIGN TECHNOLOGY INC	0.07%
CONSUMER DISCRETIONARY	9.89	DOLLAR TREE INC	0.09	ZIONS BANCORPORATION N.A.	0.01%	BAXTER INTL INC	0.07%
AUTO COMPONENTS	0.11	KROGER CO	0.09	CAPITAL MARKETS	2.79%	BECTON DICKINSON & CO	0.22%
APTIV PLC	0.08	SYSCO CORP	0.11	AMERIPRISE FINANCIAL INC	0.09%	BOSTON SCIENTIFIC CORP	0.21%
BORGWARNER INC	0.03	TARGET CORP	0.21	BLACKROCK INC	0.29%	COOPER COMPANIES INC	0.05%
AUTOMOBILES	1.53	WALGREENS BOOTS	0.07	CBOE GLOBAL MARKETS, INC	0.04%	DENTSPLY SIRONA INC	0.03%
FORD MOTOR CO	0.13	WALMART INC	0.61	CHARLES SCHWAB CORP	0.23%	DEXCOM INC	0.13%
GENERAL MOTORS COMPANY	0.13	FOOD PRODUCTS	1.19	CME GROUP INC A	0.19%	EDWARDS LIFESCIENCES CORP	0.16%
TESLA, INC	1.27	ARCHER-DANIELS-MIDLAND	0.12	FACTSET RESEARCH SYSTEM INC	0.05%	GE HEALTHCARE TECHNOLOGIES INC	0.08%
BROADLINE RETAIL	2.81	BUNGE LTD	0.04	FRANKLIN RESOURCES INC	0.02%	HOLOGIC INC	0.06%
AMAZON.COM INC	2.70	CAMPBELL SOUP CO	0.03	GOLDMAN SACHS GROUP INC	0.33%	IDEXX LABORATORIES INC	0.12%
EBAY INC	0.07	CONAGRA BRANDS, INC	0.05	INTERCONTINENTAL EXCHANGE	0.17%	INSULET CORP	0.06%
ETSY, INC	0.04	GENERAL MILLS INC	0.15	INVESCO LTD	0.02%	INTUITIVE SURGICAL INC	0.30%
DISTRIBUTORS	0.15	HERSHEY FOODS CORP	0.12	MARKETAXESS HOLDINGS	0.03%	MEDTRONIC PLC	0.35%
GENUINE PARTS CO	0.07	HORMEL FOODS CORP	0.03	MOODY'S CORP	0.14%	RESMED INC	0.10%
LKQ CORP	0.04	J.M. SMUCKER CO	0.05	MORGAN STANLEY	0.34%	STERIS PLC	0.05%
POOL CORP	0.04	KELLOGG CO	0.05	MSCI INC	0.11%	STRYKER CORP	0.29%
HOTELS REST LEIS	2.19	LAMB WESTON HOLDINGS	0.05	NASDAQ INC	0.05%	TELEFLEX INC	0.04%
BOOKING HOLDINGS INC	0.30	MCCORMICK & CO	0.06	NORTHERN TRUST CORP (IL)	0.05%	ZIMMER BIOMET HOLDINGS INC	0.08%
CAESARS ENTERTAINMENT, INC	0.03	MONDELEZ INTERNATIONAL	0.30	RAYMOND JAMES FINANCIAL INC	0.05%	HEALTH PROVIDERS & SVS	3.11%
CARNIVAL CORP	0.03	THE KRAFT HEINZ COMPANY	0.09	S&P GLOBAL INC	0.34%	AMERSOURCEBERGEN CORP	0.08%
CHIPOTLE MEXICAN GRILL INC	0.16	TYSON FOODS INC A	0.05	STATE STREET CORP	0.07%	CARDINAL HEALTH INC	0.06%
DARDEN RESTAURANTS INC	0.05	HOUSEHOLD PRODUCTS	1.52	T ROWE PRICE GROUP INC	0.07%	CENTENE CORP	0.11%
DOMINO'S PIZZA INC	0.03	CHURCH & DWIGHT CO	0.07	THE BANK OF NEW YORK	0.09%	CYS HEALTH CORPORATION	0.27%
EXPEDIA GROUP, INC	0.04	CLOROX CO	0.06	CONSUMER FINANCE	0.50%	DAVITA INC	0.01%
HILTON WORLDWIDE HOLDINGS	0.11	COLGATE-PALMOLIVE CO	0.19	AMERICAN EXPRESS CO	0.28%	ELEVANCE HEALTH, INC	0.32%
LAS VEGAS SANDS	0.06	KIMBERLY-CLARK	0.14	CAPITAL ONE FINANCIAL	0.11%	HCA HEALTHCARE INC	0.17%
MARRIOTT INTL A	0.13	PROCTER & GAMBLE	1.06	DISCOVER FINANCIAL SERVICES	0.08%	HENRY SCHEIN INC	0.03%
MCDONALD'S CORP	0.62	PERSONAL PRODUCTS	0.16	SYNCHRONY FINANCIAL	0.04%	HUMANA INC	0.19%
MGM RESORTS INTERNATIONAL	0.04	ESTEE LAUDER COS. A	0.16	FINANCIAL SVS	4.44%	LAB CORP OF AMERICA HLDGS	0.06%
NORWEGIAN CRUISE LINE	0.02	TOBACCO	0.69	BERKSHIRE HATHAWAY B	1.70%	MCKESSON CORP	0.14%
ROYAL CARIBBEAN GROUP	0.04	ALTRIA GROUP INC	0.24	FIDELITY NATIONAL	0.10%	MOLINA HEALTHCARE	0.05%
STARBUCKS CORP	0.38	PHILIP MORRIS	0.44	FISERV INC	0.22%	QUEST DIAGNOSTICS	0.04%
WYNN RESORTS LTD	0.03	ENERGY	4.69	FLEETCOR TECHNOLOGIES INC	0.05%	THE CIGNA GROUP	0.22%
YUM! BRANDS INC	0.11	ENERGY EQUIP & SVS	0.37	GLOBAL PAYMENTS INC	0.09%	UNITEDHEALTH GROUP INC	1.32%
HOUSEHOLD DURABLES	0.37	BAKER HUGHES COMPANY	0.08	JACK HENRY & ASSOCIATES INC	0.03%	UNIVERSAL HEALTH SERVICES B	0.03%
GARMIN LTD	0.04	HALLIBURTON CO	0.08	MASTERCARD INC A	0.92%	LIFE SCIENCES TOOLS	1.74%
HORTON D.R. INC	0.10	SCHLUMBERGER LTD	0.20	PAYPAL HOLDINGS INC	0.25%	AGILENT TECHNOLOGIES INC	0.11%
LENNAR CORP A	0.08	OIL GAS & CONSUMABLE FUELS	4.32	VISA INC A	1.09%	BIO-RAD LABORATORIES INC A	0.03%
MOHAWK INDUSTRIES INC	0.02	APA CORPORATION	0.03	INSURANCE	2.20%	BIO-TECHNE CORP	0.04%
NEWELL BRANDS INC	0.01	CHEVRON CORP	0.86	AFLAC INC	0.11%	CHARLES RIVER LABORATORIES	0.03%
NVR INC	0.05	CONOCOPHILLIPS	0.36	ALLSTATE CORP	0.09%	DANAHER CORP	0.45%
PULTE GROUP INC	0.04	COTERRA ENERGY INC	0.06	AMERICAN INTL GROUP INC	0.11%	ILLUMINA INC	0.09%
WHIRLPOOL CORP	0.02	DEVON ENERGY CORP	0.10	AON PLC	0.19%	IQVIA HOLDINGS INC	0.10%
LEISURE PRODUCTS	0.02	DIAMONDBACK ENERGY INC	0.07	ARCH CAPITAL GROUP LTD	0.08%	METTLER-TOLEDO INTL	0.09%
HASBRO INC	0.02	EOG RESOURCES	0.20	ARTHUR J. GALLAGHER & CO	0.13%	PERKINELMER INC	0.05%

Source: BofA Global Research

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Exhibit 58: Latest month's end S&P 500 weights for companies sorted by sectors/industries

Company Distribution of S&P 500 by GICS Sector/Industry Classifications as of 4/30/2023

THERMO FISHER SCIENTIFIC	0.62%	SNAP ON INC	0.04%	CADENCE DESIGN SYSTEMS INC	0.16%	INVITATION HOMES	0.06%
WATERS CORP	0.05%	STANLEY BLACK & DECKER	0.04%	CERIDIAN HCM HOLDING INC.	0.03%	MID-AMERICA APT	0.05%
WEST PHARMACEUTICAL SERVICES INC	0.08%	WABTEC	0.05%	FAIR ISAAC & CO INC	0.05%	UDR INC	0.04%
PHARMACEUTICALS	4.31%	XYLEM INC	0.05%	FORTINET INC	0.12%	RETAIL REITS	0.30%
BRISTOL-MYERS SQUIBB	0.41%	AIRLINES	0.20%	GEN DIGITAL INC.	0.03%	FEDERAL REALTY INVT TRUST	0.02%
CATALENT INC	0.03%	ALASKA AIR GROUP INC	0.02%	INTUIT INC	0.36%	KIMCO REALTY CORP	0.03%
ELI LILLY & CO	0.90%	AMERICAN AIRLINES GROUP INC.	0.03%	MICROSOFT CORP	6.56%	REALTY INCOME CORP	0.11%
JOHNSON & JOHNSON	1.23%	DELTA AIR LINES	0.06%	ORACLE CORP	0.42%	REGENCY CENTERS CORP	0.03%
MERCK & CO INC	0.84%	SOUTHWEST AIRLINES CO	0.05%	PAYCOM SOFTWARE INC	0.04%	SIMON PROPERTY GROUP A	0.11%
ORGANON & CO	0.02%	UNITED AIRLINES HOLDING, INC	0.04%	PTC INC	0.04%	SPECIALIZED REITS	1.18%
PFIZER INC	0.63%	PROFESSIONAL SERVICES	0.76%	ROPER TECHNOLOGIES, INC	0.14%	AMERICAN TOWER CORP A	0.27%
VIATRIS INC	0.03%	AUTOMATIC DATA PROCESSING	0.26%	SALESFORCE, INC	0.57%	CROWN CASTLE INC	0.15%
ZOETIS INC	0.24%	BROADRIDGE FINANCIAL SOLUTIONS	0.05%	SERVICENOW INC.	0.27%	DIGITAL REALTY TRUST	0.08%
INDUSTRIALS	8.43%	COSTAR GROUP INC	0.09%	SYNOPSIS INC	0.16%	EQUINIX INC	0.19%
AEROSPACE & DEFENSE	1.72%	EQUIFAX INC	0.07%	TYLER TECHNOLOGIES INC	0.05%	EXTRA SPACE STORAGE INC	0.06%
BOEING CO	0.33%	JACOBS SOLUTIONS INC.	0.04%	TECHNOLOGY HARDWARE	7.47%	IRON MOUNTAIN INC	0.05%
GENERAL DYNAMICS	0.14%	LEIDOS HOLDINGS INC	0.04%	APPLE INC.	7.24%	PUBLIC STORAGE	0.13%
HOWMET AEROSPACE INC.	0.05%	PAYCHEX INC	0.10%	HEWLETT PACKARD ENTERPRISE	0.05%	SBA COMMUNICATIONS CORP	0.08%
HUNTINGTON INGALLS INDUSTRIES INC.	0.02%	ROBERT HALF INTL INC	0.02%	HP INC	0.07%	VICI PROPERTIES INC.	0.10%
L3HARRIS TECHNOLOGIES INC	0.11%	VERISK ANALYTICS INC	0.09%	NETAPP INC	0.04%	WEYERHAEUSER CO	0.06%
LOCKHEED MARTIN	0.30%	TRADING CO. & DISTR	0.25%	SEAGATE TECHNOLOGY	0.03%	UTILITIES	2.87%
NORTHROP GRUMMAN CORP	0.19%	FASTENAL CO	0.09%	WESTERN DIGITAL CORP	0.03%	ELECTRIC UTILITIES	1.88%
RAYTHEON TECHNOLOGIES CORP	0.42%	UNITED RENTALS INC	0.07%	MATERIALS	2.60%	ALLIANT ENERGY CORP	0.04%
TEXTRON INC	0.04%	W.W. GRAINGER INC	0.09%	CHEMICALS	1.80%	AMERICAN ELECTRIC POWER	0.14%
TRANSDIGM GROUP	0.11%	INFORMATION TECHNOLOGY	25.81%	AIR PRODUCTS & CHEMICALS INC	0.19%	CONSTELLATION ENERGY CORP	0.07%
AIR FREIGHT & LOGISTICS	0.61%	COMMUNICATIONS EQUIP	0.86%	ALBEMARLE CORP	0.06%	DUKE ENERGY CORP	0.22%
CH ROBINSON WORLDWIDE INC	0.03%	ARISTA NETWORKS INC	0.11%	CELANESE CORP A	0.03%	EDISON INTL	0.08%
EXPEDITORS INTL OF WA INC	0.05%	CISCO SYSTEMS INC	0.56%	CF INDUSTRIES HOLDINGS	0.04%	ENTERGY CORP	0.06%
FEDEX CORP	0.15%	FS, INC.	0.02%	CORTEVA INC.	0.13%	EVERGY INC.	0.04%
UNITED PARCEL SERVICE INC B	0.38%	JUNIPER NETWORKS INC	0.03%	DOW INC	0.11%	EVERSOURCE ENERGY	0.08%
BUILDING PRODUCTS	0.43%	MOTOROLA SOLUTIONS INC	0.14%	DUPONT DE NEMOURS INC.	0.09%	EXELON CORP	0.12%
A.O. SMITH CORP	0.02%	ELECTRONIC EQUIP, INSTR & COMP	0.58%	EASTMAN CHEMICAL CO	0.03%	FIRSTENERGY CORP	0.06%
ALLEGION PLC	0.03%	AMPHENOL CORP A	0.13%	ECOLAB INC	0.12%	NEXTERA ENERGY INC	0.44%
CARRIER GLOBAL CORP.	0.10%	CDW CORP	0.07%	FMC CORP	0.04%	NRG ENERGY	0.02%
JOHNSON CONTROLS INTERNATIONAL	0.12%	CORNING INC	0.07%	INTL FLAVORS & FRAGRANCES	0.07%	PG&E CORPORATION	0.08%
MASCO CORP	0.03%	KEYSIGHT TECHNOLOGIES INC	0.07%	LYNDELL BASSELL INDUSTRIES	0.52%	PINNACLE WEST CAPITAL (AZ)	0.03%
TRANE TECHNOLOGIES PLC	0.12%	TE CONNECTIVITY LTD.	0.11%	MOSAIC CO	0.04%	PPL CORP	0.06%
COMMERCIAL SVS	0.50%	TELEDYNE TECHNOLOGIES INC	0.06%	PPG INDUSTRIES INC	0.09%	SOUTHERN CO	0.23%
CINTAS CORP	0.11%	TRIMBLE INC	0.03%	SHERWIN-WILLIAMS CO	0.16%	XCEL ENERGY INC	0.11%
COPART INC	0.10%	IT SVS	1.15%	CONSTRUCTION MATERIALS	0.13%	GAS UTILITIES	0.05%
REPUBLIC SERVICES INC	0.09%	ACCENTURE PLC A	0.51%	MARTIN MARIETTA MATERIALS	0.06%	ATMOS ENERGY CORP	0.05%
ROLLINS INC	0.03%	AKAMAI TECHNOLOGIES INC	0.04%	VULCAN MATERIALS CO	0.07%	INDEPENDENT POWER	0.05%
WASTE MANAGEMENT INC	0.18%	COGNIZANT TECH SOLUTIONS CORP	0.09%	CONTAINERS & PACKAGING	0.25%	AES CORP	0.05%
CONSTR & ENGINEERING	0.07%	DXC TECHNOLOGY COMPANY	0.02%	AMCOR PLC	0.05%	MULTI-UTILITIES	0.82%
QUANTA SERVICES INC	0.07%	EPAM SYSTEMS INC	0.05%	AVERY DENNISON CORP	0.04%	AMEREN CORP	0.07%
ELECTRICAL EQUIP	0.53%	GARTNER INC	0.07%	BALL CORP	0.05%	CENTERPOINT ENERGY INC	0.06%
AMETEK INC	0.09%	INTL BUSINESS MACHINES CORP	0.33%	INTL PAPER CO	0.03%	CMS ENERGY CORP	0.05%
EATON CORP PLC	0.19%	VERISIGN INC	0.06%	PACKAGING CORP OF AMERICA	0.04%	CONSOLIDATED EDISON INC	0.10%
EMERSON ELECTRIC CO	0.14%	SEMICONDUCTORS	6.06%	SEALED AIR CORP	0.02%	DOMINION ENERGY INC	0.14%
GENERAC HOLDINGS INC	0.02%	ADVANCED MICRO DEVICES	0.41%	WESTROCK CO	0.02%	DTE ENERGY CO	0.06%
ROCKWELL AUTOMATION INC	0.09%	ANALOG DEVICES INC	0.26%	METALS & MINING	0.42%	NISOURCE INC	0.03%
GROUND TRANSP	0.79%	APPLIED MATERIALS INC	0.27%	FREEPORT-MCMORAN INC	0.16%	PUBLIC SERVICE ENTERPRISE	0.09%
CSX CORPORATION	0.18%	BROADCOM INC	0.75%	NEWMONT CORP	0.11%	SEMPRA	0.14%
J.B. HUNT TRANSPORT SERVICES	0.04%	ENPHASE ENERGY INC	0.06%	NUCOR CORP	0.11%	WEC ENERGY GROUP INC	0.09%
NORFOLK SOUTHERN CORP	0.13%	FIRST SOLAR INC	0.05%	STEEL DYNAMICS INC	0.05%	WATER UTILITIES	0.08%
OLD DOMINION FREIGHT LINE INC	0.08%	INTEL CORP	0.37%	REAL ESTATE	2.54%	AMERICAN WATER WORKS CO	0.08%
UNION PACIFIC CORP	0.34%	KLA CORPORATION	0.15%	HEALTH CARE REITS	0.20%		
IND CONGLOMERATES	0.86%	LAM RESEARCH CORP	0.20%	HEALTHPEAK PROPERTIES INC.	0.03%		
3M CO	0.17%	MICROCHIP TECHNOLOGY INC	0.11%	VENTAS INC	0.06%		
GENERAL ELECTRIC CO	0.31%	MICRON TECHNOLOGY INC	0.20%	WELLTOWER INC	0.11%		
HONEYWELL INTL INC	0.38%	MONOLITHIC POWER SYSTEMS	0.06%	HOTEL & RESORT REITS	0.03%		
MACHINERY	1.72%	NVIDIA CORP	1.96%	HOST HOTELS & RESORTS INC	0.03%		
CATERPILLAR INC	0.33%	NXP SEMICONDUCTOR NV	0.12%	INDUSTRIAL REITS	0.33%		
CUMMINS INC	0.10%	ON SEMICONDUCTOR CORP	0.09%	PROLOGIS INC	0.33%		
DEERE & CO	0.29%	QORVO, INC	0.03%	OFFICE REITS	0.08%		
DOVER CORP	0.06%	QUALCOMM INC	0.37%	ALEXANDRIA REAL ESTATE EQTY	0.06%		
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NORDSON CORP	0.03%	SOFTWARE	9.69%	AVALONBAY COMMUNITIES INC	0.07%		
OTIS WORLDWIDE CORP	0.10%	ADOBE INC.	0.50%	CAMDEN PROPERTY TRUST	0.03%		
PACCAR INC	0.11%	ANSYS INC	0.08%	EQUITY RESIDENTIAL	0.06%		
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Source: BofA Global Research.

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Appendix

Bull market signposts methodology

Our bull market signposts are a composite of 10 indicators that have historically signaled market bottoms in seven prior bear markets. All indicators are calculated on a month-end basis. See definitions of signposts below and a deep dive on our [bull market signposts \(note\)](#) for more information.

Fed cutting rates

During the prior seven bear markets, the Fed always cut before the market bottomed.

Unemployment rates rise (vs. 12-mo. low)

Rising unemployment rates preceded Fed rate cuts. The unemployment rate typically rose from its 12-mo. lows before the market bottomed.

More bears than bulls (AAII)

The AAI US Investment Sentiment Readings have been a reliable contrarian indicator when marking a bottom. During prior bear markets, the net bullish reading (bullish – bearish) was typically deeply bearish when the market bottomed.

Equity risk premium (ERP) increases by >75bps vs. 12-mo. low

Prior bear markets were accompanied by a rising ERP, as increased risk in stocks lead to investors requiring higher risk premium. Historically, stocks bottomed after adequately pricing in a downturn via higher ERP of at least 75bps. We calculate ERP as trailing earnings yield – real 10yr rates.

50bps+ decline in the 2-yr yield (vs. 6-mo. high)

The 2-yr yield fell at least 50 bps from its 6-month highs ahead of prior bull markets.

Sell Side Indicator Buy signal (prior 3m)

The Sell Side Indicator (SSI) is based on our survey of the Wall Street Strategists that submit their asset allocation recommendations to us. For this indicator, we use the simple average of the recommended equity weighting for each strategist as of the last business day of each month. The thresholds for the Buy and Sell readings are rolling 15-year +/- 1 standard deviations from the rolling 15-year mean. The SSI has been a reliable contrarian indicator over time. In other words, it has been a bullish signal when Wall Street strategists were extremely bearish, and vice versa.

Yield curve steepens (vs. 6 mo. low)

A widening 2-10yr yield spread indicates improving economic activity and/or a more dovish Fed.

5%+ bear market rallies (prior 3m)

Historically, bear market rallies of 5%+ occurred before the market ultimately bottomed.

Rule of 20 (trailing P/E + CPI < 20)

The sum of trailing P/E and CPI fell below 20 before prior market bottoms.

PMI improves (vs. 12-mo YoY low)

Historically, the S&P 500 troughed with some visibility into a recovery. The ISM Manufacturing PMI typically improved on a YoY basis vs. its 12-month lows ahead of market bottoms. We compared the YoY change in PMI to the YoY trough over the past 12 months.



Trigger lags

Exhibit 59: How many months before the bottom was the metric triggered?

of months indicators triggered before market bottoms

Metrics

	Sep-74	Jul-82	Nov-87	Oct-90	Sep-02	Feb-09	Mar-20	Average
Fed cutting rates (12m)	3	13	1	16	20	17	8	11
Unemployment rates rise (6m)	11	12		3	29	21	0	13
More bears than bulls (AAII) (3m)			0	2		10	2	4
ERP increases by >75bps from trough (12m)	21	9	2	4	6	9	2	8
Decreasing 2-yr yield (6m/12m)		1	2	4	5	6	1	3
Sell side indicator buy signal			1	0		0		0
Yield curve steepens		6		0	1	2	1	2
5% bear market rallies (prior 3m)	3		2		2	1	0	2
Rule of 20 (prior 12m)		17	2	3		6	0	6
PMI improves (12m YoY)		8	12	14	20	2	6	10

Source: BofA US Equity & Quant Strategy

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R1}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{R1} Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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