12 frightful slides before Halloween: Stocks boil and bubble, investors toil and trouble

Summary

A number of signals indicate the S&P 500, which has been led by a handful of technology-related stocks, is at risk of further correction. We see the P/E multiple pressured by Oct-2020 by a slightly higher real 10Y Treasury yield (we estimate +40bps to -0.60%) as fiscal assistance recedes and 2021 EPS estimates come under pressure. We "get" the obvious Equity Risk Premium bull case, but the S&P 500 earlier this month briefly reached the middle of a 2,880 to 3,715 range that ERP would imply through 2021, and we see more downside by Oct-2020. There is an alternate, outright "bubble" case featuring Fed repressed real yields with low inflation and resulting gargantuan P/E expansion, but history teaches us that over-paying for earnings growth when the Federal Reserve and Treasury (finally working in unison amid populism) are determined to reflate is the purview of speculators, not investors.

Key Points

Buyer beware: 20 years ago (just before the 2000-02 Tech Wreck) stocks were expensive vs. commodities, and we are there again: In the past 150 years, following the first month that the S&P 500 relative to commodities crossed above +1.5 sigma within the polynomial uptrend, an average -45% bear market has ensued about 1-2 years later, and the most recent cross was Jan-2020 **(Pages 2-3)**

Cyclicals vs. Defensives (equal-weighted), led by Technology and Discretionary, are at a level that indicates S&P 500 downside: Equal-weighted S&P 500 Cyclical sectors relative to equal-weighted Defensives are peaking close to the level that for the past 20 years has preceded a major (high-teens percentage) correction or bear market for the S&P 500 **(Page 4)**

Fading oil divided by gold signals a higher real 10Y yield in the near term, which could weigh on the S&P 500 P/E (especially Growth stocks): Oil divided by gold (barrel of Brent oil divided by an ounce of gold) indicates a deflation shock beckons, possibly catalyzed by fading fiscal policy support; as inflation fades real yields may rise, and it is the higher real yield that weighs on Growth stock P/E ratios **(Page 5)**

Next shoe to drop for a high P/E market? The Street may be too optimistic about 2021 EPS based on past curve inversions: The 50-day moving average inversion of the 10Y-3M Treasury has never missed a recession call and besides the (correct) recession call the Jun-20, 2019 inversion warned of weak EPS for *two* years through 2021E, making the consensus EPS 44% EPS recovery in 2021E seem outlandish **(Page 6)**

If the recession ended Jun-2020, the S&P 500 has just delivered the second strongest post-recession rebound despite the weakest GDP track since WW2: The dichotomy between the S&P 500 and the economy is attributable to the increased prominence of large cap Tech and the positive effect of low real bond yields which magnify the valuation for those long duration stocks, but the cognitive dissonance of price versus recovery potential does appear *stretched* to us **(Page 7)**

Liquidity and the "Powell Pivot" in Dec-2018 have led to a P/E ratio boom (nascent bubble?) for long duration Tech stocks: Price and fundamentals are separate issues, so despite tech fundamentals perceived now as stronger than the late-1990s bubble, the price pattern is exactly the same: an "ascending curve," with all the attendant risk and reward **(Page 8)**

Lesson for today? The 5 "high-tech" stocks in the 1972 Nifty Fifty saw their superior EPS offset by P/E compression 1973-82: We understand the view that tech leaders today are stronger in every respect than those of the late-1990s bubble, but a better comparison is the 1972 Nifty Fifty leaders, the post-script for which was that over-paying for growth with a Fed and Treasury determined to reflate in the next decade was not a good combination in 1972...nor do we believe it is now **(Page 9)**

We "get" the Equity Risk Premium bull case, but the S&P 500 is just in the middle (not the low end) of the 2,880 to 3,715 ERP-implied range we would expect: We see the S&P 500 CAPE Equity Risk Premium indicating a 2,880 to 3,715 potential range the next year, but acknowledge the alternate "bubble" case which hinges on a negative (repressed) real yield and resulting gargantuan P/E expansion, the historical aftermath of which would be a major bear market **(Pages 10-11)**

The CAPE will tell us soon if this is a P/E bubble (like the late-1920s & late-1990s) or a top (like the mid-30s & mid-60s): If CAPE breaks out and the S&P 500 rises meaningfully past 3,700 it could signal a late-1920s or late-1990s style bubble that builds to a fateful peak; note that bubbles are rare (4 years of the past 120 years in our chart) **(Pages 12-13)**

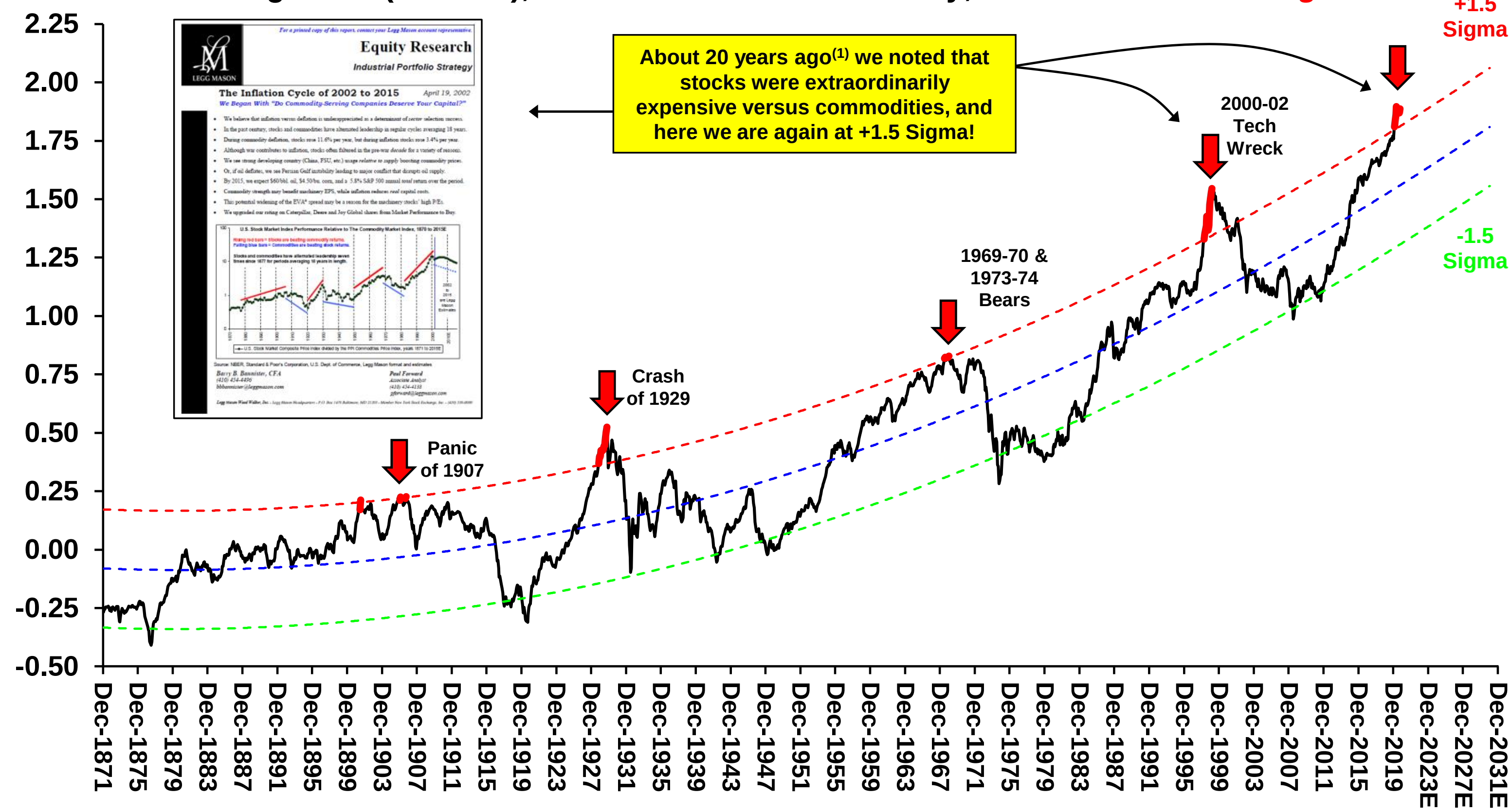
Barry B. Bannister, CFA | (443) 224-1317 | bbbannister@stifel.com
Thomas R. Carroll | (443) 224-1344 | carrollt@stifel.com
Stifel Equity Trading Desk | (800) 424-8870

Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

Buyer beware: 20 years ago (the 2000-02 Tech Wreck) stocks were expensive vs. commodities, *we are there again*

Following the first month that the S&P 500 relative to commodities has crossed above +1.5 sigma in the long-term polynomial trend (red - - - line), a bear market ensued about 1-2 years later, and the most recent cross was Jan-2020

U.S. Large Cap (S&P 500) Stock Index Relative to the U.S. Commodity Price Index, Log Scale (Base 10), Dec-1871 to Present Monthly; *Red = Outside +1.5 Sigma*



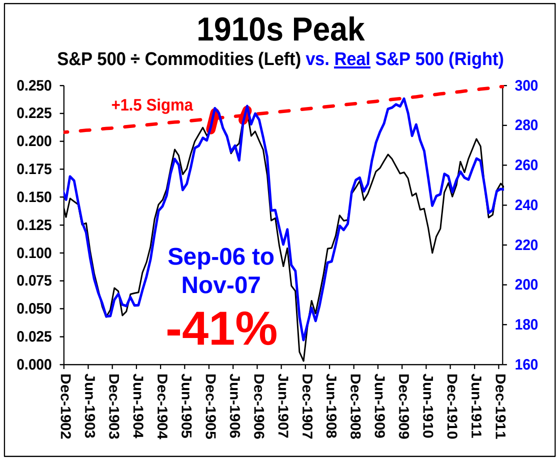
Source: S&P 500 and CPI data Shiller, Warren & Pearson Commodity Index (1871-1925), equal-weighted (1/3rd ea.) PPI Energy, PPI Farm Products and PPI Metals (Ferrous & Non-Ferrous, excl.-precious metals) (1926-1956), Refinitiv Equal Weight (CCI) Index (1956-1994), and Refinitiv Core Commodity CRB Index (1994 to present).

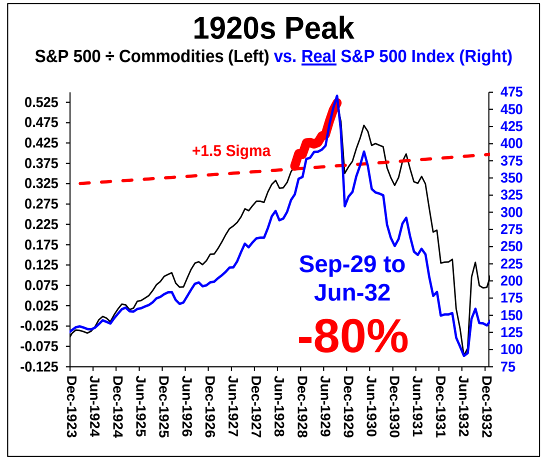
(1) From a former report by Barry Bannister & Paul Forward dated Ap-19, 2002 at Legg Mason Wood Walker, Inc., the prior owner of parts of Stifel Capital Markets.

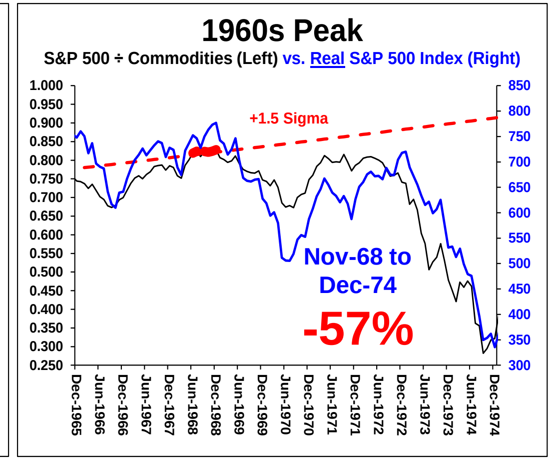
Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

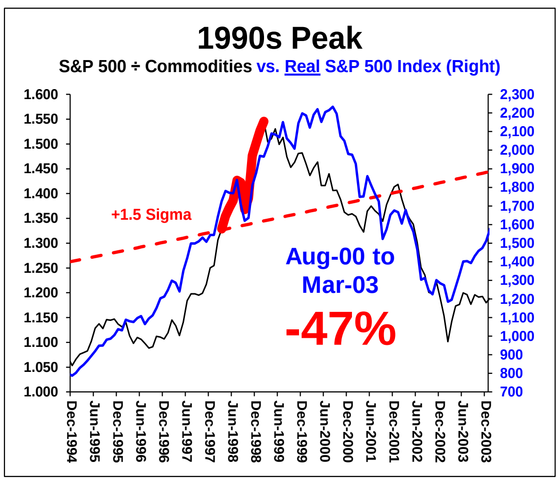
Looking at the stock vs. commodity tops (prior page): above *1.5σ precedes* a -45% S&P 500 plunge begins ~1-2 years later

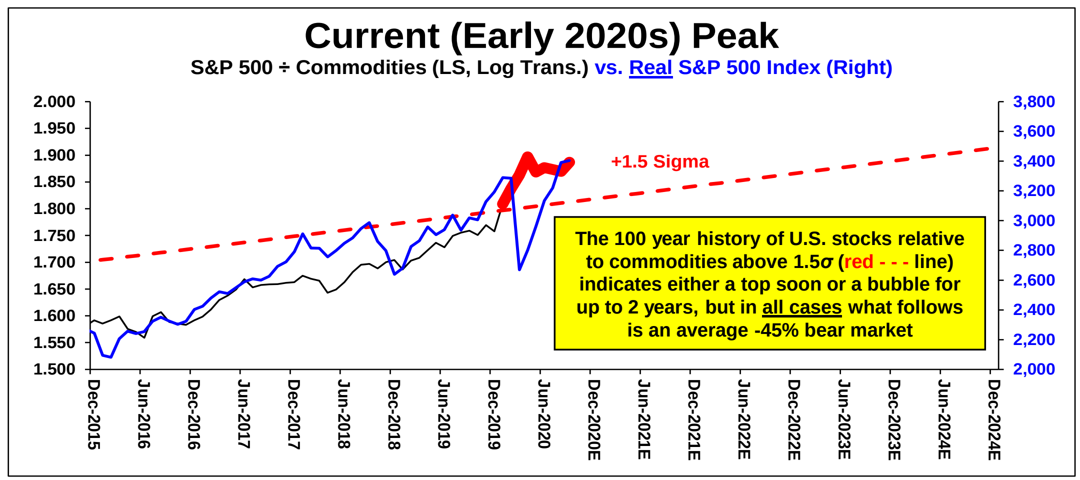
When S&P 500 ÷ commodities rises >1.5σ (red - - -) the S&P 500 (blue line) has subsequently plunged an average -45%









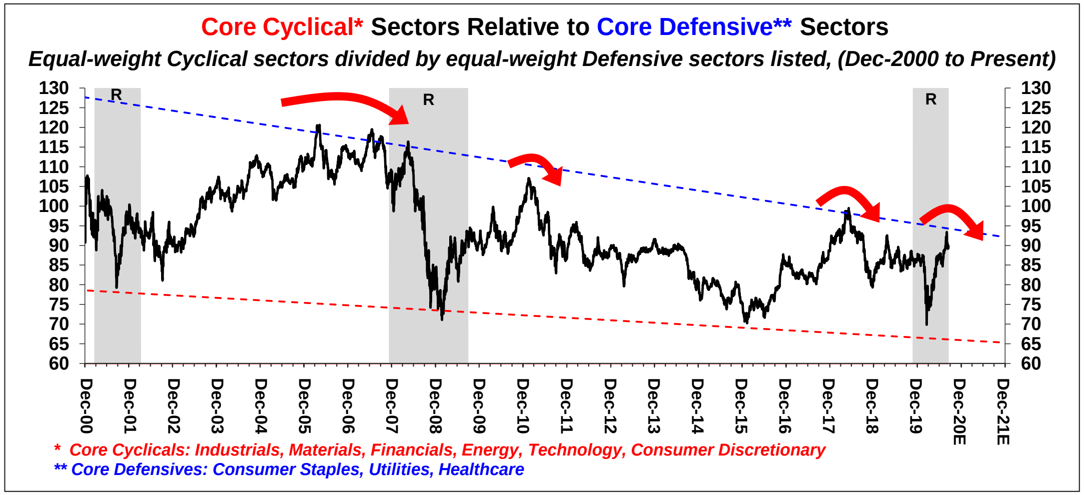


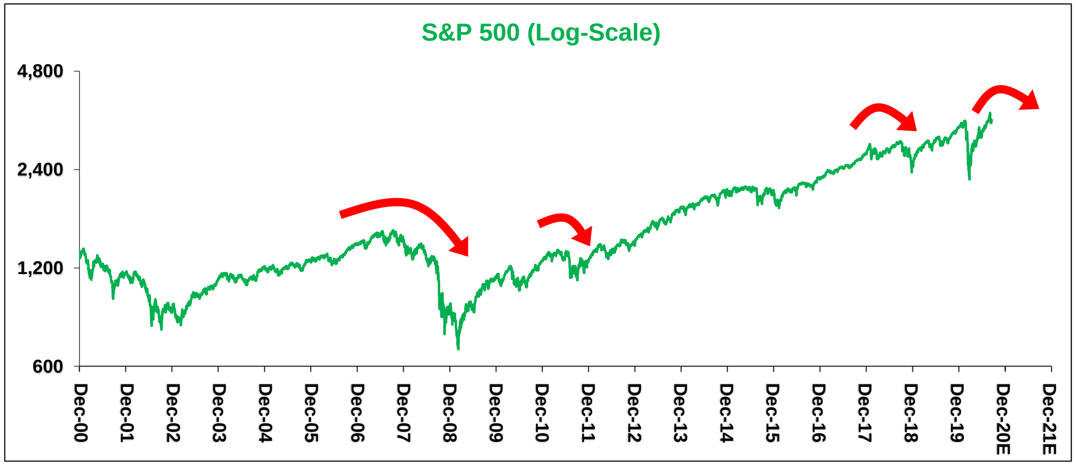
Source: S&P 500 and CPI data Shiller, Warren & Pearson Commodity Index (Trend Starts 1871-1925), equal-weighted (1/3rd ea.) PPI Energy, PPI Farm Products and PPI Metals (Ferrous & Non-Ferrous, excl.-precious) (1926-1956), Refinitiv Equal Weight (CCI) Index (1956-1994), and Refinitiv Core Commodity CRB Index (1994 to present).

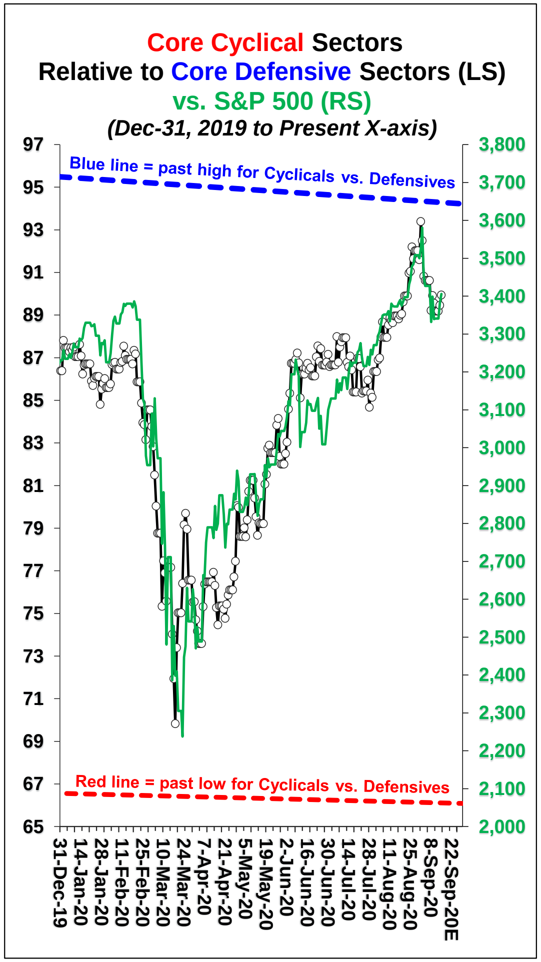
Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

Cyclicals vs. Defensives (equal-weighted), led by Tech and Discretionary, are at a level that indicates S&P 500 downside

Equal-weighted S&P 500 Cyclical sectors relative to equal-weighted Defensives are peaking close to the level (blue --- line, top left chart) that precedes a major correction or bear market for the S&P 500 (bottom left chart) the past 20 years





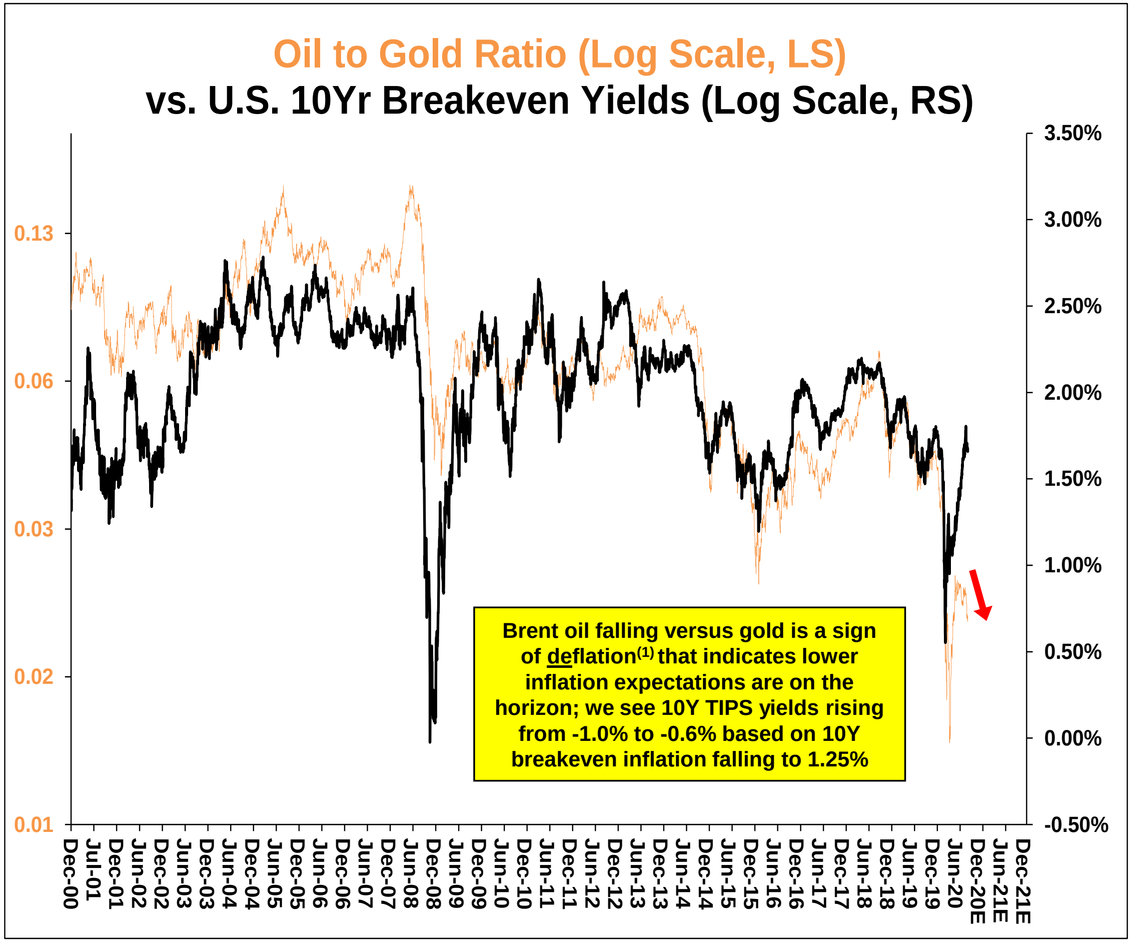


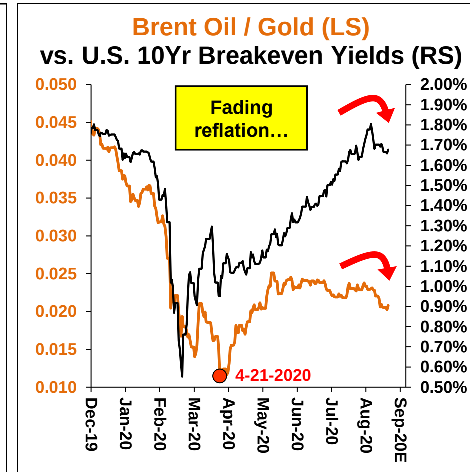
Source: Bloomberg prices, Stifel estimates.

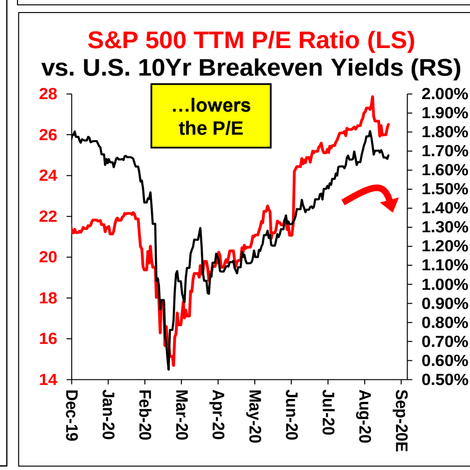
Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

Fading oil ÷ gold signals a higher real 10Y yield, which could weigh on the S&P 500 P/E (especially Growth stocks)

Oil ÷ gold (brown line) is rolling over, indicating a deflation[1] shock (we estimate -40bps decline to 1.25% for 10Y breakeven inflation), catalyzed by fading fiscal policy support; the higher real yield weighs on the Growth stock P/Es







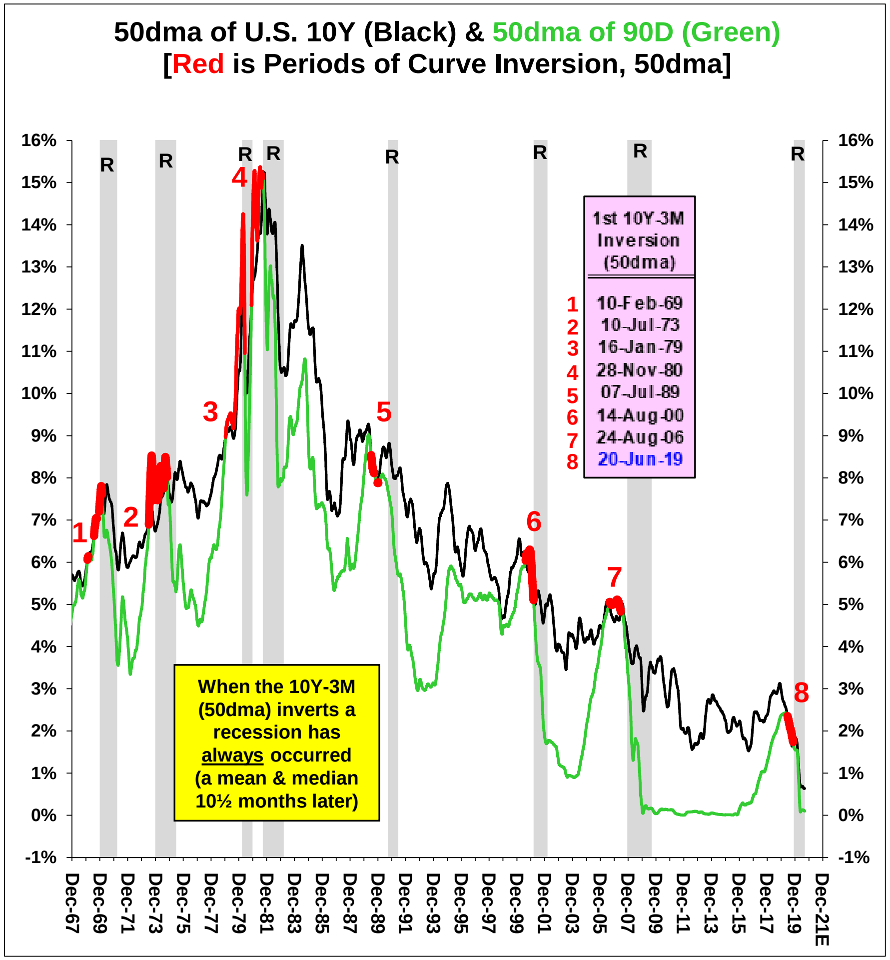
Source: Bloomberg data, Stifel format.

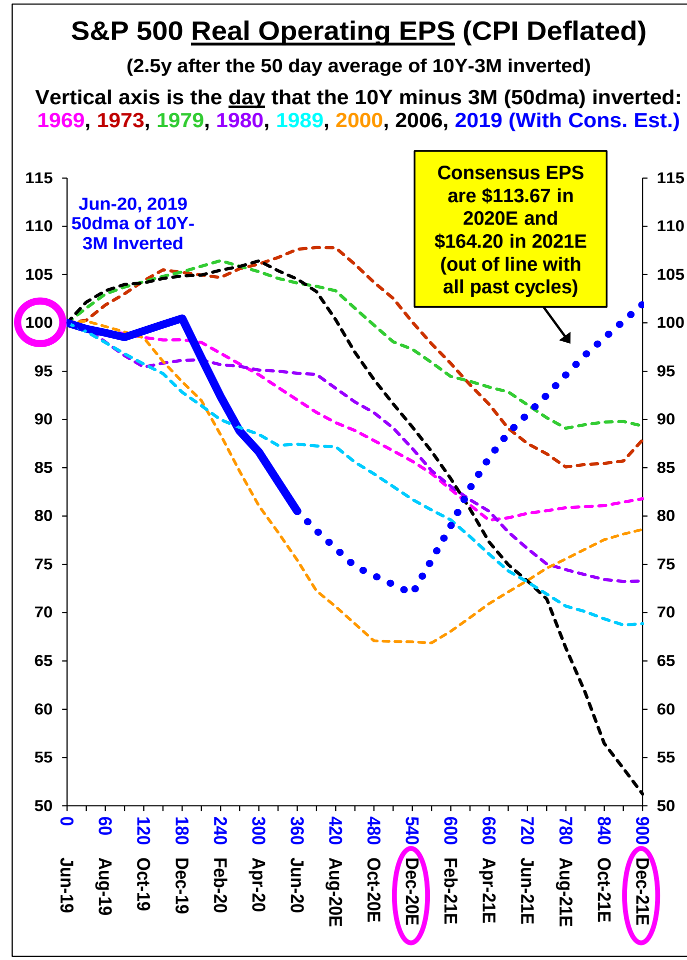
(1) Brent oil (*not* WTI oil, with more storage issues) falling *relative to* gold means the price level of "things" (like oil) is falling versus "money" (which is gold), which is deflation.

Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

Next shoe to drop for a high P/E market? The Street may be *too optimistic about 2021 EPS* based on past curve inversions

The 50dma inversion of the 10Y-3M Treasury (left chart) has never missed a recession call, and the Jun-20, 2019 inversion warned of weak EPS for TWO years through 2021E, making the consensus EPS recovery seem outlandish (right chart)





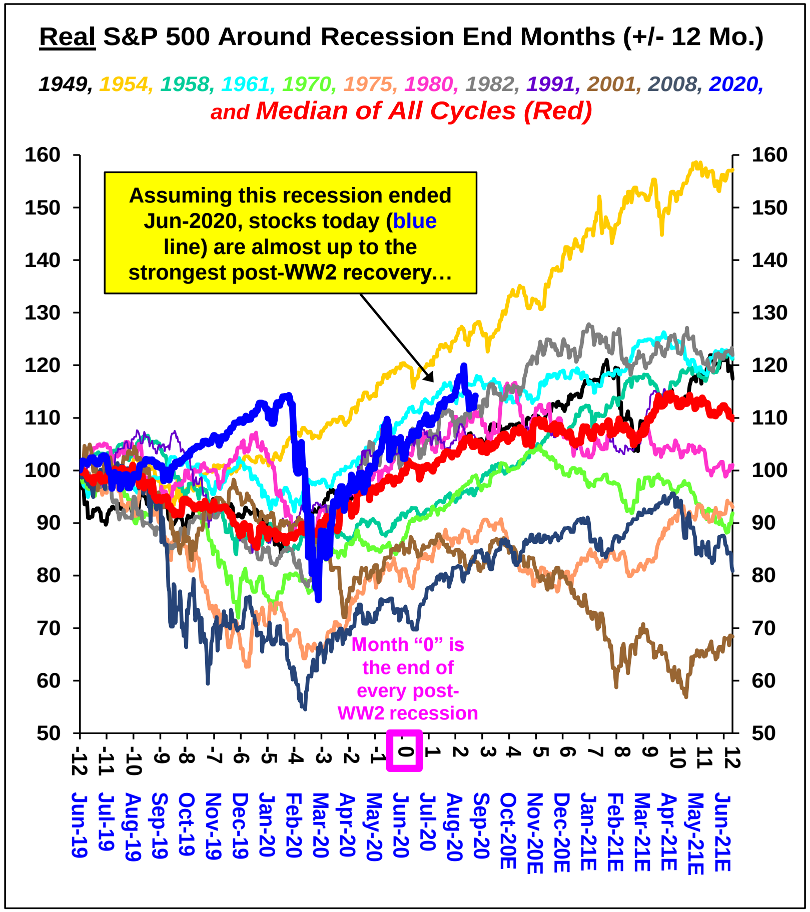
Source: Bloomberg yields and Operating EPS 1989-present, pre-1989 S&P/Shiller/Yale GAAP EPS data grossed up 11.7% to match the historical GAAP/Operating difference.

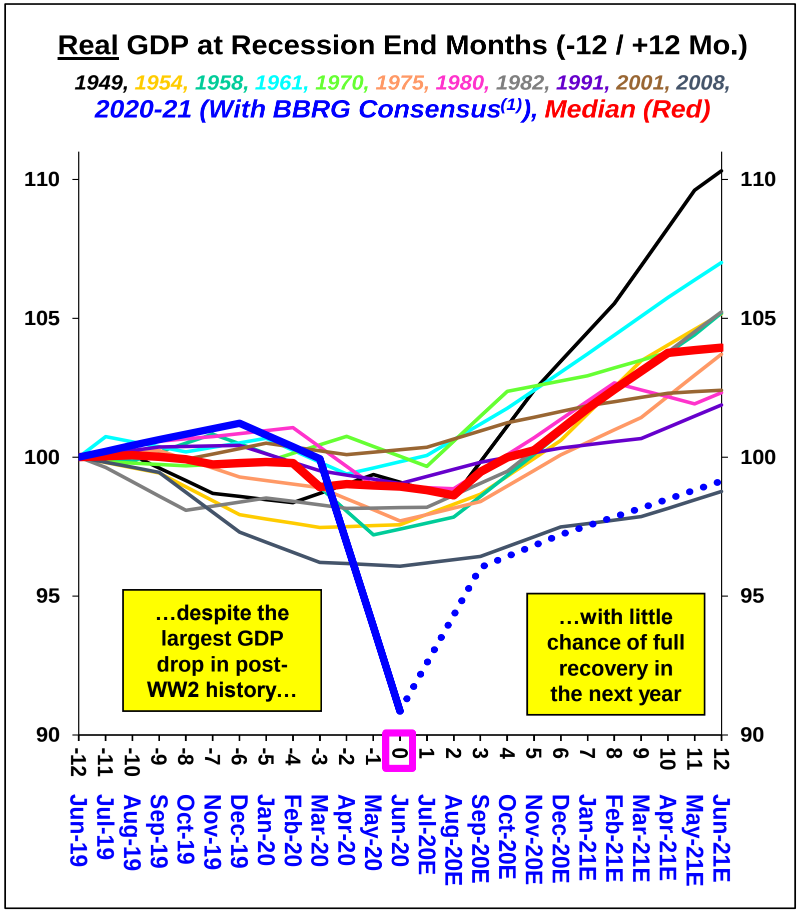
STIFEL

Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

If a recession ended Jun-2020, the S&P 500 has the 2nd strongest bull market despite the weakest GDP track since WW2

The dichotomy between the S&P 500 (left chart) and the economy (right chart) is due to the increased prominence of large cap Tech and the positive effect of low real bond yields which magnify the valuation for those long duration stocks





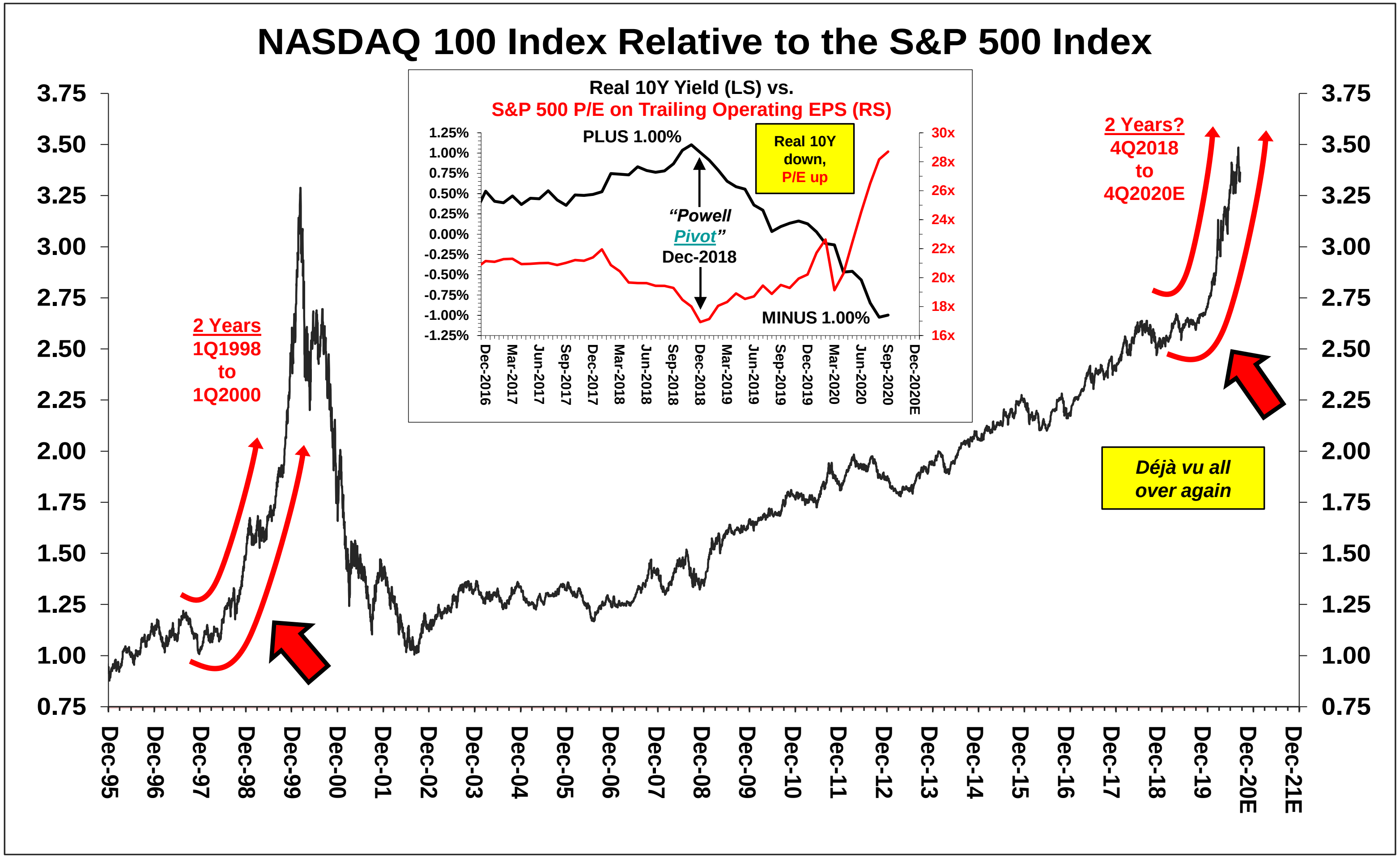
Source: Bloomberg data, NBER business cycle dates, Stifel estimates.

(1) U.S. 2H20-21E real GDP forecasts QoQ% (SAAR): 3Q 24.8%, 4Q 5%, 1Q21 4%, 2Q 4%, 3Q 3.3%, 4Q 3.2%.

Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

Liquidity and the "Powell Pivot" in Dec-2018 have created a P/E boom (nascent bubble?) for long duration Tech stocks

Price and fundamentals are separate issues, so despite tech fundamentals perceived now as stronger than the late-1990s bubble, the price pattern is exactly the same: an "ascending curve," with all the attendant risk and reward



Source: Bloomberg prices, Stifel estimates.

Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

Lesson for today? The 5 "high tech" stocks in the 1972 Nifty Fifty[(1)] saw superior EPS *offset* by P/E compression 1973-82

Over-paying for growth with a Fed & Treasury determined to reflate the next decade was not a good combination then (or now?)

"Nifty Fifty" Dec-31, 1972 - The Decade after, note the Technology-related stocks had P/E compression that offset their above-market EPS growth

		31-Dec-1972				31-Dec-1982				10-Yr Annualized Change				
Rank	Company Name	Share Price	12M Dividend	72FY EPS	TTM P/E	Share Price	12M Dividend	82FY EPS	TTM P/E	Price	Dividend	Total Return	EPS	P/E
1	Phillip Morris	$1.23	$0.01	$0.05	25.1x	$2.50	$0.10	$0.26	9.5x	7.3%	4.0%	11.3%	18.3%	-9.3%
2	Pfizer	$0.89	$0.00	$0.03	28.4x	$1.43	$0.04	$0.09	15.9x	4.9%	2.8%	7.7%	11.1%	-5.6%
3	Bristol Myers	$2.16	$0.02	$0.08	26.3x	$4.20	$0.15	$0.34	12.4x	6.9%	3.6%	10.5%	15.3%	-7.3%
4	Gillete	$2.00	$0.05	$0.08	25.6x	$1.41	$0.07	$0.15	9.4x	-3.4%	5.1%	1.7%	6.8%	-9.5%
5	Coca-Cola	$1.55	$0.04	$0.07	23.5x	$1.08	$0.11	$0.18	6.2x	-3.5%	10.2%	6.6%	10.2%	-12.5%
6	Merck	$2.48	$0.03	$0.06	44.3x	$2.35	$0.08	$0.16	14.7x	-0.5%	3.2%	2.7%	11.1%	-10.4%
7	Heublein [*Merged 10-82*]	$58.00	$0.87	$1.87	31.0x	$60.50	$1.96	$4.53	13.4x	0.4%	3.2%	3.7%	9.3%	-8.1%
8	General Electric	$1.52	$0.02	$0.06	25.3x	$1.98	$0.07	$0.17	11.6x	2.7%	3.5%	6.2%	11.0%	-7.5%
9	Schering Corp.	$2.14	$0.02	$0.05	47.6x	$1.23	$0.05	$0.13	9.8x	-5.4%	4.2%	-1.2%	10.8%	-14.6%
10	Squibb	$2.16	$0.02	$0.08	26.3x	$4.20	$0.15	$0.34	12.4x	6.9%	3.6%	10.5%	15.3%	-7.3%
11	Pepsico	$1.16	$0.02	$0.06	20.2x	$1.99	$0.09	$0.19	10.8x	5.5%	4.5%	10.1%	12.4%	-6.1%
12	Eli Lilly	$4.98	$0.02	$0.12	40.5x	$3.59	$0.18	$0.35	10.3x	-3.2%	4.9%	1.7%	11.0%	-12.8%
13	American Home Products	$5.08	$0.07	$0.15	33.0x	$5.59	$0.28	$0.45	12.4x	1.0%	4.9%	5.9%	11.3%	-9.3%
14	Procter and Gamble	$3.48	$0.10	$0.23	15.5x	$3.70	$0.15	$0.33	11.2x	0.6%	4.1%	4.7%	3.9%	-3.2%
15	Revlon	$72.00	$1.00	$2.88	25.0x	$29.31	$1.84	$2.41	12.2x	-8.6%	6.3%	-2.3%	-1.8%	-7.0%
16	Johnson & Johnson	$2.72	$0.04	$0.05	60.4x	$3.10	$0.07	$0.17	18.2x	1.3%	2.1%	3.4%	14.2%	-11.3%
17	Anheuser-Busch	$2.30	$0.02	$0.07	31.5x	$2.69	$0.06	$0.24	11.4x	1.6%	2.2%	3.8%	12.4%	-9.6%
18	Chesebrough Ponds Inc	$43.88	$1.08	$2.20	19.9x	$45.00	$1.72	$3.56	12.6x	0.3%	3.8%	4.1%	4.9%	-4.5%
19	McDonalds Corp	$1.88	$0.00	$0.02	78.3x	$2.24	$0.03	$0.19	11.8x	1.8%	1.4%	3.2%	23.0%	-17.3%
20	First National City Corp	$1.38	$0.09	$0.15	9.2x	$1.35	$0.13	$0.04	34.6x	-0.2%	9.7%	9.5%	-12.6%	14.2%
21	Disney	$2.20	$0.00	$0.03	81.5x	$1.32	$0.03	$0.06	22.0x	-5.0%	1.9%	-3.1%	8.3%	-12.3%
22	American Express	$5.41	$0.04	$0.16	34.7x	$5.35	$0.19	$0.50	10.7x	-0.1%	3.5%	3.4%	12.4%	-11.1%
23	Dow Chemical	$5.54	$0.10	$0.23	24.1x	$5.60	$0.40	$0.40	14.0x	0.1%	7.1%	7.2%	5.7%	-5.3%
24	Amer. Hospital Supply Corp	$33.67	$0.18	$0.70	48.1x	$42.00	$0.77	$2.70	15.6x	2.2%	1.8%	4.1%	14.5%	-10.7%
25	Schlumberger	$2.98	$0.03	$0.14	21.3x	$11.66	$0.51	$1.17	10.0x	14.6%	4.4%	19.0%	23.7%	-7.3%
26	UpJohn	$10.75	$0.14	$0.27	39.8x	$8.50	$0.37	$0.73	11.6x	-2.3%	4.4%	2.0%	10.5%	-11.6%
27	AMP Inc.	$12.87	$0.08	$0.30	42.9x	$24.86	$0.48	$1.13	22.1x	6.8%	1.9%	8.7%	14.1%	-6.4%
28	Texas Instruments	$1.89	$0.00	$0.05	42.0x	$2.80	$0.02	$0.14	20.4x	4.0%	0.7%	4.7%	11.8%	-7.0%
29	3M	$10.70	$0.13	$0.27	39.0x	$9.38	$0.40	$0.70	13.4x	-1.3%	4.3%	3.0%	9.8%	-10.1%
30	Baxter Labs	$6.97	$0.02	$0.10	71.4x	$12.09	$0.13	$0.67	18.1x	5.7%	1.0%	6.7%	21.2%	-12.8%
31	Int'l Tel. and T'grapg Corp.	$60.25	$1.33	$3.91	15.4x	$31.25	$2.83	$4.60	6.8x	-6.4%	9.1%	2.7%	1.6%	-7.9%
32	JC Penney	$22.59	$0.28	$0.72	31.5x	$12.09	$0.50	$1.48	8.2x	-6.1%	4.1%	-1.9%	7.5%	-12.6%
33	IBM	$20.10	$0.27	$0.57	35.5x	$24.06	$0.86	$1.85	13.0x	1.8%	3.6%	5.4%	12.6%	-9.6%
34	Schiltz Joe Brewing Corp [*Merged 6-82*]	$58.38	$0.55	$1.58	36.9x	$16.88	$0.08	($0.71)	-23.8x	-11.7%	0.4%	-11.2%	-104.5%	-106.4%
35	Xerox	$25.58	$0.16	$0.53	48.0x	$6.41	$0.50	$0.72	8.9x	-12.9%	7.8%	-5.1%	3.1%	-15.5%
36	Hallburton	$5.84	$0.09	$0.32	18.4x	$8.84	$0.80	$2.17	4.1x	4.2%	9.0%	13.3%	21.2%	-14.0%
37	Lubrizol	$11.25	$0.11	$0.33	34.6x	$9.38	$0.53	$0.63	14.9x	-1.8%	5.7%	3.8%	6.8%	-8.1%
38	Eastman Kodak	$65.25	$0.48	$1.50	43.5x	$40.00	$1.42	$3.20	12.5x	-4.8%	3.6%	-1.2%	7.9%	-11.7%
39	Simplicity Patterns	$53.00	$0.30	$1.06	50.0x	$10.08	$0.56	$0.54	18.7x	-15.3%	5.6%	-9.7%	-6.5%	-9.4%
40	Digital Equipment Corp	$15.29	$0.00	$0.27	56.2x	$49.75	$0.00	$3.15	15.8x	12.5%	0.0%	12.5%	27.8%	-11.9%
41	Avon Products	$17.09	$0.17	$0.28	61.2x	$3.34	$0.25	$0.35	9.5x	-15.1%	7.5%	-7.6%	2.3%	-17.0%
42	Louisiana Land & Expo	$43.25	$1.00	$1.74	24.9x	$21.13	$1.60	$0.33	64.0x	-6.9%	7.6%	0.7%	-15.3%	9.9%
43	Black and Decker	$36.00	$0.34	$0.72	50.0x	$18.13	$0.53	$0.38	47.7x	-6.6%	2.9%	-3.7%	-6.2%	-0.5%
44	KMART	$16.83	$0.06	$0.34	49.5x	$8.75	$0.35	$0.70	12.5x	-6.3%	4.0%	-2.3%	7.5%	-12.9%
45	Burroughs	$724.17	$1.10	$15.74	46.0x	$139.17	$8.62	$18.10	7.7x	-15.2%	6.2%	-9.0%	1.4%	-16.4%
46	Poloroid	$61.62	$0.16	$0.65	94.8x	$13.30	$0.50	$0.35	38.0x	-14.2%	3.8%	-10.5%	-6.0%	-8.7%
47	Emery Air Freight	$59.17	$0.52	$1.07	55.3x	$9.59	$0.83	$0.65	14.8x	-16.6%	8.6%	-8.0%	-4.9%	-12.4%
48	MGIC Investment Corp. [*Merged 3-82*]	$92.00	$0.10	$1.34	68.5x	$52.00	$0.13	$4.21	12.3x	-5.5%	0.2%	-5.3%	12.1%	-15.8%
49	Sears Roebuck	$58.00	$0.70	$1.99	29.2x	$30.13	$1.35	$2.50	12.1x	-6.3%	4.5%	-1.9%	2.3%	-8.5%
50	International Flavors	$14.48	$0.07	$0.21	69.1x	$9.21	$0.35	$0.57	16.2x	-4.4%	3.8%	-0.6%	10.5%	-13.5%
	Median				**36.2x**	Nifty 50 P/E collapse offset their			**12.4x**	**-0.9%**	**4.0%**	**3.1%**	**10.2%**	**-9.6%**
	S&P 500				**16.4x**	superior median EPS growth			**9.9x**	**1.7%**	**5.0%**	**6.7%**	**7.0%**	**-4.9%**

Source: SRC Chart Books (various issues), Standard & Poor's, Bloomberg, Univ. of Alabama Bruno Library historical financial reports database.

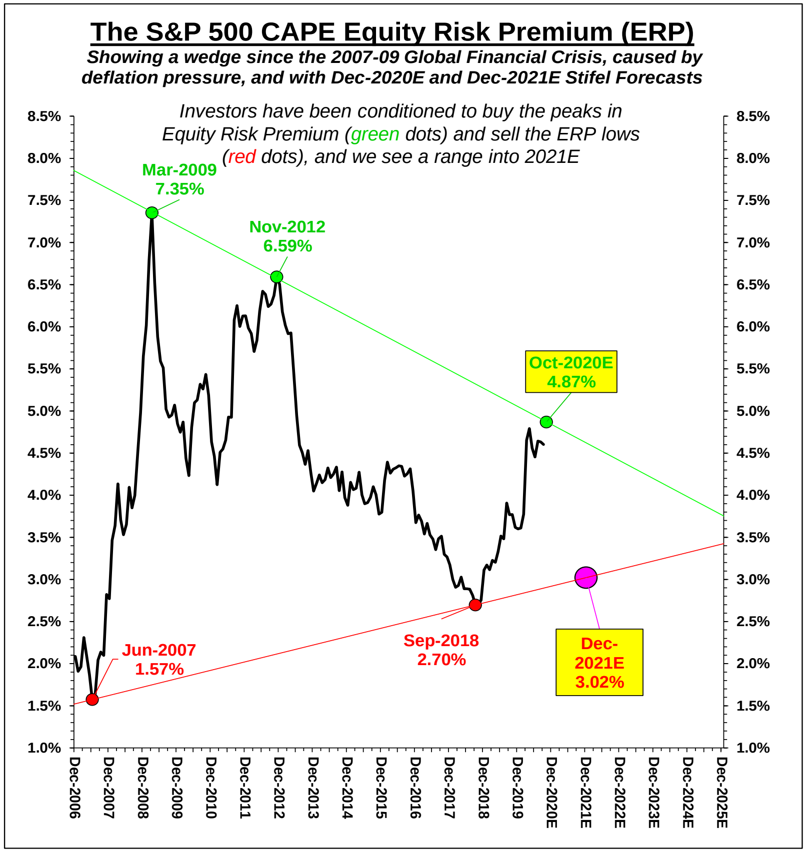
(1) Morgan Guaranty Trust Nifty Fifty list (never a "formal" index).

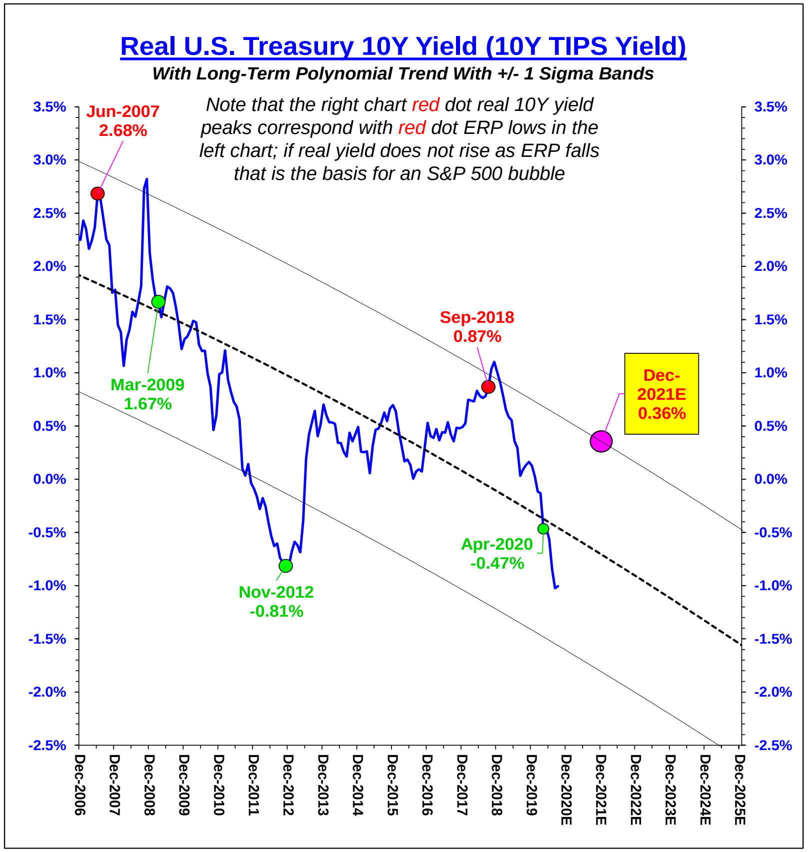
STIFEL

Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

We "get" the Equity Risk Premium bull case, but the S&P 500 is only in the middle of the 2,880 to 3,715 ERP-implied range

If S&P 500 Equity Risk Premium(1) rises to the maximum (bearish) case we would expect in 2020 on a rising real yield shock, that is 2,880(2) for the S&P 500; if ERP falls to the minimum (bullish) case of 3.02% by 2021 (left chart) with a real yield of 0.36% (real yield may rise as GDP improves, a form of taper tantrum) that is 3,715(3); the S&P 500 was 3,310 on 9/11/20, near that mid-point





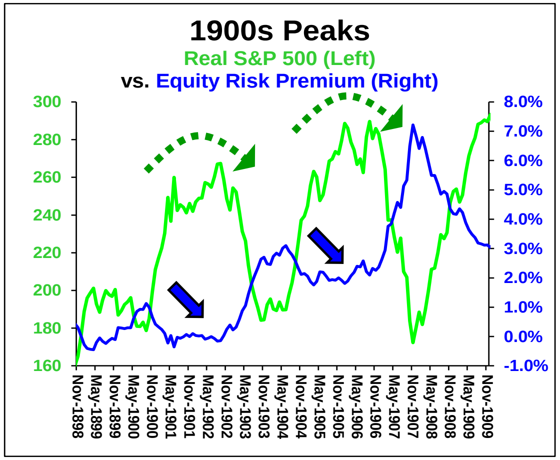
Source: Bloomberg Data, Stifel Estimates.

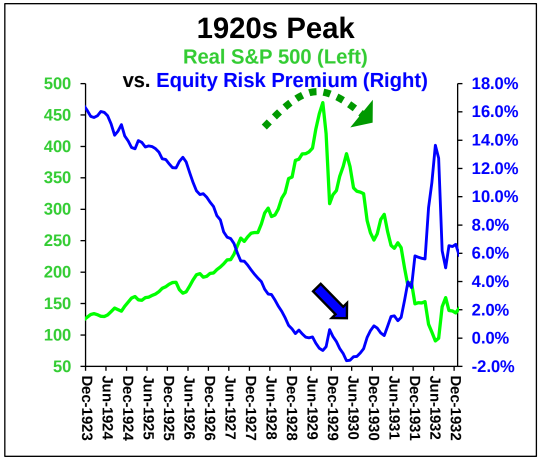
(1) CAPE Equity Risk Premium (ERP) is: [(10 year moving average of inflation-adjusted S&P 500 operating EPS / price each month) - Real 10Y Yield].
(2) We estimate 2020E CAPE EPS of $123, an ERP *high* of 4.87%, a 10Y TIPS yield worst case of -0.60% and CAPE EPS Yield of 4.27%, or a CAPE P/E (1/.0427) x $123 = ~$2,880
(3) We estimate 2021E CAPE EPS of $126, an ERP *low* of 3.02%, a 10Y TIPS yield of +0.36% and CAPE EPS Yield of 3.38%, or a CAPE P/E (1/.0338) x $126 = ~$3,715.

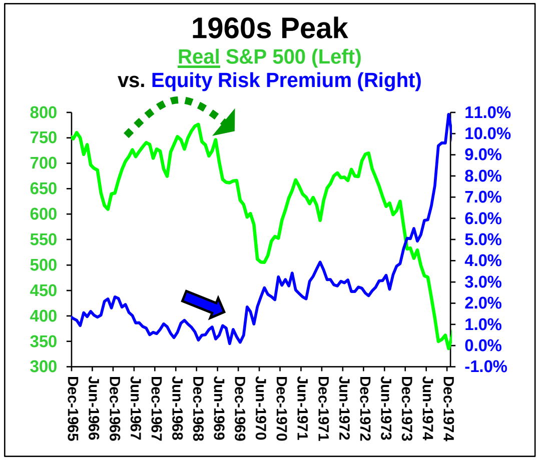
Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

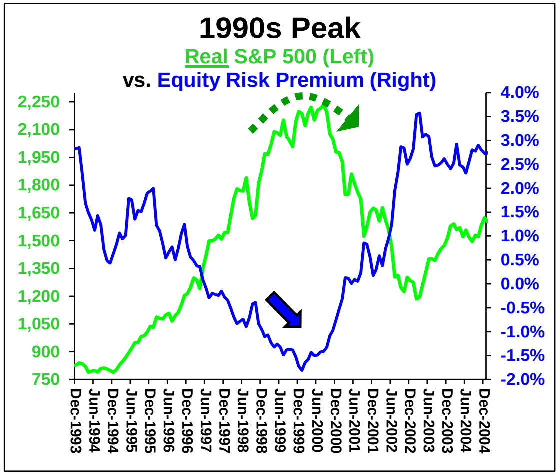
If the Equity Risk Premium does make the final dash for a low, a century of precedent says the S&P 500 tops and plunges

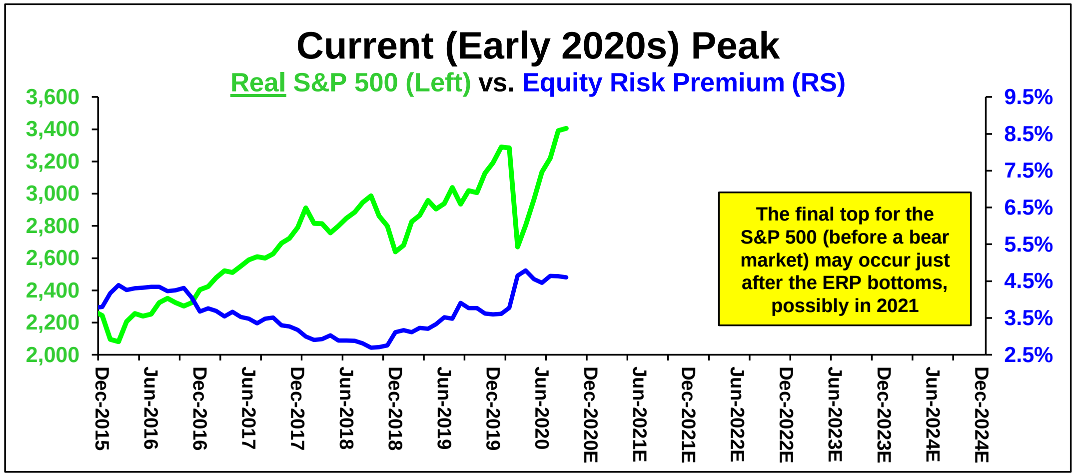
The final top for the S&P 500 may occurs when ERP bottoms, making an ERP-driven market more about speculation than investing











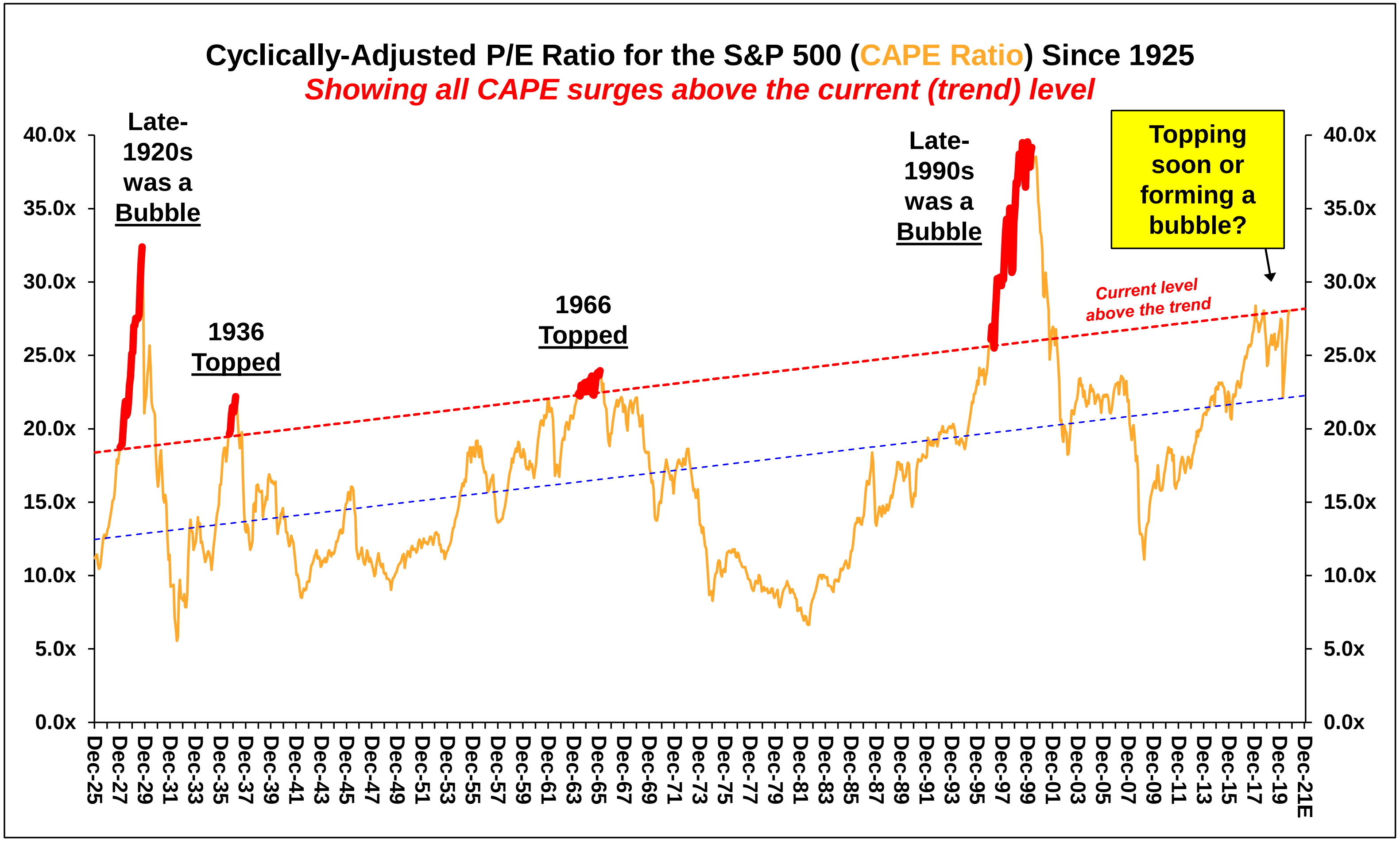
Source: S&P 500 and CPI data Shiller, Warren & Pearson Commodity Index (Trend Starts 1871-1925), equal-weighted (1/3rd ea.) PPI Energy, PPI Farm Products and PPI Metals (Ferrous & Non-Ferrous, excl.-precious) (1926-1956), Refinitiv Equal Weight (CCI) Index (1956-1994), and Refinitiv Core Commodity CRB Index (1994 to present).

STIFEL

Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

The CAPE will tell us *soon* if this is a P/E bubble (like the late-1920s & late-1990s) or a top (like the mid-30s & mid-60s)

If CAPE(1) breaks out (if the red - - - diagonal line, which marks the current level above the blue - - - trend, rises above the mid-1930s and mid-1960s tops and continues to rise), it could signal a late-1920s or late-1990s style bubble



Source: S&P/Shiller/Yale data Stifel estimates.

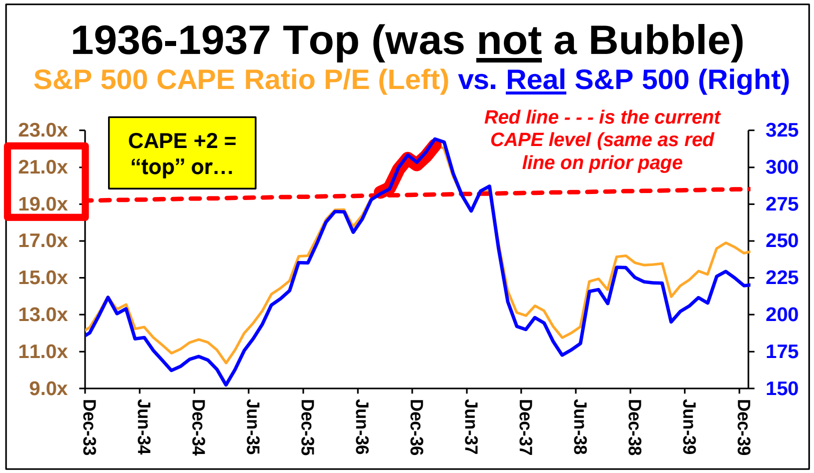
(1) For valuation we show the CAPE P/E, which is the P/E based on the trailing 10-year average of inflation-adjusted EPS; Bloomberg Operating EPS 1989-present and pre-1989 S&P/Shiller/Yale GAAP EPS data are grossed up 11.7% to match the historical GAAP/Operating difference.

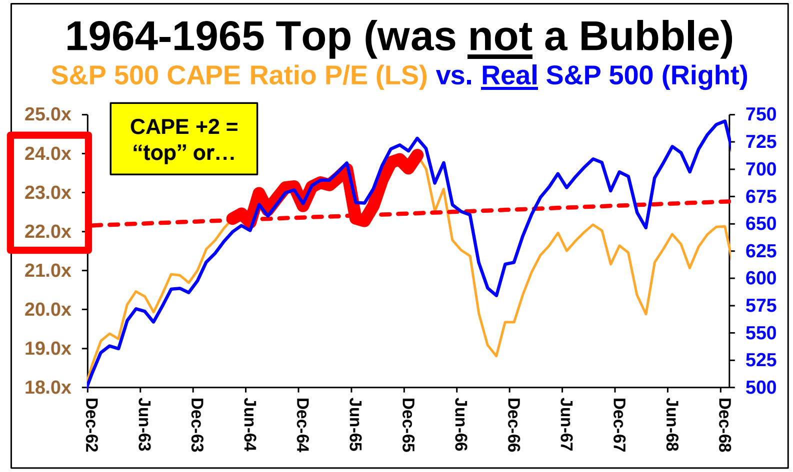
STIFEL

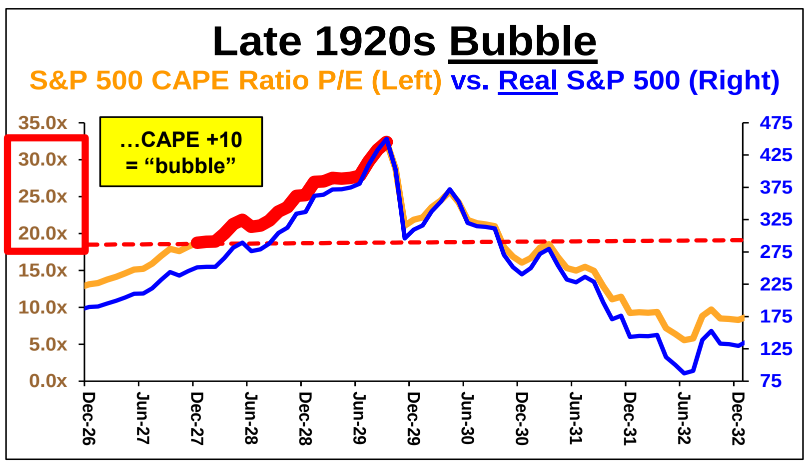
Barry B. Bannister, CFA Stifel Equity Strategy bbbannister@stifel.com

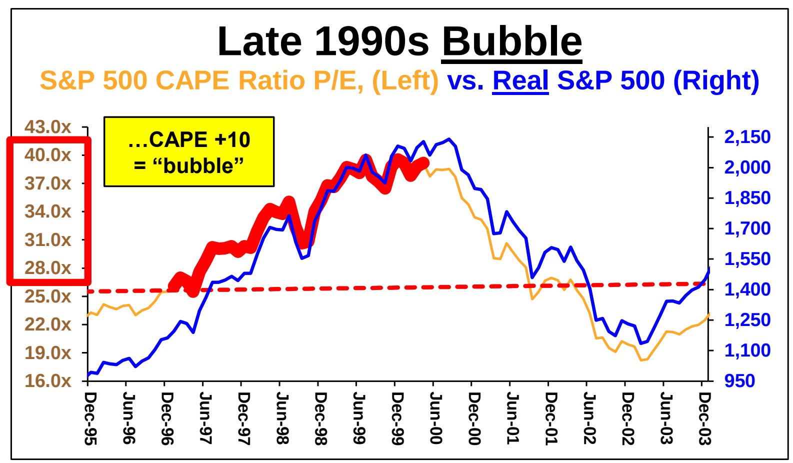
If CAPE rises >2 (above 1930s & 1960s, top row), we would go on bubble watch (like the late-1920s & late-1990s, lower row)

We are not averse to calling a bubble >3,700[(1)] for the S&P 500, we just note that bubbles are pure speculation and very rare









Source: S&P/Shiller/Yale data Stifel estimates. For valuation we show the CAPE P/E, which is the P/E based on the trailing 10-year average of inflation-adjusted EPS; Bloomberg Operating EPS 1989-present and pre-1989 S&P/Shiller/Yale GAAP EPS data are grossed up 11.7% to match the historical GAAP/Operating difference.

(1) We estimate CAPE 2021 EPS of $126E, so more than 2 CAPE multiples would pierce the 1930s & 1960s levels (top row) and be an S&P 500 price meaningfully above 3,700.

Important Disclosures and Certifications

I, Barry B. Bannister, certify that the views expressed in this research report accurately reflect my personal views about the subject securities or issuers; and I, Barry B. Bannister, certify that no part of my compensation was, is, or will be directly or indirectly related to the specific recommendations or views contained in this research report. Our European Policy for Managing Research Conflicts of Interest is available at www.stifel.com/institutional/ImportantDisclosures

The equity research analyst(s) responsible for the preparation of this report receive(s) compensation based on various factors, including Stifel's overall revenue, which includes investment banking revenue.

Our investment rating system is three tiered, defined as follows:

BUY -We expect a total return of greater than 10% over the next 12 months with total return equal to the percentage price change plus dividend yield.

HOLD -We expect a total return between -5% and 10% over the next 12 months with total return equal to the percentage price change plus dividend yield.

SELL -We expect a total return below -5% over the next 12 months with total return equal to the percentage price change plus dividend yield.

Occasionally, we use the ancillary rating of **SUSPENDED** (SU) to indicate a long-term suspension in rating and/or target price, and/or coverage due to applicable regulations or Stifel policies. Alternatively, **SUSPENDED** may indicate the analyst is unable to determine a "reasonable basis" for rating/target price or estimates due to lack of publicly available information or the inability to quantify the publicly available information provided by the company and it is unknown when the outlook will be clarified. **SUSPENDED** may also be used when an analyst has left the firm.

Of the securities we rate, 51% are rated Buy, 34% are rated Hold, 2% are rated Sell and 13% are rated Suspended.

Within the last 12 months, Stifel or an affiliate has provided investment banking services for 20%, 6%, 0% and 7% of the companies whose shares are rated Buy, Hold, Sell and Suspended, respectively.

Within the last 12 months, Stifel or an affiliate has provided material services for 37%, 19%, 38% and 15% of the companies whose shares are rated Buy, Hold, Sell and Suspended, respectively.

Additional Disclosures

Please visit the Research Page at www.stifel.com for the current research disclosures and respective target price methodology applicable to the companies mentioned in this publication that are within Stifel's coverage universe. For a discussion of risks to target price including basis of valuation or methodology please see our stand-alone company reports and notes for all stocks.

The information contained herein has been prepared from sources believed to be reliable but is not guaranteed by us and is not a complete summary or statement of all available data, nor is it considered an offer to buy or sell any securities referred to herein. Opinions expressed are subject to change without notice and do not take into account the particular investment objectives, financial situation or needs of individual investors. Employees of Stifel, or its affiliates may, at times, release written or oral commentary, technical analysis or trading strategies that differ from the opinions expressed within. Stifel or any of its affiliates may have positions in the securities mentioned and may make purchases or sales of such securities from time to time in the open market or otherwise and may sell to or buy from customers such securities on a principal basis; such transactions may be contrary to recommendations in this report. Past performance should not and cannot be viewed as an indicator of future performance.

As a multi-disciplined financial services firm, Stifel regularly seeks investment banking assignments and compensation from issuers for services including, but not limited to, acting as an underwriter in an offering or financial advisor in a merger or acquisition, or serving as a placement agent in private transactions.

Affiliate Disclosures

References to “**Stifel**” (collectively ”**Stifel**”) refer to **SFC** and other associated affiliated subsidiaries including (i) Stifel, Nicolaus & Company, Incorporated (“**SNC**”); (ii) Keefe, Bruyette & Woods, Incorporated (“**KBWI**’’), which are both U.S. broker-dealers registered with the United States Securities and Exchange Commission (“**SEC**”) and members of the Financial Industry National Regulatory Authority (“**FINRA**”), respectively; (iii) Stifel Nicolaus Europe Limited (“**SNEL**”), which is authorised and regulated by the United Kingdom Financial Conduct Authority (“**FCA**”) (FRN 190412) and is a member of the London Stock Exchange and also trades under the name Keefe, Bruyette & Woods Europe (“**KBW Europe**”); (iv) our MainFirst affiliates (collectively “**MAINFIRST**’’): MainFirst Bank AG, which is regulated by the German Federal Financial Services Authority (Bundesanstalt für Finanzdienstleistungsaufsicht; “**BaFin**”), MainFirst Schweiz AG, which is regulated by the Eidgenössische Finanzmarktaufsicht (“**FINMA**”), and MainFirst Securities US Inc. which is a U.S. broker-dealer registered with the SEC and member of FINRA; and (v) Stifel Nicolaus Canada, Incorporated. (“**Stifel Canada**”), which is authorised and regulated by Investment Industry Regulatory Organization of Canada (“**IIROC**”), and also trades under the names “Stifel GMP” and/or “Stifel First Energy”.

Registration of non-US Analysts: Any non-US research analyst employed by SNEL contributing to this report is not registered/qualified as a research analyst with FINRA and is not an associated person of the US broker-dealer and therefore may not be subject to FINRA Rule 2241 restrictions on communications with a subject company, public appearances, and trading securities held by a research analyst account.

Global Research Notes: Stifel Global Research (Cross-Border Research) notes are intended for use only by Institutional or Professional Clients. Research analysts contributing content to these reports are subject to different regulatory requirements based on the jurisdiction in which they operate. Clients seeking additional information should contact the Stifel entity through which they conduct business.

MAINFIRST Sponsored research:

At MAINFIRST, analysts may produce issuer paid research ('sponsored research'). This research is produced by analysts in accordance with local regulatory requirements relating to such research. In certain jurisdictions, this issuer paid research may be deemed to be independent research albeit not produced to the same conflicts of interest standards required by all jurisdictions for independent research. Where research has been paid for by an issuer, this will be clearly labelled. Please see our European Policy for Managing Research Conflicts of Interest for additional information.

Country Specific and Jurisdictional Disclosures

United States: Research produced and distributed by SNEL is distributed by SNEL to "Major US Institutional Investors" as defined in Rule 15a-6 under the US Securities Exchange Act of 1934, as amended. SNC may also distribute research prepared by SNEL directly to US clients, including US clients that are not Major US Institutional Investors. In these instances, SNC accepts responsibility for the content. SNEL is a non-US broker-dealer and accordingly, any transaction by a US client in the securities discussed in the document must be effected by SNC. US clients wishing to place an order should contact their SNC representative.

UK and European Economic Area (EEA): This report is distributed in the EEA by SNEL, which is authorized and regulated in the United Kingdom by the FCA. In these instances, SNEL accepts responsibility for the content. Research produced by SNEL is not intended for use by and should not be made available to non-professional clients.

The complete preceding 12-month recommendations history related to recommendation(s) in this research report is available at https://stifel2.bluematrix.com/sellside/MAR.action

Brunei: This document has not been delivered to, registered with or approved by the Brunei Darussalam Registrar of Companies, Registrar of International Business Companies, the Brunei Darussalam Ministry of Finance or the Autoriti Monetari Brunei Darussalam. This document and the information contained within will not be registered with any relevant Brunei Authorities under the relevant securities laws of Brunei Darussalam. The interests in the document have not been and will not be offered, transferred, delivered or sold in or from any part of Brunei Darussalam. This document and the information contained within is strictly private and confidential and is being distributed to a limited number of accredited investors, expert investors and institutional investors under the Securities Markets Order, 2013 ("Relevant Persons") upon their request and confirmation that they fully understand that neither the document nor the information contained within have been approved or licensed by or registered with the Brunei Darussalam Registrar of Companies, Registrar of International Business Companies, the Brunei Darussalam Ministry of Finance, the Autoriti Monetari Brunei Darussalam or any other relevant governmental agencies within Brunei Darussalam. This document and the information contained within must not be acted on or relied on by persons who are not Relevant Persons. Any investment or investment activity to which the document or information contained within is only available to, and will be engaged in only with Relevant Persons.

Canadian Distribution: Research produced by SNEL is distributed in Canada by SNC in reliance on the international dealer exemption. This material is intended for use only by professional or institutional investors. None of the investments or investment services mentioned or described herein is available to other persons or to anyone in Canada who is not a "permitted client" as defined under applicable Canadian securities law.

Republic of South Africa: Research produced by SNEL is distributed by SNEL to "Clients" as defined in FSCA FAIS Notice 20 of 2018 (the "FAIS Notice") issued by the Financial Services Conduct Authority. Research distributed by SNEL is pursuant to an exemption from the licensing requirements under Section 7(1) of the Financial Advisory and Intermediary Services Act, 2002.

In jurisdictions where Stifel is not already licensed or registered to trade securities, transactions will only be affected in accordance with local securities legislation which will vary from jurisdiction to jurisdiction and may require that a transaction is carried out in accordance with applicable exemptions from registration and licensing requirements. Non-US customers wishing to effect transactions should contact a representative of the Stifel entity in their regional jurisdiction except where governing law permits otherwise. US customers wishing to effect transactions should contact their US salesperson.

The recommendation contained in this report was produced at 15 September 2020 19:35EDT and disseminated at 15 September 2020 19:35EDT.

Additional Information Is Available Upon Request