

# S&P 500 Relative Value Cheat Sheet

## Life after US debt downgrade

### A lost 18 months for the S&P 500

The S&P 500 has taken a roundtrip to January 2022 levels on forward earnings (\$227) and on its multiple of 20x - a lost 18 months (Exhibit 2). But bonds and inflation have done a lot since then - the 10-yr yield jumped from 1.8% in Jan 2022 to 4.0%, real rates from -0.7% to 1.8% and Fed Funds saw the quickest ascent in history. Visibility on Fed policy, lower rates volatility, inflation cooling from 7% to 3%, and a pickup in GDP (+2.6% q/q SAAR vs. -1.6% in 1Q22) are all equity positive. And productivity gains (+3.7% YoY in 2Q) could at least partially offset higher borrowing costs.

### Four reasons Fitch downgrade is not the 2011 downgrade

10-yr yields spiked after Fitch's downgrade of US debt, but 2011 saw Treasuries rally. Supply/demand dynamics, positioning (see [bond love note](#)), and signs of a better economic backdrop have been cited as drivers of today's reaction. But higher yields may also reflect increased risk: US debt to GDP is at an all-time high, and the US now ranks in the bottom 5 (vs. Top 5 in 2000), in line with Emerging Europe. Worldwide Governance Indicators data show the US shifting closer to emerging economies on other measures like political stability, gov't effectiveness etc. (Exhibit 7).

### Mispriced leverage risk evident across asset classes...

Higher risk should equate to higher returns, but as US debt to GDP approaches record highs, 10yr yields are just off record lows. It is telling that of the 20 valuation measures we track, the S&P 500 looks undervalued on just one: its required return relative to that of bonds (Exhibit 12). And whereas high debt to GDP sounds negative for stocks too, prior periods of elevated US Debt/GDP saw stocks hold up well- in the '40s, GDP growth outpaced debt growth; in the '90s, a deceleration in government debt plus stable GDP growth solved the problem. In both cases equities were up, and in general, the S&P 500 saw better returns during/after periods of elevated debt/GDP (Exhibit 4).

### ...& within S&P 500 (yet another reason to like Energy)

Based on the relationship between debt to equity and equity risk premia, certain sectors appear undervalued vs leverage ratios, and vice versa. Energy has the highest earnings yield of all industries, but a lower leverage ratio than that of the S&P 500. It is also the only sector where equities are pricing in more risk relative to credit than they have historically. On the flipside, Food Retailers, Capital Goods and Autos have elevated leverage ratios but trade at lower earnings yield than that of the S&P 500.

### Buy beta, sell long duration

We still prefer stocks to bonds, and within equities, we would avoid long-term growth stocks in favor of high free cash flow yielding cyclicals/beta. Real rates have risen, and real rates and equity risk premia tend to move in opposite directions. Higher real rates represent risk to longer duration stocks, all else equal. Lower equity risk premia represent a relative benefit to high beta, short- to medium-duration stocks. Our recommended overweighted sectors skew higher beta: Financials, Energy and Materials.

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

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**Refer to important disclosures on page 25 to 27.**

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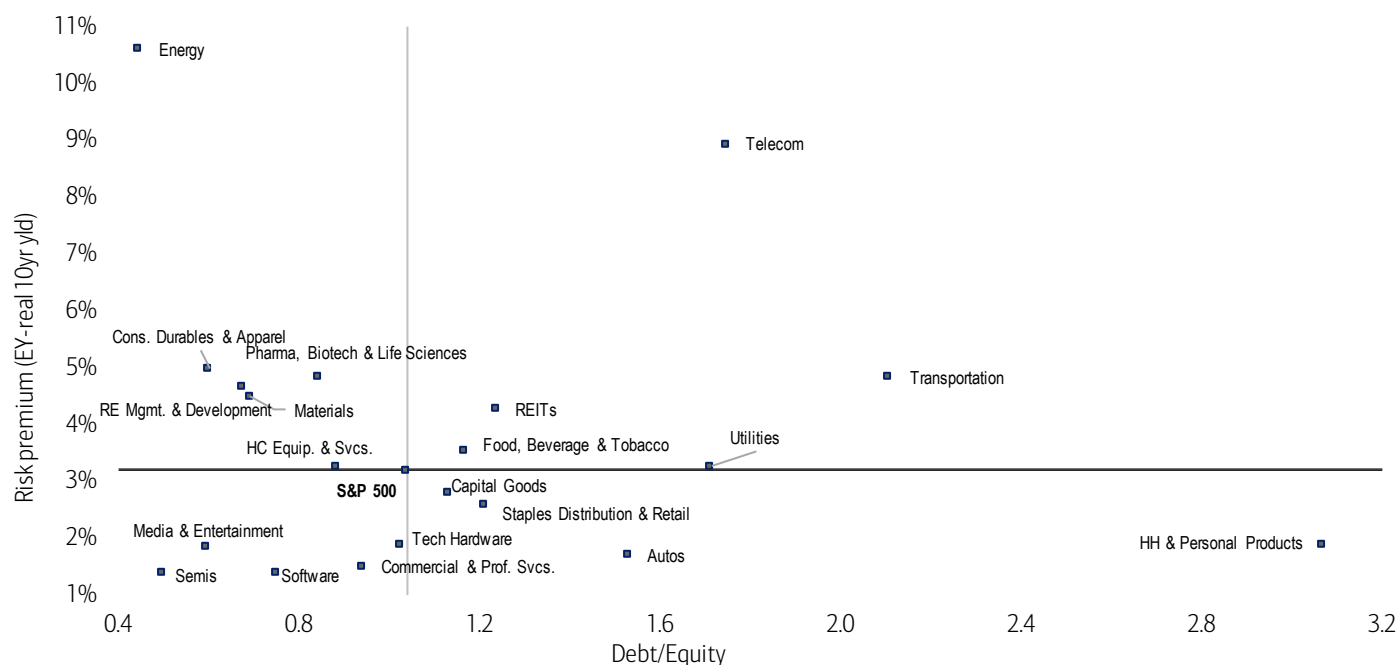
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# Spotlight

## Exhibit 1: Leverage risk vs. equity risk: Energy/Consumer Durables/Pharma too cheap? Autos/Staples/Cap Goods too expensive?

Debt to equity for S&P 500 industry groups vs their risk premia (trailing earnings yield – real risk free rate)

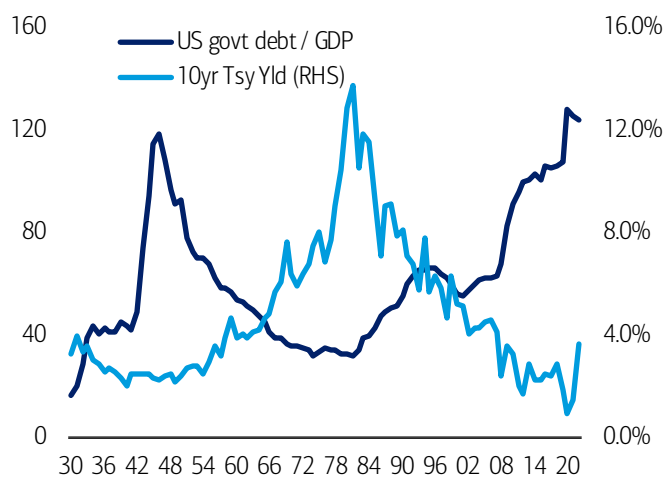


Source: FactSet, Bloomberg, BofA US Equity & Quant Strategy

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## Exhibit 2: US sovereign bonds: high risk, low return?

US public debt to GDP vs. 10yr yields



Source: Haver Analytics, BofA US Equity & Quant Strategy

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## Exhibit 4: Government debt is not anathema for equities

S&P 500 returns based on various US debt/GDP scenarios, 1930-present

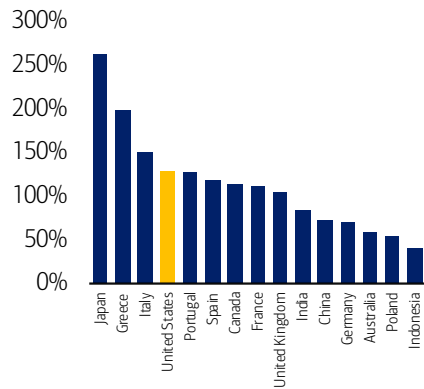
	S&P 500 returns			
	Coincident	Next year	Next 5yr	Next 10yr
Above avg. (51)	10%	9%	56%	127%
Below avg.	4%	4%	31%	89%
Above 1SD (81)	9%	10%	69%	198%
Rest of time	7%	6%	39%	95%
Following 1946 peak (118)	-7%	1%	55%	203%
Following 1995 peak (66)	26%	18%	146%	110%
Control: Avg all years	7%	7%	45%	109%

Source: Federal Reserve, S&P, BofA US Equity & US Quant Strategy

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**Exhibit 4: US government debt is ~130% of GDP today...**

Government debt as a % of GDP, 2021

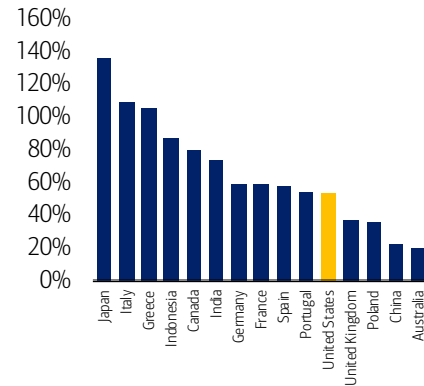


Source: International Monetary Fund, BofA US Equity &amp; Quant Strategy

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**Exhibit 5: ...vs. ~50% in 2000**

Government debt as a % of GDP, 2000

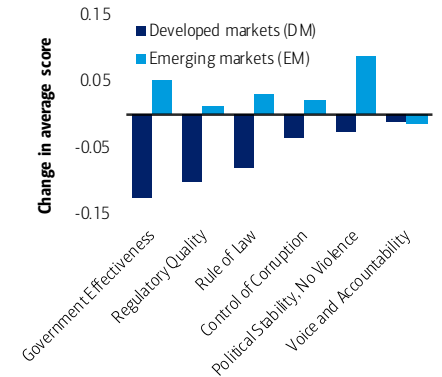


Source: International Monetary Fund, BofA US Equity &amp; Quant Strategy

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**Exhibit 6: Governance deteriorating in developed economies, improving in emerging**

Change in avg DM and EM sovereign governance scores (scores range from -2.5 to 2.5) over the last 5 years

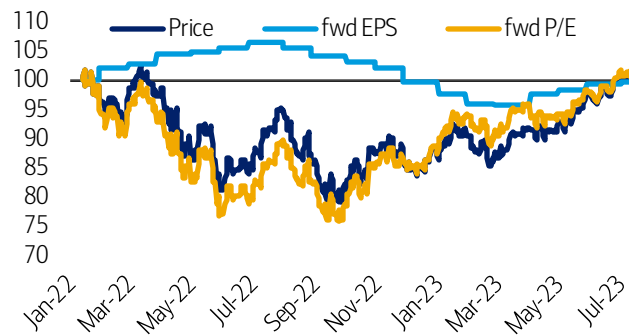


Source: Worldwide Governance Indicators (WGI), BofA US Equity &amp; Quant Strategy. WGI is a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents. Latest data from 2021.

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**Exhibit 7: Back to Jan 2022 for S&P 500: level, forecast EPS and P/E multiple at Jan 22 levels**

Time series of S&amp;P 500 price, forward EPS and Price to forward EPS

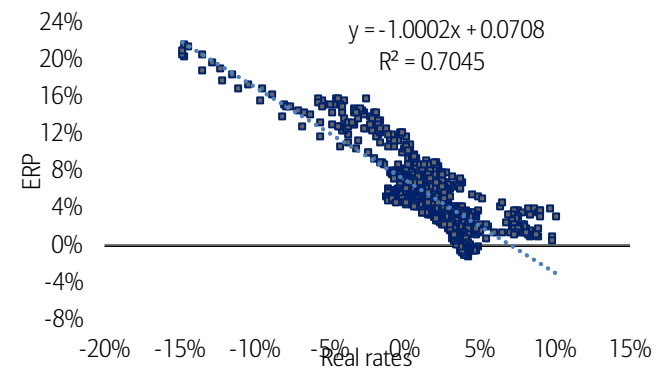


Source: FactSet, BofA US Equity &amp; Quant Strategy

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**Exhibit 8: Higher rates = lower ERP**

Normalized equity risk premium vs. 10-yr real rates (1945-7/23)



Source: BofA US Equity &amp; Quant Strategy, Global Financial Data, Bloomberg

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# S&P 500: cheap or expensive?

**Exhibit 12: S&P 500 valuations, where shading means measure is statistically expensive vs. its own history (as of 7/31/23)**

S&P 500 valuation metrics

Metric	Current	Average	Avg. ex. Tech			% Above (below) avg	Z-Score	History
			Bubble	Min	Max			
Trailing PE	20.9	14.8	14.5	5.2	30.5	40.9%	1.2	1960-present
Trailing GAAP PE	26.2	15.1	14.8	4.2	122.4	73.5%	1.3	1832-present
Forward Consensus PE	20.2	15.7	14.9	9.8	25.1	28.3%	1.3	1986-present
Trailing Normalized PE	23.4	19.0	17.8	9.2	34.5	23.0%	0.9	9/1987-present
Median Forward P/E	17.4	15.5	15.3	10.0	21.9	12.3%	0.8	1986-present
Shiller PE	30.8	17.4	16.8	4.8	44.2	77.2%	1.9	1881-present
P/BV	4.50	2.65	2.48	0.98	5.34	69.6%	1.8	1978-present
EV/EBITDA	14.7	10.5	10.2	6.0	17.1	39.8%	1.8	1986-present
Trailing PEG	3.10	1.66	1.63	1.05	3.24	86.4%	4.2	1986-present
Forward PEG	3.00	1.43	1.40	0.92	3.50	110.3%	4.4	1986-present
P/OCF	16.8	11.2	10.7	5.4	19.3	49.8%	1.7	1986-present
P/FCF	29.8	27.8	25.0	12.9	65.7	7.2%	0.2	1986-present
EV/Sales	2.84	1.97	1.91	0.86	3.40	44.2%	1.5	1986-present
ERP (Market-Based)	584	504	521	136	880	15.8%	-0.4	11/1980-present
Normalized ERP	275	349	395	-143	880	-21.1%	0.3	1987-present
S&P 500 Div. Yld. vs. 10yr Tsy. Yld.	0.39	1.23	1.25	0.17	4.20	-68.6%	1.4	1792-present
S&P 500 in WTI terms	60.3	26.7	24.4	2.7	175.3	126.2%	1.8	1960-present
S&P 500 in Gold terms	2.33	1.64	1.42	0.17	5.48	42.0%	0.6	1968-present
S&P 500 vs. R2000 Fwd. P/E	1.42	1.03	0.98	0.76	1.70	37.4%	2.0	1986-present
S&P 500 Market Cap/GDP	1.43	0.66	0.63	0.22	1.66	117.3%	2.3	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 13: Relative valuation (vs. S&P 500) by sector (based on data from 1986 - 7/23)**

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
<b>S&amp;P 500 (absolute metrics)</b>	<b>4.50</b>	<b>2.95</b>	<b>-35%</b>	<b>16.84</b>	<b>11.23</b>	<b>-33%</b>	<b>19.69</b>	<b>15.77</b>	<b>-20%</b>
Consumer Discretionary	2.21	1.35	-39%	1.20	0.91	-24%	1.40	1.05	-25%
Consumer Staples	1.36	1.69	24%	1.05	1.27	21%	1.04	1.13	9%
Energy	0.53	0.78	46%	0.35	0.73	105%	0.60	1.05	75%
Financials	0.44	0.59	36%	N/A	N/A	N/A	0.72	0.77	7%
Health Care	1.08	1.70	57%	0.91	1.57	73%	0.90	1.09	21%
Industrials	1.29	1.16	-10%	0.99	1.01	2%	0.98	1.01	3%
Information Technology	2.51	1.49	-41%	1.59	1.22	-23%	1.40	1.12	-20%
Materials	0.68	0.90	33%	0.79	0.89	12%	0.93	1.04	12%
Real Estate	0.65	0.87	35%	N/A	N/A	N/A	0.85	1.54	80%
Communication Services	0.85	1.00	17%	0.72	0.84	17%	0.90	1.18	32%
Utilities	0.46	0.60	32%	0.77	0.65	-16%	0.88	0.89	2%

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

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See page 19 for definitions of valuation measures.

## Consumer Discretionary

**Exhibit 14: Relative Valuation (vs. S&P 500) for Consumer Discretionary industries (based on data from 1986-7/23)**

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

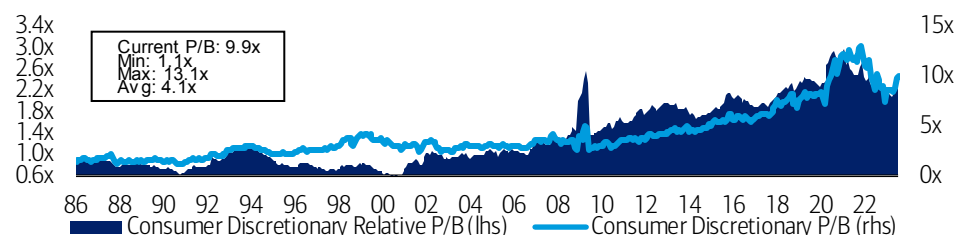
Consumer Discretionary (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Automobile Components (2)	0.55	0.78	42%	0.83	0.78	-6%	0.80	0.82	2%
Automobiles (3)	1.38	0.84	-39%	1.28	0.28	-78%	1.62	0.67	-59%
Distributors (3)	1.01	1.10	10%	0.97	1.14	18%	0.86	1.01	18%
Hotels Restaurants & Leisure (17)	353.94	1.51	-100%	1.03	1.14	10%	1.17	1.22	4%
Household Durables (8)	0.45	0.73	64%	0.60	1.04	75%	0.52	0.81	56%
Broadline Retail (3)	1.97	1.01	-49%	1.46	1.05	-28%	2.86	1.15	-60%
Leisure Products (1)	0.73	1.15	58%	1.62	0.96	-41%	0.68	0.92	34%
Specialty Retail (12)	52.75	1.65	-97%	1.04	1.28	23%	1.01	1.12	11%
Textiles Apparel & Luxury Goods (4)	2.06	1.21	-41%	1.84	1.32	-28%	1.18	1.01	-15%

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

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**Exhibit 12: Consumer Discretionary P/B at 9.9x vs. 4.1x historical average, 1986-07/23**

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

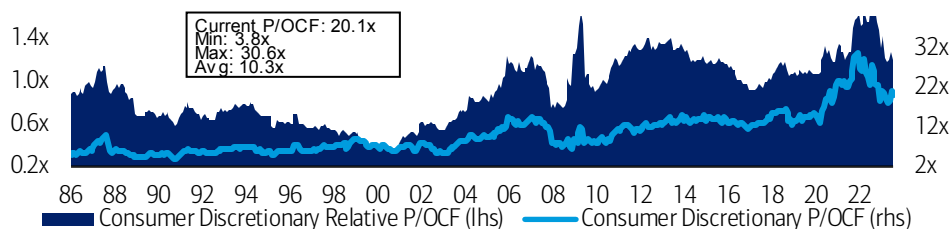


Source: Compustat, BofA US Equity &amp; US Quant Strategy

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**Exhibit 13: Consumer Discretionary P/OCF at 20.1x vs. 10.3x historical average, 1986-07/23**

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

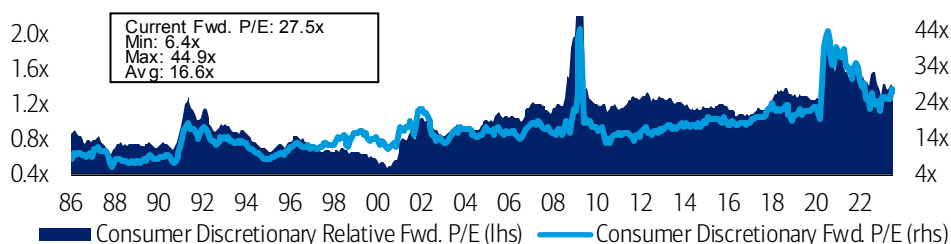


Source: Compustat, BofA US Equity &amp; US Quant Strategy

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**Exhibit 14: Consumer Discretionary fwd P/E at 27.5x vs. 16.6x historical average, 1986-07/23**

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



Source: Compustat, BofA US Equity &amp; US Quant Strategy

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# Consumer Staples

## Exhibit 18: Relative Valuation (vs. S&P 500) for Consumer Staples industries (based on data from 1986-7/23)

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

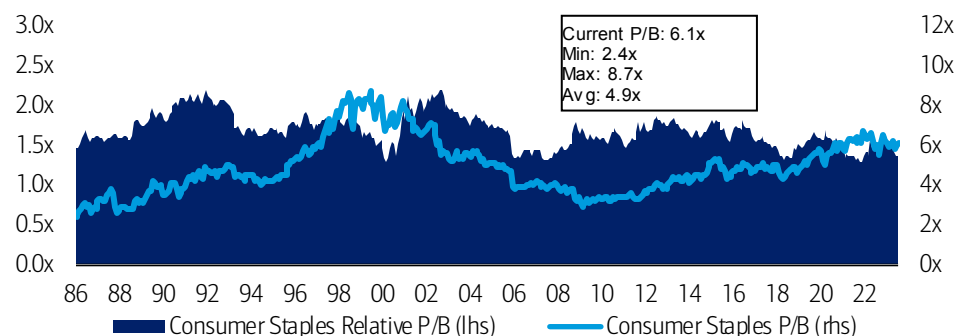
Consumer Staples (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Beverages (7)	1.63	2.08	28%	1.45	1.50	3%	1.18	1.29	9%
Consumer Staples Distribution & Retail (8)	1.31	1.38	5%	0.81	1.08	34%	1.12	1.16	3%
Food Products (14)	0.55	1.20	120%	1.11	1.22	10%	0.85	1.07	26%
Household Products (5)	2.42	1.79	-26%	1.26	1.35	7%	1.21	1.18	-3%
Personal Care Products (1)	2.46	2.92	19%	1.85	1.74	-6%	1.78	1.38	-23%
Tobacco (2)	-3.87	2.46	NM	0.83	0.96	16%	0.62	0.75	21%

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

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## Exhibit 16: Consumer Staples P/B at 6.1x vs. 4.9x historical average, 1986-07/23

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

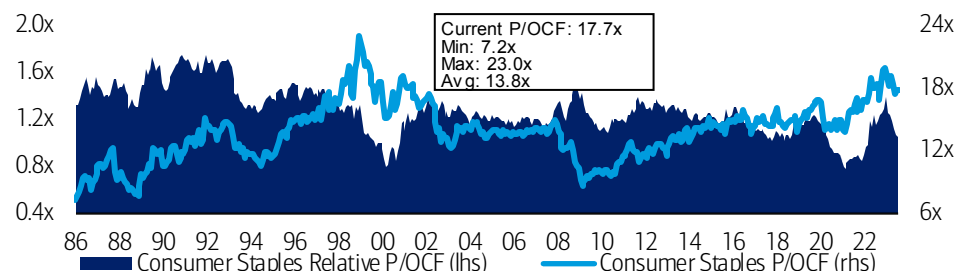


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 17: Consumer Staples P/OCF at 17.7x vs. 13.8x historical average, 1986-07/23

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

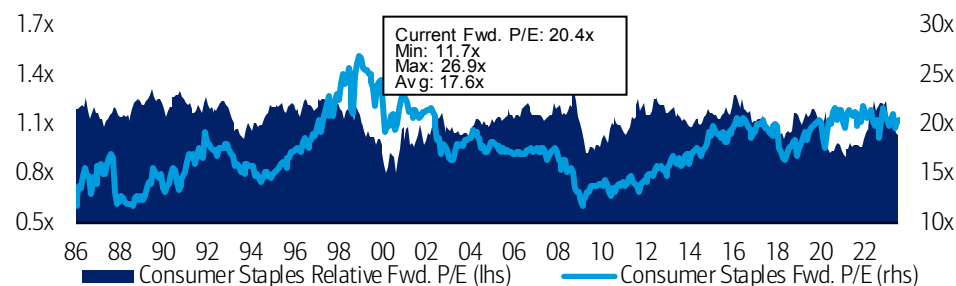


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 18: Consumer Staples fwd P/E at 20.4x vs. 17.6x historical average, 1986-07/23

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 22: Relative Valuation (vs. S&P500) for Energy industries (based on data from 1986-7/23)

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

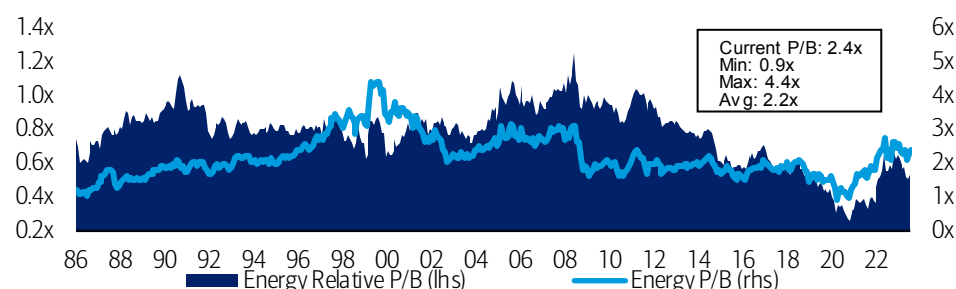
Energy (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Energy Equipment & Services (3)	0.82	0.83	2%	0.84	1.22	46%	0.82	1.31	61%
Oil Gas & Consumable Fuels (20)	0.51	0.71	37%	0.33	0.65	95%	0.59	0.92	57%

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

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## Exhibit 20: Energy P/B at 2.4x vs. 2.2x historical average, 1986-07/23

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

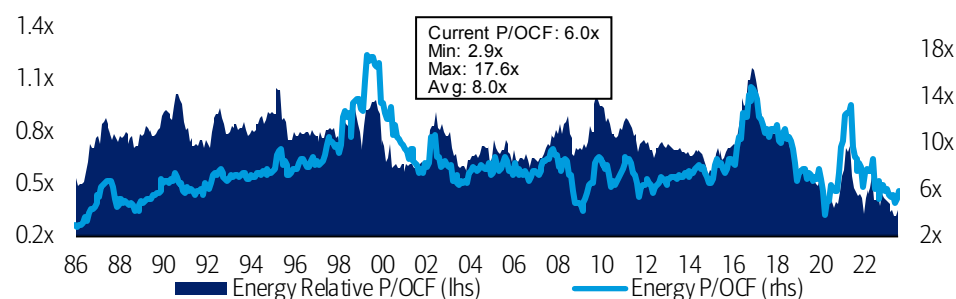


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 21: Energy P/OCF at 6.0x vs. 8.0x historical average, 1986-07/23

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

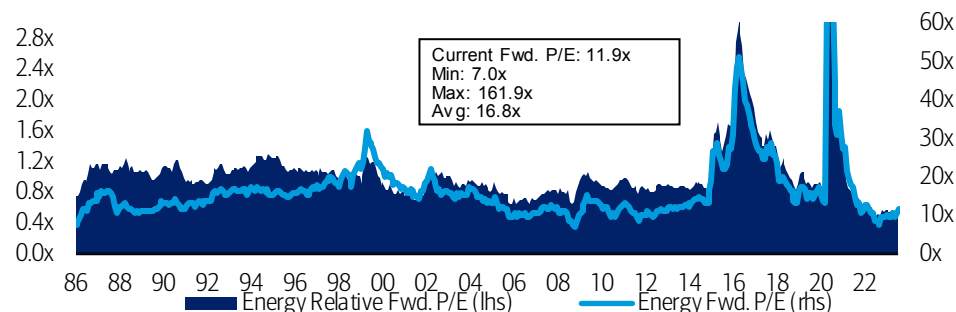


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 22: Energy fwd P/E at 11.9x vs. 16.8x historical average, 1986-07/23

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 26: Relative Valuation (vs. S&P 500) for Financials industries (based on data from 1986-7/23)

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

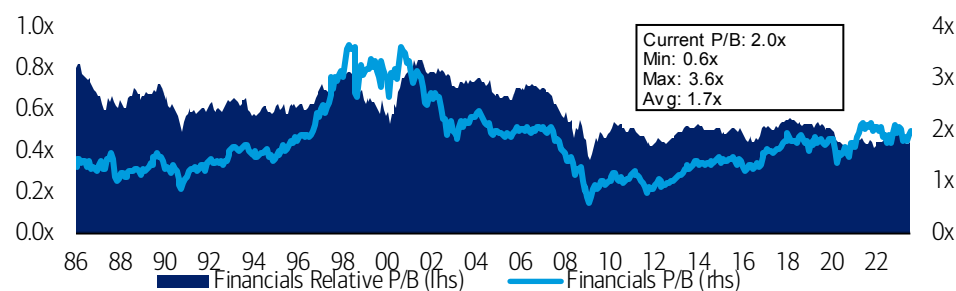
Financials (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Capital Markets (21)	0.53	0.56	5%	N/A	N/A	N/A	0.83	0.75	-9%
Banks (16)	0.25	0.50	99%	N/A	N/A	N/A	0.49	0.68	40%
Consumer Finance (4)	0.47	0.76	62%	N/A	N/A	N/A	0.56	0.79	42%
Financial Services (9)	0.65	0.68	4%	N/A	N/A	N/A	1.08	0.85	-21%
Insurance (23)	0.50	0.50	1%	N/A	N/A	N/A	0.63	0.75	19%

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

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## Exhibit 24: Financials P/B at 2.0x vs. 1.7x historical average, 1986-07/23

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

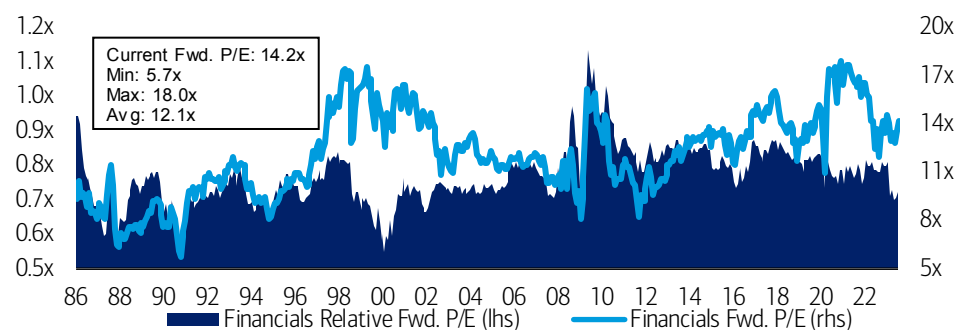


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 25: Financials fwd P/E at 14.2x vs. 12.1x historical average, 1986-07/23

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 29: Relative Valuation (vs. S&P 500) for Health Care industries (based on data from 1986 – 7/23)

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

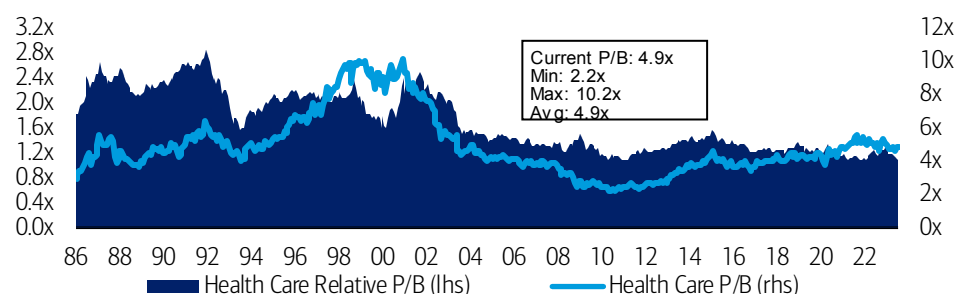
Health Care (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		P/E
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Biotechnology (8)	1.47	2.25	53%	1.02	1.45	42%	0.80	1.15	44%
Health Care Equipment & Supplies (20)	1.06	1.33	25%	1.95	1.63	-16%	1.32	1.22	-8%
Health Care Providers & Services (16)	0.85	1.07	25%	0.50	1.06	111%	0.73	0.90	23%
Life Sciences Tools & Services (12)	1.02	0.94	-8%	1.58	1.42	-10%	1.29	1.13	-12%
Pharmaceuticals (9)	1.20	1.65	37%	1.06	1.47	39%	0.82	1.01	24%

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

BoFA GLOBAL RESEARCH

## Exhibit 27: Health Care P/B at 4.9x vs. 4.9x historical average, 1986-07/23

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

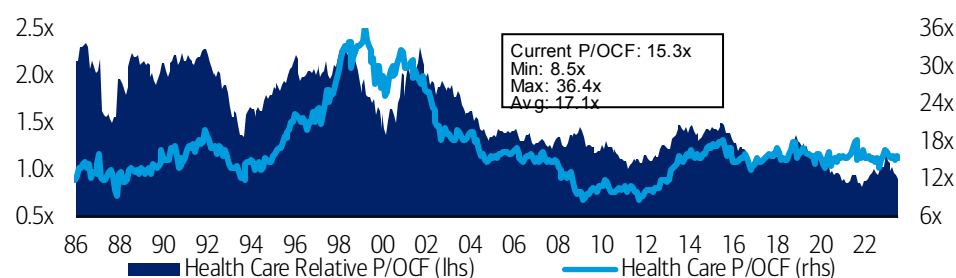


Source: Compustat, BoFA US Equity & US Quant Strategy

BoFA GLOBAL RESEARCH

## Exhibit 28: Health Care P/OCF at 15.3x vs. 17.1x historical average, 1986-07/23

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

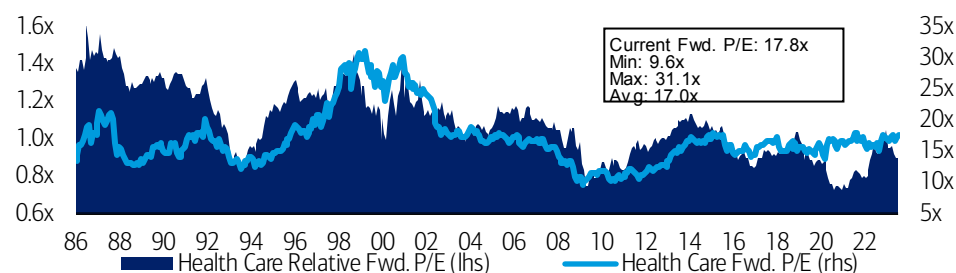


Source: Compustat, BoFA US Equity & US Quant Strategy

BoFA GLOBAL RESEARCH

## Exhibit 29: Health Care fwd P/E at 17.8x vs. 17.0x historical average, 1986-07/23

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



Source: Compustat, BoFA US Equity & US Quant Strategy

BoFA GLOBAL RESEARCH

# Industrials

## Exhibit 33: Relative Valuation (vs. S&P 500) for Industrials industries (based on data from 1986-7/23)

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

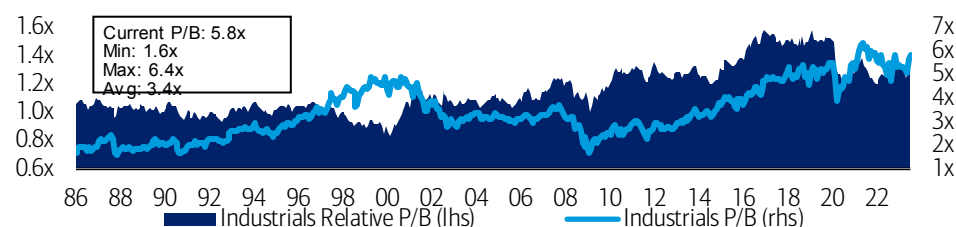
Industrials (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Aerospace & Defense (10)	1.12	1.01	-9%	1.08	1.03	-5%	1.11	0.89	-20%
Air Freight & Logistics (4)	1.16	1.07	-8%	0.62	0.73	17%	0.85	0.99	17%
Passenger Airlines (5)	0.74	0.70	-5%	0.22	0.51	134%	0.32	1.05	225%
Building Products (6)	1.23	1.07	-13%	1.32	1.10	-16%	0.99	0.94	-5%
Commercial Services & Supplies (5)	1.86	1.28	-32%	1.23	0.95	-22%	1.52	1.14	-25%
Construction & Engineering (1)	1.20	0.76	-36%	1.64	1.31	-20%	1.31	0.84	-36%
Electrical Equipment (5)	1.17	1.13	-3%	1.71	1.23	-28%	1.16	1.03	-11%
Industrial Conglomerates (3)	1.26	1.22	-3%	1.08	0.99	-8%	1.03	1.10	6%
Machinery (17)	1.19	1.00	-17%	1.20	1.03	-14%	0.85	0.91	6%
Professional Services (9)	2.03	1.59	-21%	1.71	1.54	-10%	1.39	1.33	-5%
Ground Transportation (5)	1.62	0.76	-53%	0.88	0.71	-19%	1.04	0.89	-14%
Trading Companies & Distributors (3)	1.67	1.17	-30%	0.81	1.10	35%	0.88	0.98	12%

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

BofA GLOBAL RESEARCH

## Exhibit 31: Industrials P/B at 5.8x vs. 3.4x historical average, 1986-07/23

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

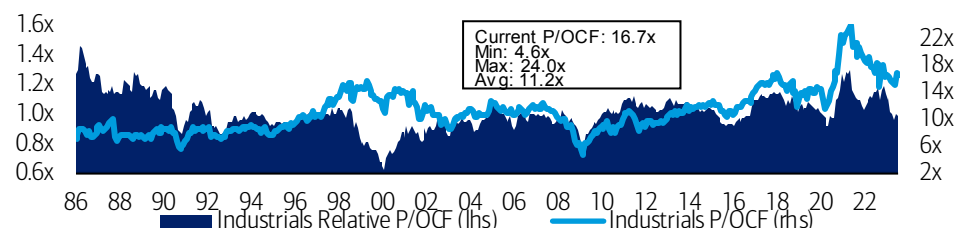


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 32: Industrials P/OCF at 16.7x vs. 11.2x historical average, 1986-07/23

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

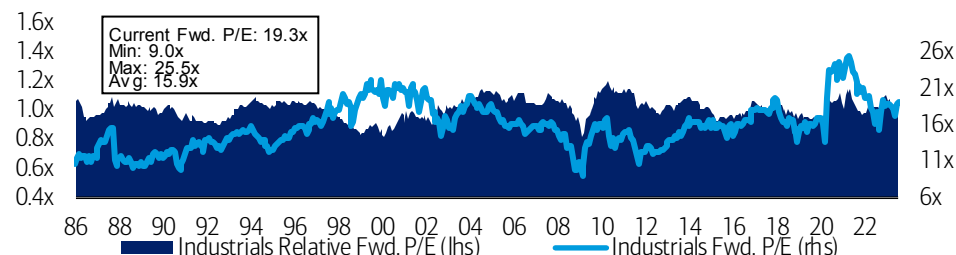


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 33: Industrials fwd P/E at 19.3x vs. 15.9x historical average, 1986-07/23

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 37: Relative Valuation (vs. S&P500) for information Technology industries (based on data from 1986-7/23)

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

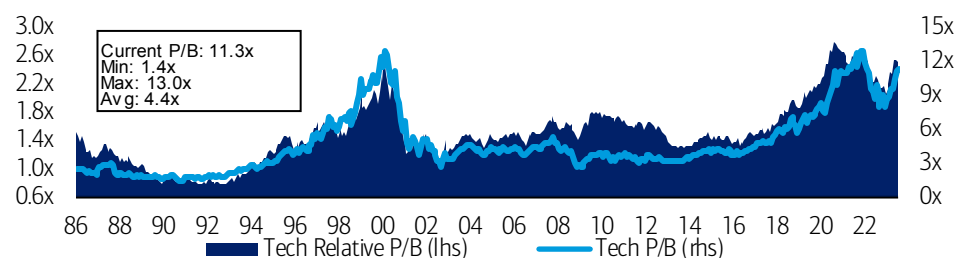
Information Technology (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Communications Equipment (5)	1.34	1.24	-8%	0.91	1.37	50%	0.76	1.16	53%
Electronic Equipment Instruments & Components (8)	0.99	0.97	-2%	1.18	1.30	10%	1.02	1.13	10%
IT Services (8)	1.44	1.38	-4%	0.88	0.87	-2%	0.98	0.93	-6%
Semiconductors & Semiconductor Equipment (21)	1.70	1.24	-27%	1.85	1.11	-40%	1.44	1.08	-25%
Software (18)	2.63	2.14	-19%	1.69	1.61	-5%	1.52	1.30	-15%
Technology Hardware Storage & Peripherals (6)	7.87	1.30	-84%	1.61	1.19	-26%	1.48	1.04	-30%

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

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## Exhibit 35: Tech P/B at 11.3x vs. 4.4x historical average, 1986-07/23

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

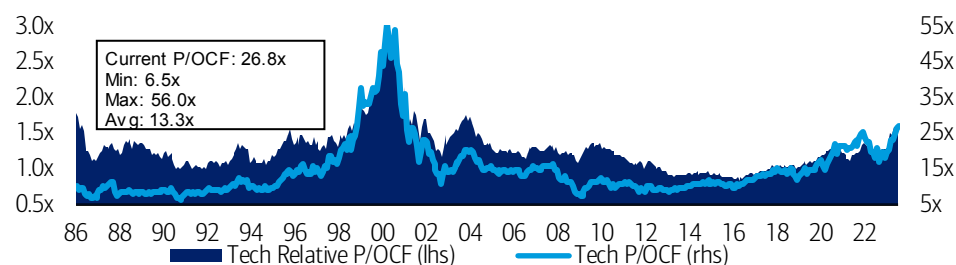


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 36: Tech P/OCF at 26.8x vs. 13.3x historical average, 1986-07/23

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

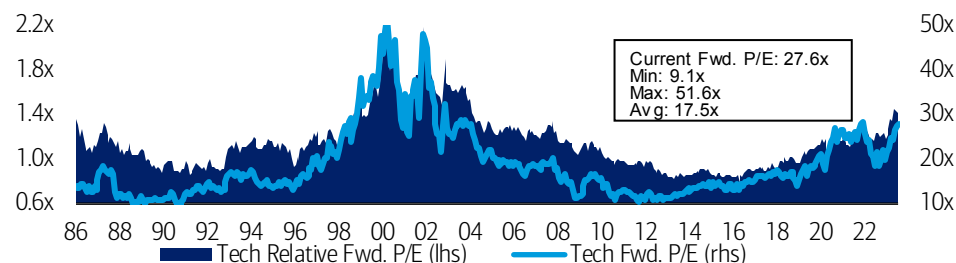


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 37: Tech fwd P/E at 27.6x vs. 17.5x historical average, 1986-07/23

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



Source: Compustat, BofA US Equity & US Quant Strategy

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# Materials

## Exhibit 41: Relative Valuation (vs. S&P 500) for Materials industries (based on 1986-7/23)

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

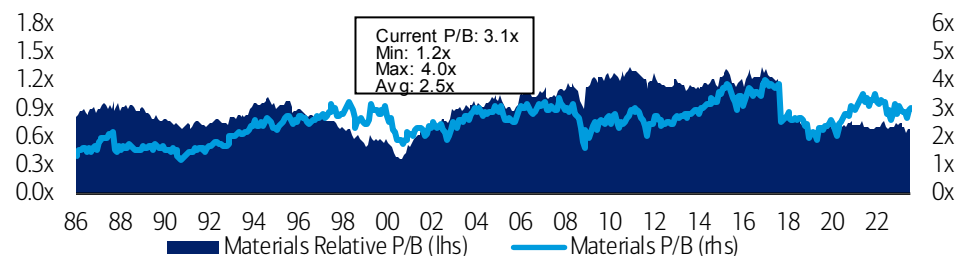
Materials (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Chemicals (16)	0.70	1.03	47%	0.94	0.94	0%	0.96	1.07	11%
Construction Materials (2)	0.88	0.75	-15%	1.41	1.27	-9%	1.35	1.60	19%
Containers & Packaging (7)	0.63	0.81	29%	0.61	0.77	25%	0.84	0.88	4%
Metals & Mining (4)	0.57	0.62	9%	0.48	0.72	51%	0.78	0.92	18%

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

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## Exhibit 39: Materials P/B at 3.1x vs. 2.5x historical average, 1986-07/23

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

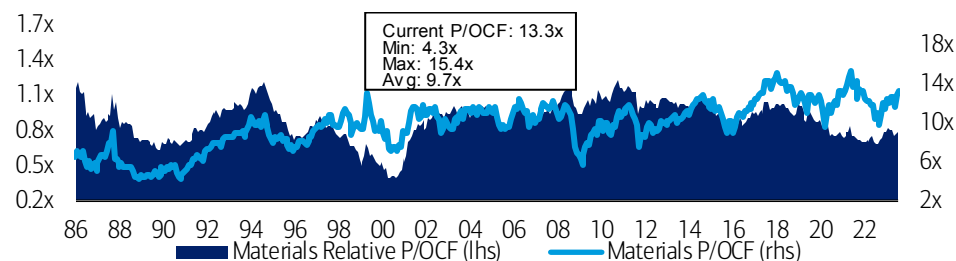


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 40: Materials P/OCF at 13.3x vs. 9.7x historical average, 1986-07/23

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

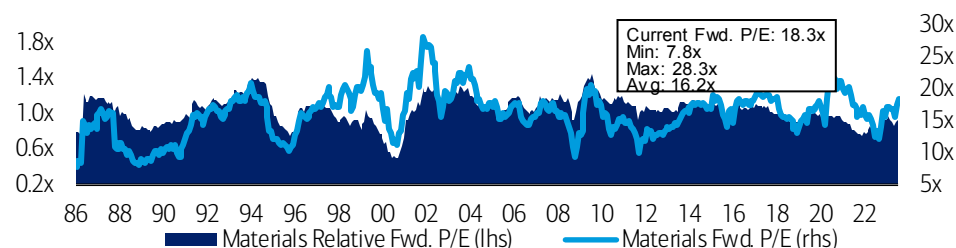


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 41: Materials fwd P/E at 18.3x vs. 16.2x historical average, 1986-07/23

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 45: Relative Valuation (vs. S&P 500) for Real Estate industries (based on data from 2001-7/23)

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

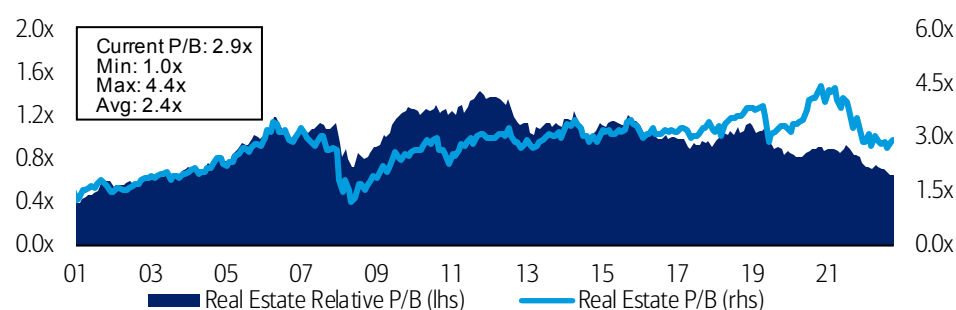
Real Estate (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)**		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Health Care Reits (3)	0.43	0.62	44%	N/A	N/A	N/A	0.89	0.96	8%
Hotel & Resort Reits (1)	0.43	0.73	71%	N/A	N/A	N/A	0.49	0.99	101%
Industrial Reits (1)	0.47	0.53	13%	N/A	N/A	N/A	1.13	1.51	34%
Office Reits (2)	0.28	0.77	174%	N/A	N/A	N/A	0.59	1.10	85%
Real Estate Management & Development (1)	0.73	0.92	26%	N/A	N/A	N/A	0.85	0.99	16%
Residential Reits (7)	0.55	0.82	48%	N/A	N/A	N/A	0.86	1.11	29%
Retail Reits (5)	0.49	1.11	128%	N/A	N/A	N/A	0.64	0.86	35%
Specialized Reits (10)	1.17	0.84	-28%	N/A	N/A	N/A	0.92	1.62	75%

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

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## Exhibit 43: Real Estate P/B at 2.9x vs. 2.4x historical average, 1986-07/23

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

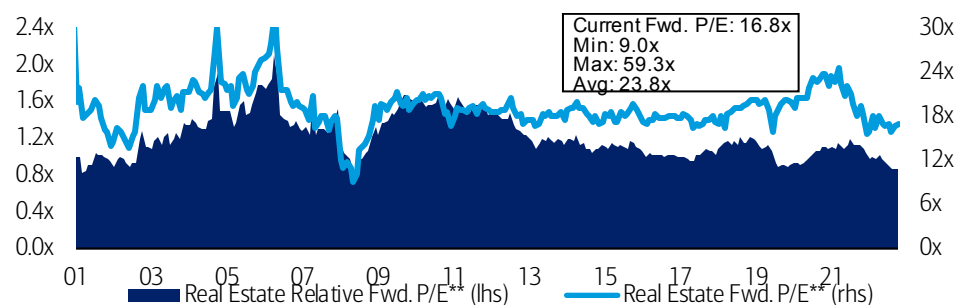


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 44: Real Estate fwd P/E at 16.8x vs. 23.8x historical average, 1986-07/23

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 48: Relative Valuation (vs. S&P 500) for Communication Services industries (based on data from 1986-7/23)

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

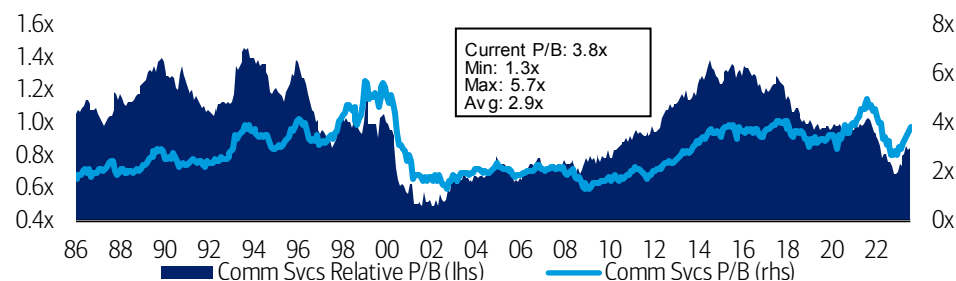
Comm. Svcs (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Diversified Telecommunication Services (2)	0.28	0.78	176%	0.20	0.52	163%	0.34	0.83	148%
Media (8)	0.51	0.91	77%	0.42	0.92	121%	0.59	1.35	131%
Entertainment (7)	0.60	0.90	50%	1.56	1.33	-15%	1.30	1.49	15%
Interactive Media & Services (3)	1.42	1.33	-6%	0.97	1.49	53%	1.08	1.72	58%

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

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## Exhibit 46: Communication Services P/B at 3.8x vs. 2.9x historical average, 1986-07/23

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

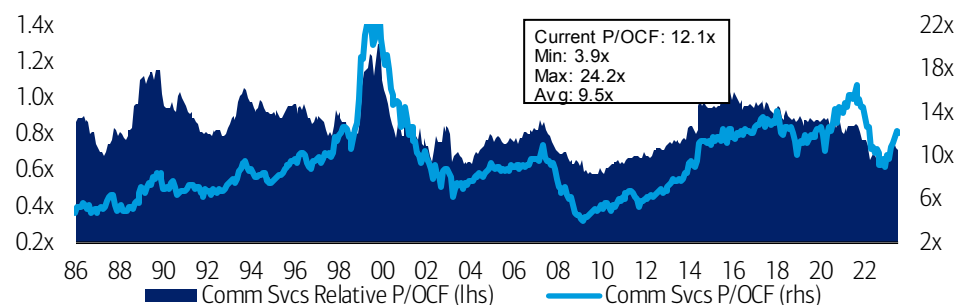


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 47: Communication Services P/OCF at 12.1x vs. 9.5x historical average, 1986-07/23

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

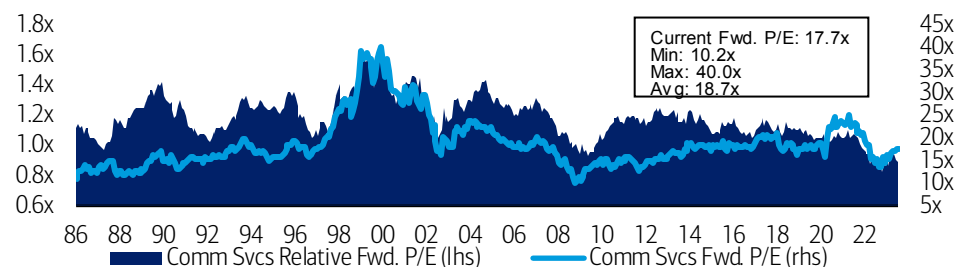


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 48: Communication Services fwd P/E at 17.7x vs. 18.7x historical average, 1986-07/23

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 52: Relative Valuation (vs. S&P 500) for Utilities industries (based on data from 1986-7/23)

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

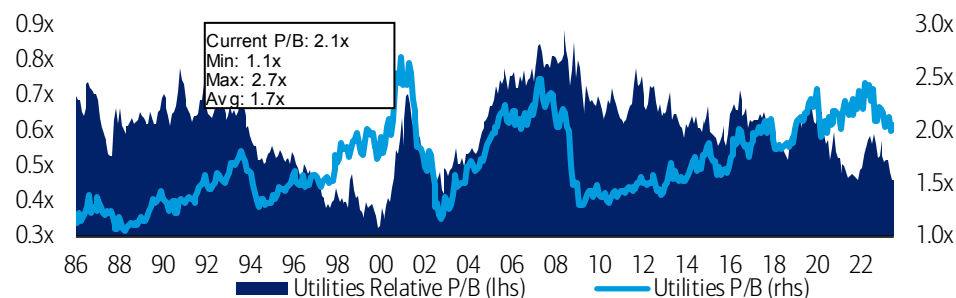
Utilities (# of co's)	Price to Book (Relative)			Price to Operating Cash Flow (Relative)			Forward P/E (Relative)		
	Current	Average	Implied upside	Current	Average	Implied upside	Current	Average	Implied upside
Electric Utilities (17)	0.46	0.56	22%	0.89	0.60	-33%	0.87	0.83	-4%
Independent Power and Renewable Electricity Producers (1)	2.18	0.78	-64%	0.31	0.40	31%	0.60	0.80	34%
Multi-Utilities (10)	0.43	0.61	42%	0.65	0.67	3%	0.87	0.99	14%

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

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## Exhibit 50: Utilities P/B at 2.1x vs. 1.7x historical average, 1986-07/23

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

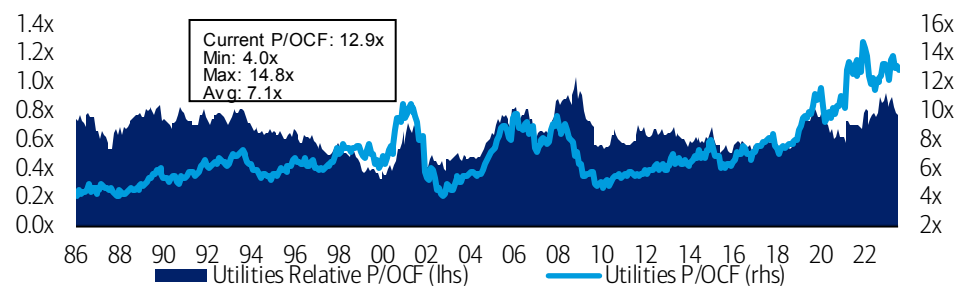


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 51: Utilities P/OCF at 12.9x vs. 7.1x historical average, 1986-07/23

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

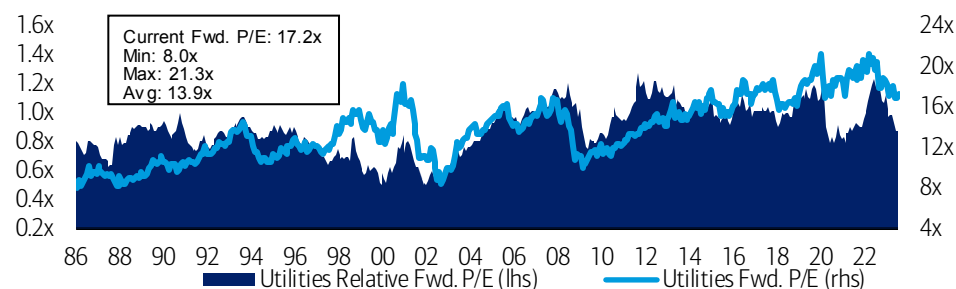


Source: Compustat, BofA US Equity & US Quant Strategy

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## Exhibit 52: Utilities fwd P/E at 17.2x vs. 13.9x historical average, 1986-07/23

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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**Exhibit 56: S&P 500 Momentum & Value Framework - industry ranks as of 7/23**

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	30	10	10	10	Opportunity
Passenger Airlines	Industrials	30	10	10	10	Opportunity
Household Durables	Consumer Discretionary	27	8	10	9	Opportunity
Energy Equipment & Services	Energy	27	10	8	9	Opportunity
Hotel & Resort Reits	Real Estate	26	8	9	9	Opportunity
Construction Materials	Materials	25	10	10	5	
Leisure Products	Consumer Discretionary	24	7	9	8	Opportunity
Media	Communication Services	23	6	7	10	Opportunity
Machinery	Industrials	23	9	9	5	
Communications Equipment	Information Technology	22	6	6	10	Opportunity
Semiconductors & Semiconductor Equipment	Information Technology	21	10	10	1	
Broadline Retail	Consumer Discretionary	21	10	10	1	
Office Reits	Real Estate	21	6	5	10	
Hotels Restaurants & Leisure	Consumer Discretionary	20	5	10	5	
Electrical Equipment	Industrials	20	9	9	2	
Building Products	Industrials	20	9	8	3	
Trading Companies & Distributors	Industrials	20	8	6	6	Opportunity
Automobiles	Consumer Discretionary	20	10	9	1	
Industrial Conglomerates	Industrials	19	5	9	5	
Banks	Financials	19	8	2	9	
Entertainment	Communication Services	19	7	6	6	Opportunity
Residential Reits	Real Estate	18	4	5	9	
Software	Information Technology	18	8	8	2	
Construction & Engineering	Industrials	18	9	8	1	
Auto Components	Consumer Discretionary	18	7	8	3	
Health Care Providers & Services	Health Care	17	4	6	7	
Consumer Finance	Financials	17	7	2	8	
Retail Reits	Real Estate	17	4	4	9	
Insurance	Financials	17	4	6	7	
Metals & Mining	Materials	16	7	3	6	
Independent Power And Renewable Electricity Producers	Utilities	16	1	7	8	
IT Services	Information Technology	16	8	5	3	
Electronic Equipment Instruments & Components	Information Technology	16	7	3	6	
Specialized Reits	Real Estate	15	2	5	8	
Financial Services	Financials	15	5	7	3	
Beverages	Consumer Staples	15	3	7	5	
Technology Hardware Storage & Peripherals	Information Technology	15	9	5	1	
Air Freight & Logistics	Industrials	15	6	2	7	
Professional Services	Industrials	15	8	4	3	
Commercial Services & Supplies	Industrials	14	5	8	1	
Health Care Reits	Real Estate	14	4	6	4	
Household Products	Consumer Staples	14	2	8	4	
Multi-Utilities	Utilities	14	2	4	8	
Oil Gas & Consumable Fuels	Energy	14	3	1	10	Value Trap
Specialty Retail	Consumer Discretionary	14	6	3	5	
Electric Utilities	Utilities	14	2	7	5	
Diversified Telecommunication Services	Communication Services	14	1	3	10	Value Trap
Distributors	Consumer Discretionary	13	2	4	7	
Health Care Equipment & Supplies	Health Care	13	3	7	3	
Food Products	Consumer Staples	13	1	4	8	
Tobacco	Consumer Staples	13	2	4	7	
Chemicals	Materials	13	5	2	6	
Ground Transportation	Industrials	13	9	2	2	
Capital Markets	Financials	13	6	3	4	
Real Estate Management & Development	Real Estate	12	5	1	6	
Biotechnology	Health Care	12	1	3	8	Value Trap
Industrial Reits	Real Estate	12	3	5	4	
Pharmaceuticals	Health Care	11	3	1	7	Value Trap
Consumer Staples Distribution & Retail	Consumer Staples	11	4	3	4	
Aerospace & Defense	Industrials	10	3	5	2	
Containers & Packaging	Materials	10	5	1	4	
Life Sciences Tools & Services	Health Care	7	3	1	3	
Textiles Apparel & Luxury Goods	Consumer Discretionary	5	1	2	2	
Personal Care Products	Consumer Staples	4	1	1	2	

Source: BofA US Equity &amp; US Quant Strategy

ofA GLOBAL RESEARCH



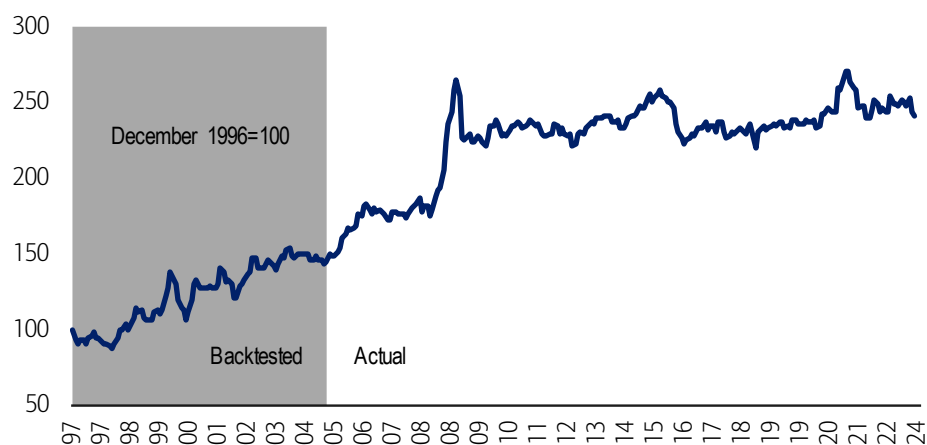


## Industry framework performance

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

### Exhibit 57: “Opportunities” Cumulative Relative Performance, 12/1996-7/2023 (backtested)

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



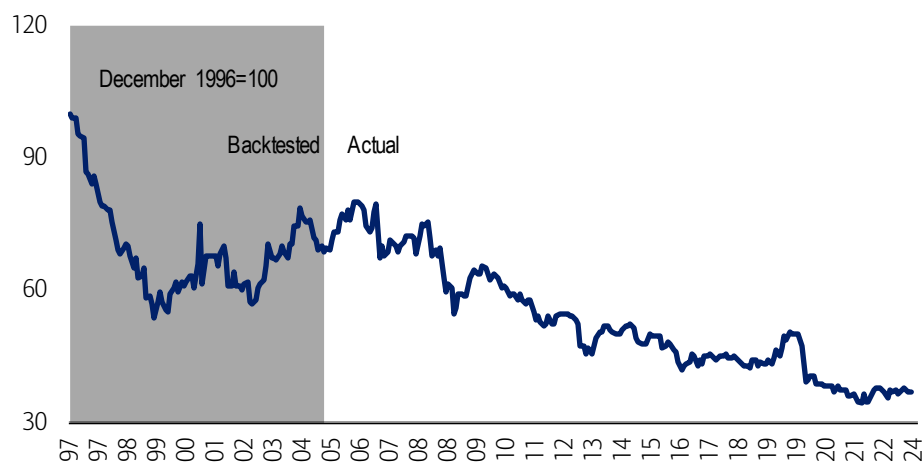
Note: the shaded area shows backtested results during the period from month-end December 1996 to month-end December 2004. The unshaded portion represents actual performance since January 2005. Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is 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 58: “Value Traps” Cumulative Relative Performance, 12/1996-7/2023 (backtested)

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



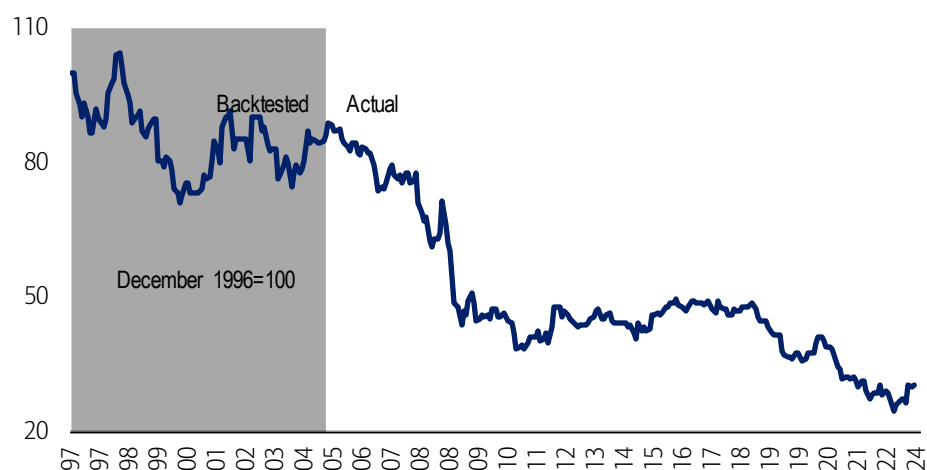
Note: the shaded area shows backtested results during the period from month-end December 1996 to month-end December 2004. The unshaded portion represents actual performance since January 2005. Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is 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 59: “Momentum Breakdowns” Cumulative Relative Performance, 12/1996-7/2023 (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 60: S&P 500 Momentum & Value Framework Sector Ranks as of 7/23

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

Sector	Combined Rank	Price Momentum Rank	EPS Revision Rank	Valuation Rank
Communication Services	30	9	11	10
Information Technology	22	11	9	2
Consumer Discretionary	21	10	10	1
Industrials	19	8	8	3
Real Estate	19	4	6	9
Financials	17	7	4	6
Energy	17	5	1	11
Materials	15	6	2	7
Health Care	14	3	3	8
Utilities	12	1	7	4
Consumer Staples	12	2	5	5

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 dividend 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 61: Relative performance of Opportunities, Value Traps and Momentum Breakdowns (as of 7/23)

Relative performance vs. equal-weighted S&P industries

	1m	3m	6m	12m	YTD	2yr	Ann'zed	3yr	Ann'zed	5yr	Ann'zed
Opportunities	-1.2%	-2.7%	-2.4%	-1.8%	-3.4%	-8.5%	-4.3%	4.4%	1.1%	14.8%	2.0%
Value Traps	0.5%	-1.4%	-1.1%	-2.1%	0.4%	3.2%	1.6%	-6.4%	-1.7%	-24.2%	-3.7%
Momentum Breakdown	0.9%	15.1%	14.8%	7.7%	17.0%	-3.8%	-1.9%	-37.0%	-10.7%	-54.6%	-9.3%

Source: BofA Us Equity & US Quant Strategy

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# S&P 500 Company Distribution

## Exhibit 62: 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 7/31/2023

<b>COMMUNICATION SERVICES</b>	8.69%	ADVANCE AUTO PARTS INC	0.01%	EXXON MOBIL CORP	1.13%	CHUBB LIMITED	0.22%
<b>DIVERSIFIED TELECOM</b>	0.64%	ALTIMETRONIC INC	0.12%	HESS CORP	0.11%	CINCINNATI FINANCIAL CORP	0.04%
AT&T INC	0.27%	BATH & BODY WORKS INC	0.02%	KINDER MORGAN INC	0.09%	EVEREST GROUP LTD	0.04%
VERIZON COMMUNICATIONS INC	0.37%	REST BUY CO INC	0.04%	MARATHON OIL CORP	0.04%	GILDEFI INC	0.03%
<b>ENTERTAINMENT</b>	1.37%	CARMAX INC	0.03%	MARATHON PETROLEUM	0.15%	HARTFORD FINL SERVICES	0.06%
ACTIVISION BLIZZARD INC	0.17%	HOME DEPOT INC	0.88%	OCCIDENTAL PETROLEUM	0.12%	LINCOLN NATIONAL CORP	0.01%
FLUORINTECH ARTS	0.09%	LOWE'S COS INC	0.36%	ONEOK INC	0.08%	LOWE'S CORP	0.03%
LIVE NATION ENTERTAINMENT	0.03%	O'REILLY AUTOMOTIVE	0.15%	PHILLIPS 66	0.13%	MARSH & MCLENNAN	0.24%
NFTX INC	0.51%	ROSS STORES INC	0.10%	PIONEER NATURAL	0.14%	METRO INC	0.11%
TAKE-TWO INTERACTIVE	0.06%	TIX COS INC	0.26%	TARGA RESOURCES CORP	0.05%	PRINCIPAL FINANCIAL GROUP	0.05%
WALT DISNEY CO	0.47%	TRACTOR SUPPLY CO	0.06%	THE WILLIAMS COMPANIES	0.11%	PROGRESSIVE CORP	0.19%
WARNER BROS DISCOVERY INC	0.08%	ULTA BEAUTY INC	0.06%	VALERO ENERGY CORP	0.12%	PRUDENTIAL FINANCIAL INC	0.09%
<b>INTERACTIVE MEDIA &amp; SERV</b>	5.70%	<b>TEXTILES APPAREL &amp; LUX</b>	0.41%	<b>FINANCIALS</b>	12.61%	TRAVELERS COS INC	0.10%
ALPHABET INC A	2.06%	NIKE INC B	0.35%	<b>BANKS</b>	3.19%	WILLIS TOWERS WATSON PLC	0.06%
ALPHABET INC C	1.77%	RAI PHILIPPIEN CORP A	0.01%	BANK OF AMERICA CORP	0.58%	WYBRIDGE CORP	0.03%
MATCH GROUP INC	0.03%	TAPESTRY INC	0.03%	CITIGROUP INC	0.24%	<b>HEALTH CARE</b>	13.12%
NETFLIX PLATFORMS INC CLASS A	1.84%	VF CORP	0.02%	CITIZENS FINANCIAL GROUP	0.04%	<b>BIOTECHNOLOGY</b>	1.94%
<b>MEDIA</b>	0.76%	<b>CONSUMER STAPLES</b>	6.59%	COMERICA INC (MI)	0.02%	ABBVIE INC	0.69%
CHARTER COMMUNICATIONS INC	0.11%	<b>BEVERAGES</b>	1.67%	FIFTH THIRD BANCORP (OH)	0.05%	AMGEN INC	0.33%
COMCAST CORP A	0.49%	BROWN-FORMAN CORP B	0.03%	HILTINGTON BANKSHARES	0.05%	ROGGEN INC	0.10%
FOX CORP A	0.02%	COCA-COLA CO	0.63%	IP MORGAN CHASE & CO	1.20%	GILEAD SCIENCES INC	0.25%
FOX CORP B	0.01%	CONSTELLATION BRANDS INC A	0.11%	KFV CORP	0.03%	INCYTE CORP	0.03%
INTERPUBLIC GROUP COS	0.03%	KEURIG DR PEPPER INC	0.07%	M&T BANK CORP	0.06%	MODERNA INC	0.10%
NEWS CORP A	0.02%	MOLSON COORS BEVERAGE CO B	0.03%	PNC FINL SERVICES GROUP	0.14%	REGENERON	0.21%
NEWS CORP B	0.01%	MONSTER BEVERAGE CORP NEW	0.11%	REGIONS FINANCIAL CORP	0.05%	VERTEX PHARMACEUTICALS	0.24%
OMNICOM GROUP	0.04%	PEPSICO INC	0.67%	TRUIST FINANCIAL CORP	0.17%	<b>HEALTH EQUIP &amp; SUPPLIES</b>	2.77%
PARAMOUNT GLOBAL CLASS B	0.02%	<b>CONSUMER STAPLES DIST</b>	1.82%	US BANCORP	0.14%	ABBOTT LABORATORIES	0.51%
<b>WIRELESS TELECOM</b>	0.71%	COSTCO WHOLESALE CORP	0.65%	WELLS FARGO & CO	0.45%	ALIGHT TECHNOLOGY INC	0.07%
T-MOBILE US INC	0.21%	DOLLAR GENERAL CORP	0.10%	ZIONS BANCORPORATION	0.01%	BAXTER INTL INC	0.06%
<b>CONSUMER DISCRETIONARY</b>	10.58%	DOLLAR TREE INC	0.08%	<b>CAPITAL MARKETS</b>	2.73%	BECTON DICKINSON & CO	0.21%
<b>AUTO COMPONENTS</b>	0.11%	KROGER CO	0.08%	AMERIPRISE FINANCIAL INC	0.09%	BOSTON SCIENTIFIC CORP	0.19%
APTIV PLC	0.08%	SYSCO CORP	0.10%	BLACKROCK INC	0.29%	COOPER COMPANIES INC	0.05%
BORGWARNER INC	0.03%	TARGET CORP	0.16%	CROCI GROUP MARKETS INC	0.04%	DENTSPLY SIRONA INC	0.07%
<b>AUTOMOBILES</b>	2.15%	WALGREENS BOOTS ALLIANCE INC	0.06%	CHARLES SCHWAB CORP	0.26%	DEXCOM INC	0.13%
FORD MOTOR CO	0.14%	WALMART INC	0.59%	CME GROUP INC A	0.19%	EDWARDS LIFESCIENCES	0.13%
GENERAL MOTORS COMPANY	0.14%	<b>FOOD PRODUCTS</b>	1.03%	FACTSET RESEARCH SYSTEM	0.04%	GE HEALTHCARE	0.08%
TESLA INC	1.88%	ARCHEL DANIEL S-MIDI AND CO	0.12%	FRANKLIN RESOURCES INC	0.02%	HOLLOGIC INC	0.05%
<b>BROADLINE RETAIL</b>	3.21%	BUNGE LTD	0.04%	GOLDMAN SACHS GROUP INC	0.31%	IDEXX LABORATORIES INC	0.12%
AMAZON COM INC	3.11%	CAMPRELL SOLID CO	0.02%	INTERCONTINENTAL	0.17%	INSITU FT CORP	0.05%
EBAY INC	0.06%	CONAGRA BRANDS INC	0.04%	INVESCO LTD	0.02%	INTUITIVE SURGICAL INC	0.30%
FTSY INC	0.03%	GENERAL MILLS INC	0.11%	MARKETAXESS HOLDINGS	0.03%	METROLOGIC PI	0.30%
<b>DISTRIBUTORS</b>	0.13%	HERSHEY FOODS CORP	0.09%	MOODY'S CORP	0.15%	RESMED INC	0.09%
GENUINE PARTS CO	0.06%	HORMEL FOODS CORP	0.03%	MORGAN STANLEY	0.31%	STERIS PLC	0.06%
LKO CORP	0.04%	I.M. SMUCKER CO	0.04%	MSCI INC	0.11%	STRYKER CORP	0.25%
POOL CORP	0.04%	KELLOGG CO	0.04%	NASDAQ INC	0.04%	TEFFEX INC	0.03%
<b>HOTELS REST LEIS</b>	2.06%	LAMB WESTON HOLDINGS INC	0.04%	NORTHERN TRUST CORP (IL)	0.04%	ZIMMER BIOMET HOLDINGS	0.08%
BOOKING HOLDINGS INC	0.29%	MCCORMICK & CO	0.06%	RAYMOND JAMES FINANCIAL	0.05%	<b>HEALTH PROVIDERS &amp; SVS</b>	2.87%
CASARS ENTERTAINMENT INC	0.03%	MONDIEZ INTERNATIONAL INC	0.26%	S&P GLOBAL INC	0.34%	AMERISOURCE BERGEN CORP	0.08%
CARNIVAL CORP	0.05%	THE KRAFT HEINZ COMPANY	0.08%	STATE STREET CORP	0.06%	CARDINAL HEALTH INC	0.06%
CHIPOTLE MEXICAN GRILL INC	0.14%	TYSON FOODS INC A	0.04%	TROWER PRICE GROUP INC	0.07%	CENTENE CORP	0.10%
DARDEN RESTAURANTS INC	0.05%	<b>HOUSEHOLD PRODUCTS</b>	1.35%	THE BANK OF NEW YORK	0.08%	CVS HEALTH CORPORATION	0.25%
DOMINOS PIZZA INC	0.04%	CHURCH & DWIGHT CO	0.06%	<b>CONSUMER FINANCE</b>	0.49%	NAVITA INC	0.01%
EXPEDIA GROUP INC	0.05%	CLOROX CO	0.05%	AMERICAN EXPRESS CO	0.26%	ELEVANCE HEALTH INC	0.29%
HILTON WORLDWIDE HOLDINGS	0.11%	COLGATE-PALMOLIVE CO	0.17%	CAPITAL ONE FINANCIAL	0.17%	HCA HEALTHCARE INC	0.15%
LAS VEGAS SANDS	0.05%	KIMBERLY-CLARK	0.11%	DISCOVER FINANCIAL	0.07%	HENRY SCHEIN INC	0.03%
MARRIOTT INTERNATIONAL	0.14%	PROCTER & GAMBLE	0.96%	SYNCHRONY FINANCIAL	0.04%	HIMMADA INC	0.15%
MCDONALD'S CORP	0.56%	<b>PERSONAL PRODUCTS</b>	0.11%	<b>FINANCIAL SVS</b>	4.17%	LABORATORY CORPORATION	0.05%
MGM RESORTS INTERNATIONAL	0.04%	ESTEE LAUDER COS A	0.11%	REFRESH HATHAWAY R	1.64%	MCKESSON CORP	0.14%
NORWEGIAN CRUISE LINE	0.02%	<b>TOBACCO</b>	0.62%	FIDELITY NATIONAL	0.09%	MOLINA HEALTHCARE	0.05%
ROYAL CARIBBEAN GROUP	0.06%	ALTRIA GROUP INC	0.21%	FISERV INC	0.20%	QUIST DIAGNOSTICS	0.04%
STARBUCKS CORP	0.30%	PHILIP MORRIS INTERNATIONAL	0.40%	FLEETCOR TECHNOLOGIES	0.05%	THE CIGNA GROUP	0.23%
WYNN RESORTS LTD	0.03%	<b>ENERGY</b>	4.28%	GLOBAL PAYMENTS INC	0.08%	UNITEDHEALTH GROUP INC	1.23%
YUM! BRANDS INC	0.10%	<b>ENERGY EQUIP &amp; SVS</b>	0.40%	JACK HENRY & ASSOCIATES	0.03%	UNIVERSAL HEALTH	0.02%
<b>HOUSEHOLD DURABLES</b>	0.37%	BAKER HUGHES COMPANY	0.09%	MASTERCARD INC A	0.86%	<b>IFF SCIENCES TOOLS</b>	1.59%
GARMIN LTD	0.04%	HALLIBURTON CO	0.09%	PAYPAL HOLDINGS INC	0.22%	AGILENT TECHNOLOGIES INC	0.09%
HORTON DR INC	0.10%	SCHLUMBERGER LTD	0.22%	VISA INC A	1.00%	BIORAD LABORATORIES INC	0.07%
LENNAR CORP A	0.08%	<b>OIL GAS &amp; CONSUMABLE FUELS</b>	3.87%	<b>INSURANCE</b>	2.03%	BIO-TECHNE CORP	0.03%
MOHAWK INDUSTRIES INC	0.01%	APA CORPORATION	0.03%	AFAC INC	0.10%	CHARLES RIVER	0.03%
NEWELL BRANDS INC	0.01%	CHEVRON CORP	0.74%	ALLSTATE CORP	0.08%	DANAHER CORP	0.44%
NVR INC	0.05%	CONOCOPHILLIPS	0.37%	AMERICAN INTL GROUP INC	0.11%	ILLUMINA INC	0.08%
PULTE GROUP INC	0.05%	COTERRA ENERGY INC	0.05%	AON PLC	0.17%	IOVIA HOLDINGS INC	0.11%
WHIRLPOOL CORP	0.02%	DEVCON ENERGY CORP	0.09%	ARCH CAPITAL GROUP LTD	0.08%	METRO FRTN FND INTL	0.07%
<b>LEISURE PRODUCTS</b>	0.02%	DIAMONDBACK ENERGY INC	0.07%	ARTHUR J. GALLAGHER & CO	0.12%	REVITY INC	0.04%
HASBRO INC	0.02%	FOG RESOURCES	0.20%	ASSURANT INC	0.02%	THERMO FISHER SCIENTIFIC	0.55%
<b>SPECIALTY RETAIL</b>	2.11%	EOT CORPORATION	0.04%	BROWN & BROWN INC	0.04%	WATERS CORP	0.04%

Source: BofA Global Research

BofA GLOBAL RESEARCH



**Exhibit 63: Latest month's end S&P 500 weights for companies sorted by sectors/industries**

Company Distribution of S&amp;P 500 by GICS Sector/Industry Classifications as of 7/31/2023

WEST PHARMACEUTICAL	0.07%	STANLEY BLACK & DECKER	0.04%	CADENCE DESIGN	0.17%	INVITATION HOMES	0.05%
<b>PHARMACEUTICALS</b>	3.95%	WAB TEC	0.06%	FAIR ISAAC & CO INC	0.05%	MID-AMERICA APT	0.05%
BRISTOL-MYERS SQUIBB	0.34%	XYLEM INC	0.07%	FORTINET INC	0.13%	UDR INC	0.03%
CALENT INC	0.02%	<b>AIRLINES</b>	0.22%	GEN DIGITAL INC.	0.03%	<b>RETAIL REITS</b>	0.29%
ELI LILLY & CO	0.93%	ALASKA AIR GROUP INC	0.02%	INTUIT INC	0.37%	FEDERAL REALTY INVT	0.02%
JOHNSON & JOHNSON	1.14%	AMERICAN AIRLINES GROUP	0.03%	MICROSOFT CORP	6.52%	KIMCO REALTY CORP	0.03%
MERCK & CO INC	0.71%	DELTA AIR LINES	0.08%	ORACLE CORP	0.47%	REALTY INCOME CORP	0.11%
ORGANON & CO	0.01%	SOUTHWEST AIRLINES CO	0.05%	PALO ALTO NETWORKS	0.20%	REGENCY CENTERS CORP	0.03%
PFIZER INC	0.53%	UNITED AIRLINES HOLDING,	0.05%	PTC INC	0.04%	SIMON PROPERTY GROUP A	0.11%
VIATRIS INC	0.03%	<b>PROFESSIONAL SERVICES</b>	0.75%	ROPER TECHNOLOGIES,	0.14%	<b>SPECIALIZED REITS</b>	1.10%
ZOETIS INC	0.23%	AUTOMATIC DATA	0.27%	SALESFORCE, INC.	0.57%	AMERICAN TOWER CORP A	0.23%
<b>INDUSTRIALS</b>	8.47%	BROADRIDGE FINANCIAL	0.05%	SERVICENOW INC.	0.31%	CROWN CASTLE INC.	0.12%
<b>AEROSPACE &amp; DEFENSE</b>	1.61%	CERDIAN HCM HOLDING INC.	0.03%	SYNOPLYS INC	0.18%	DIGITAL REALTY TRUST	0.09%
AXON ENTERPRISE INC	0.03%	EQUIFAX INC	0.07%	TYLER TECHNOLOGIES	0.04%	EQUINIX INC	0.20%
BOEING CO	0.35%	JACOBS SOLUTIONS INC.	0.04%	<b>TECHNOLOGY HARDWARE</b>	7.82%	EXTRA SPACE STORAGE INC	0.08%
GENERAL DYNAMICS	0.13%	LEIDOS HOLDINGS INC	0.03%	APPLE INC.	7.58%	IRON MOUNTAIN INC	0.05%
HOWMET AEROSPACE INC.	0.05%	PAYCHEX INC	0.11%	HEWLETT PACKARD	0.06%	PUBLIC STORAGE	0.12%
HUNTINGTON INGALLS	0.02%	PAYCOM SOFTWARE INC	0.05%	HP INC	0.07%	SBA COMMUNICATIONS	0.06%
L3HARRIS TECHNOLOGIES INC	0.09%	ROBERT HALF INC	0.02%	NETAPP INC	0.04%	VICI PROPERTIES INC.	0.08%
LOCKHEED MARTIN	0.26%	VERSK ANALYTICS INC	0.09%	SEAGATE TECHNOLOGY	0.03%	WEYERHAEUSER CO	0.07%
NORTHROP GRUMMAN CORP	0.17%	<b>TRADING CO. &amp; DISTR</b>	0.26%	WESTERN DIGITAL CORP	0.04%	<b>UTILITIES</b>	2.56%
RTX CORPORATION	0.34%	FASTENAL CO	0.09%	<b>MATERIALS</b>	2.51%	<b>ELECTRIC UTILITIES</b>	1.67%
TEXTRON INC	0.04%	UNITED RENTALS INC	0.08%	<b>CHEMICALS</b>	1.71%	ALLIANT ENERGY CORP	0.04%
TRANSDIGM GROUP	0.12%	W.W. GRAINGER INC	0.09%	AIR PRODUCTS &	0.18%	AMERICAN ELECTRIC	0.11%
<b>AIR FREIGHT &amp; LOGISTICS</b>	0.60%	<b>INFORMATION TECHNOLOGY</b>	28.13%	ALBEMARLE CORP	0.06%	CONSTELLATION ENERGY	0.08%
CH ROBINSON WORLDWIDE INC	0.03%	<b>COMMUNICATIONS EQUIP</b>	0.83%	CELANESE CORP A	0.03%	DUKE ENERGY CORP	0.19%
EXPEDITORS INTL OF WA INC	0.05%	ARISTA NETWORKS INC	0.10%	CF INDUSTRIES	0.04%	EDISON INTL	0.07%
FEDEX CORP	0.16%	CISCO SYSTEMS INC	0.56%	CORTEVA INC.	0.10%	ENTERGY CORP	0.06%
UNITED PARCEL SERVICE INC B	0.35%	F5, INC.	0.02%	DOW INC	0.10%	EVERGY INC	0.04%
<b>BUILDING PRODUCTS</b>	0.46%	JUNIPER NETWORKS INC	0.02%	DUPONT DE NEMOURS	0.09%	EVERSOURCE ENERGY	0.07%
A.O. SMITH CORP	0.02%	MOTOROLA SOLUTIONS INC	0.13%	EASTMAN CHEMICAL CO	0.03%	EEXELON CORP	0.11%
ALLEGIION PLC	0.03%	<b>ELECTRONIC EQUIP, INSTR &amp;</b>	0.59%	ECOLAB INC	0.12%	FIRSTENERGY CORP	0.06%
CARRIER GLOBAL CORP.	0.13%	AMPHENOL CORP A	0.14%	FMC CORP	0.03%	NEXTERA ENERGY INC	0.39%
JOHNSON CONTROLS	0.12%	CDW CORP	0.07%	INTL FLAVORS &	0.06%	NRG ENERGY	0.02%
MASCO CORP	0.04%	CORNING INC	0.07%	LINDE PLC	0.50%	PG&E CORPORATION	0.07%
TRANE TECHNOLOGIES PLC	0.12%	KEYSIGHT TECHNOLOGIES INC	0.07%	LYONDELLBASELL	0.07%	PINNACLE WEST CAPITAL	0.02%
<b>COMMERCIAL SVS</b>	0.48%	TE CONNECTIVITY LTD.	0.12%	MOSAIC CO	0.04%	PPL CORP	0.05%
CINTAS CORP	0.11%	TELEDYNE TECHNOLOGIES INC	0.05%	PPG INDUSTRIES INC	0.09%	SOUTHERN CO	0.21%
COPART INC	0.10%	TRIMBLE INC	0.03%	SHERWIN-WILLIAMS CO	0.17%	XCEL ENERGY INC	0.09%
REPUBLIC SERVICES INC	0.08%	ZEBRA TECHNOLOGIES CORP	0.04%	<b>CONSTRUCTION MATERIALS</b>	0.15%	<b>GAS UTILITIES</b>	0.05%
ROLLINS INC	0.02%	<b>IT SVS</b>	1.16%	MARTIN MARIETTA	0.07%	ATMOS ENERGY CORP	0.05%
WASTE MANAGEMENT INC	0.16%	ACCENTURE PLC A	0.52%	VULCAN MATERIALS CO	0.08%	<b>INDEPENDENT POWER</b>	0.04%
<b>CONSTR &amp; ENGINEERING</b>	0.08%	AKAMAI TECHNOLOGIES INC	0.04%	<b>CONTAINERS &amp; PACKAGING</b>	0.23%	AES CORP	0.04%
QUANTA SERVICES INC	0.08%	COGNIZANT TECH SOLUTIONS	0.09%	AMCOR PLC	0.04%	<b>MULTI-UTILITIES</b>	0.73%
<b>ELECTRICAL EQUIP</b>	0.57%	DXC TECHNOLOGY COMPANY	0.02%	AVERY DENNISON CORP	0.04%	AMEREN CORP	0.06%
AMETEK INC	0.10%	EPAM SYSTEMS INC	0.04%	BALL CORP	0.05%	CENTERPOINT ENERGY INC	0.05%
EATON CORP PLC	0.21%	GARTNER INC	0.07%	INTL PAPER CO	0.03%	CMS ENERGY CORP	0.05%
EMERSON ELECTRIC CO	0.14%	INTL BUSINESS MACHINES	0.34%	PACKAGING CORP OF	0.04%	CONSOLIDATED EDISON INC	0.09%
GENERAC HOLDINGS INC	0.02%	VERISIGN INC	0.05%	SEALED AIR CORP	0.02%	DOMINION ENERGY INC	0.12%
ROCKWELL AUTOMATION INC	0.10%	<b>SEMICONDUCTORS</b>	7.65%	WESTROCK CO	0.02%	DTE ENERGY CO	0.06%
<b>GROUND TRANSP</b>	0.83%	ADVANCED MICRO DEVICES	0.48%	<b>METALS &amp; MINING</b>	0.41%	NISOURCE INC	0.03%
CSX CORPORATION	0.18%	ANALOG DEVICES INC	0.26%	FREEPORT-MCMORAN	0.17%	PUBLIC SERVICE	0.08%
J.B. HUNT TRANSPORT SERVICES	0.04%	APPLIED MATERIALS INC	0.33%	NEWMONT CORP	0.09%	SEMPRA	0.12%
NORFOLK SOUTHERN CORP	0.14%	BROADCOM INC	0.98%	NUCOR CORP	0.11%	WEC ENERGY GROUP INC	0.07%
OLD DOMINION FREIGHT LINE	0.10%	ENPHASE ENERGY INC	0.05%	STEEL DYNAMICS INC	0.04%	<b>WATER UTILITIES</b>	0.07%
UNION PACIFIC CORP	0.37%	FIRST SOLAR INC	0.05%	<b>REAL ESTATE</b>	2.48%	AMERICAN WATER WORKS	0.07%
<b>IND CONGLOMERATES</b>	0.82%	INTEL CORP	0.39%	<b>HEALTH CARE REITS</b>	0.19%		
3M CO	0.16%	KLA CORPORATION	0.18%	HEALTHPEAK	0.03%		
GENERAL ELECTRIC CO	0.32%	LAM RESEARCH CORP	0.25%	VENTAS INC	0.05%		
HONEYWELL INTL INC	0.34%	MICROCHIP TECHNOLOGY INC	0.13%	WELLTOWER INC	0.11%		
<b>MACHINERY</b>	1.81%	MICRON TECHNOLOGY INC	0.20%	<b>HOTEL &amp; RESORT REITS</b>	0.03%		
CATERPILLAR INC	0.36%	MONOLITHIC POWER	0.07%	HOST HOTELS &	0.03%		
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INGERSOLL RAND INC.	0.07%	SOLAREDGE TECHNOLOGIES	0.04%	CBRE GROUP INC.	0.07%		
NORDSON CORP	0.04%	TERADYNE INC	0.05%	COSTAR GROUP INC	0.09%		
OTIS WORLDWIDE CORP	0.10%	TEXAS INSTRUMENTS INC	0.43%	<b>RESIDENTIAL REITS</b>	0.33%		
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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster <sup>R1</sup>
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Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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