2024 CRESTMONT RESEARCH STOCK MARKET MATRIX

TAX-EXEMPT INVESTOR REAL RETURNS

Real Returns (inflation adjusted), including dividends (reinvested), transaction costs, and taxes deferred

COMPONENTS	
Index	Included
Dividends	Included (Reinvested)
Transaction Costs	Included
Taxes	Not Included (Deferred)
Inflation	Real (Inflation Adjusted)

2024 MATRIX: AVERAGE ANNUAL DATA

NOTES:
1) Numbers reflect the percentage annual rate of return from the starting period to the ending period
2) Returns include index returns, dividends, and transaction costs/fees (bid/ask spread, commissions, fees, etc.) & exclude taxes; real returns are adjusted for inflation (see assumptions)
3) Red: <0%; Pink: 0% - 3%; Blue: 3% - 7%; Light Green: 7% - 10%; Dark Green: >10%
4) Black type reflects P/E ratio increasing over the period; White type reflects P/E ratio decreasing over the period
5) The black diagonal line reflects the boundary of 20-year periods
6) S&P 500 & P/E reflect the methodology popularized by Robert Shiller with average daily index annually and other related data (P/E10)
7) Other data and information developed from various sources and believed to be reliable

LEGEND			
Red		<	0.0%
Pink	0.0%	-	3.0%
Blue	3.0%	-	7.0%
Light Green	7.0%	-	10.0%
Dark Green		>	10.0%

White Numbers: Decreasing P/E Ratio

CRESTMONT RESEARCH

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TO / FROM

P/E	1899=1	Yr: 19
18.6	1	1900
22.7	1	1901
22.0	1	1902
17.6	1	1903
16.3	1	1904
19.3	1	1905
18.7	2	1906
13.4	1	1907
13.1	1	1908
14.9	2	1909
13.5	1	1910
14.2	2	1911
13.7	2	1912
11.9	1	1913
11.1	1	1914
11.5	1	1915
12.0	2	1916
8.8	1	1917
6.4	1	1918
6.5	1	1919
5.3	1	1920
5.4	1	1921
7.5	1	1922
7.9	1	1923
8.4	1	1924
10.1	2	1925
11.7	2	1926
15.9	3	1927
21.8	3	1928
27.6	5	1929
21.5	4	1930
14.7	3	1931
8.1	2	1932
11.1	2	1933
12.2	3	1934
13.1	3	1935
19.3	4	1936
18.5	4	1937
13.9	3	1938
15.6	3	1939
14.7	3	1940
12.2	3	1941
9.2	2	1942
11.0	3	1943
11.3	3	1944
13.3	4	1945
14.0	4	1946
11.2	4	1947
10.7	4	1948
9.9	4	1949
11.2	5	1950
12.0	5	1951
12.5	6	1952
12.0	6	1953
13.7	8	1954
17.5	11	1955
18.3	13	1956
15.6	12	1957
15.1	12	1958
18.4	15	1959
17.4	15	1960
20.5	17	1961
18.8	16	1962
20.3	18	1963
22.6	21	1964
23.3	23	1965
21.3	22	1966
21.6	23	1967
21.5	24	1968
19.4	23	1969
15.2	19	1970
16.9	21	1971
17.8	23	1972
16.1	22	1973
10.9	15	1974
10.2	15	1975
11.5	17	1976
10.4	16	1977
9.4	15	1978
8.9	15	1979
8.8	16	1980
8.5	16	1981
7.3	15	1982
9.6	20	1983
9.4	20	1984
10.7	23	1985
13.4	29	1986
16.0	34	1987
14.4	31	1988
16.6	37	1989
16.5	37	1990
17.9	40	1991
19.6	44	1992
20.7	47	1993
20.5	47	1994
22.7	55	1995
25.9	66	1996
31.0	84	1997
36.0	103	1998
42.1	123	1999
41.7	128	2000
32.1	105	2001
25.9	86	2002
24.1	82	2003
26.4	95	2004
26.0	99	2005
26.0	105	2006
26.8	116	2007
20.8	93	2008
16.9	74	2009
20.7	88	2010
21.8	96	2011
21.4	103	2012
23.2	123	2013
25.5	144	2014
26.2	155	2015
26.1	157	2016
29.9	181	2017
31.5	201	2018
29.4	212	2019
29.8	234	2020
36.8	300	2021
31.0	269	2022
29.5	273	2023

	Yr: 19
S&P 500 Index Value	6
S&P 500 Div Yield (%)	4
CPI (Inflation %)	7
GDP (Nominal %)	4
GDP (Annualized %)	+5.3%
GDP (Real %)	2
GDP (Annualized %)	+3.9%

P/E Ratio
1899 = 1
←"TO" Year

FROM	Rodin Completes 'The Thinker'
1901	First Electric Typewriter
1902	Navy Installs Radio
1903	Wright Bros Fly
1904	Crayola & Jell-O
1905	Pen Gets Pocket Clip
1906	S.F. Earthquake
1907	Photocopier Marketed
1908	Model T Introduced
1909	Chlorine In Drinking Water
1910	Electric Range Invented
1911	Sherman Anti-Trust Act; Airmail Begins
1912	Titanic Sinks; U.S. Radio Act
1913	Income Tax & Federal Reserve
1914	WWI Starts; First Transcon. Phone Call
1915	Americans Avg 40 Phone Calls A Year
1916	Keds & Electric Clock Invented
1917	US Enters WWI; Einstein Theorizes Lasers
1918	WWI Ends
1919	Prohibition; Shortwave Radio; Dial Phones
1920	Women's Right To Vote
1921	World Series On Radio; Quartz Crystals
1922	100,000 Radios Made In U.S.; 3 Frequencies
1923	500,000 Radios Made; Neon Signs
1924	2.5 Million Radios Made; Frozen Food Invented
1925	Commercial Picture Fax By Radio In U.S.
1926	First Publicly Shown 'Talkie'
1927	2-Way Radio Phone: U.S. To London ($15/min)
1928	Teletype Machine; Test TV In 3 Homes
1929	Crash of '29; Car Radio
1930	Photo Flash Bulbs
1931	Radios In 40% Of Homes; Scotch Tape
1932	Radar; 8 mm Cameras; Electric Eye Scanner
1933	End of Prohibition; FM Radio; Wallboard
1934	Radios In 50% Of Homes; AP Wirephoto
1935	Social Security Act Passed
1936	BBC First TV Service, 3 Hours A Day
1937	Hindenburg Airship Crash
1938	National Minimum Wage Enacted
1939	WWII Begins; Regular TV In U.S.; Helicopter
1940	FM Radio; Radar; 1st Social Security Check
1941	Pearl Harbor Attack; 2-Way Police Radio
1942	U.S. Office Of Censorship Due To War
1943	Phone Line Repeaters Help Service
1944	D-Day, Normandy
1945	World War II Ends; FCC Sets VHF Channels
1946	ENIAC, 1st Computer; First Copy Machine Sold
1947	Transistor Invented; Microwave Oven
1948	Israel Established; RCA High Speed Fax
1949	NATO Established; Network TV In U.S.
1950	Korean War Begins; Credit Card Created
1951	Color TV; Modern Plastic Invented
1952	Phone Area Codes; EDVAC Computer
1953	Korean War Ends; Magnetic Core Memory
1954	TVs In 54% Of Homes; Transistor Radios
1955	Tests Begin On Digital Fiber Optics
1956	Transatlantic Phone Cable; The Pager
1957	Sputnik, First Satellite; EEC Formed
1958	Stereo LP Records; Data On Phone Lines
1959	COBOL; Microchip; Plain Paper Xerox
1960	90% Homes w/TVs; Laser; Weather Satellite
1961	Berlin Wall Built; IBM Selectric Typewriter
1962	Cuban Missile Crisis; Mariner II At Venus
1963	Kennedy Killed, Income Tax 91% To 70%
1964	Vietnam Begins; Home VCR
1965	First Minicomputer; Car Phones; Hypertext
1966	Dow @ 1,000; 8-Tracks In Cars; Fax Machine
1967	Floppy Disk; Cordless Phones; Dolby
1968	Intelsat Global Satellite Link; Intel 1KB RAM
1969	Neil Armstrong Walks On Moon; ATMs
1970	Barcodes; First Internet Connections
1971	Microchip, Price Controls; Answering Machine
1972	Dow Closes Above 1,000; Pong; HBO
1973	U.S. Leaves Vietnam; International Internet
1974	Nixon Resigns; Wage & Price Controls End
1975	Microsoft; Optical Videodisk Demo
1976	Apple I; Cray-1; Home Satellite Dish
1977	Elvis Dies; TRS-80 PC; Fiber Optic Call
1978	Modems; Cell Phone Tests; Intel 16-bit Chip
1979	CompuServe Online; VisiCalc Spreadsheet
1980	CPI 13.5%; CNN; Sony Camcorder
1981	IBM PC Introduced; 300 bps Modems
1982	Dow Over 1,000; Compact Disk; 5.5 Mil. PCs
1983	AT&T Breakup; 288k Chips; Domain Names
1984	3 1/2" Floppy; Intel 32-bit; 1 MB Chips
1985	Cellphones; 2400k Modems; Windows OS
1986	Laser Printers; TV On 7 Hrs/Day In U.S.
1987	Stock Market Crash; 50% Have Cable TV
1988	Transatlantic Fiberoptic Cable; Internet T1
1989	Poland Solidarity; Nintendo Profits @ $1 Bil.
1990	World Wide Web (www)
1991	Gulf War; USSR Breakup; 75% Have VCRs
1992	65 Mil. PCs; 200k On AOL; CDs > Cassettes
1993	Pentium Chip; HTML; V-Chip
1994	First WTC Attack; Satellite TV; 33% w/PC
1995	NAFTA Enacted; Dot.com; Internet Audio
1996	100k Web Sites; 30 Mil In U.S. On Internet
1997	Internet Video; 43% In U.S. Have PCs
1998	Russia Debt Default; 75 Mil U.S. On Internet
1999	Satellite Can See 3' Objects On Earth
2000	Dow Hits 11,723; NASDAQ Hits 5,048
2001	WTC Attack (9/11); >50% U.S. On Internet; iPod
2002	HDTV Grows; Wi-Fi Laptops; DVD Sales>VCR
2003	Iraq Conflict; Home Networks; T-Bills @ <1%
2004	Hybrid Cars; Flat Panel TVs; Blogs; VoIP
2005	Hurricanes; $70 Oil; Podcasts; Housing Boom
2006	YouTube; Dow High; Pluto Demoted; Fed Pause
2007	iPhone; Sub-Prime; Going Green; Facebook
2008	Recession; Wall Street Crisis; $144 Oil; Obama
2009	H1N1; Jackson Dies; GM Bankruptcy; Digital TV
2010	iPad; Greece Debt Crisis; Twitter; QE2
2011	The Cloud; Arab Spring; OWS; E-books
2012	Google Glass; Mars Rover; iPhone5; Fiscal Cliff
2013	Fed Taper; Detroit Ch 9; NSA; ACA Launch; Nest
2014	Ebola; ISIS; Amazon Drones; Wearable Tech
2015	ZIRP Ends; Iran Deal; Refugees; Driverless Car
2016	Brexit; Trump; <$30 Oil; Cyborg Stingray
2017	Bitcoin Mania; Robot Citizen; Teleporting; WattUp
2018	Apple $1T; Tax Reform; Zero Carbon Nat Gas; 5G
2019	UPS Drones; Quantum Supremacy; Starlink L1
2020	Covid; Zoom; ZIRP II; mRNA Vaccine; Dow 30k
2021	Inflation; Bitcoin ETFs; Metaverse; Kirk To Space
2022	ChatGPT; Pig Heart; Genome 100%; World 8B
2023	Everything AI; WHO Covid End; India Moon/#1 Pop
Yr: 19	Dow 40k; Bitcoin $100k;Telepathy Brain; Mechazilla
4.0%	Avg (S&P 500 Div Yield %)
3.2%	Avg (CPI Inflation %)
+6.1%	Avg (GDP Nominal %)
+3.2%	Avg (GDP Real %)