2020
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)

2020 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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FROM	P/E (1899=1)	Yr: 19	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
		TO	19	23	22	18	16	19	19	13	13	15	14	14	12	11	11	12	9	6	7	5
			1	1	1	1	1	1	2	1	1	2	1	2	2	1	1	1	2	1	1	1
18.6	1	1900		32	16	6	4	9	8	4	4	5	4	5	5	3	3	3	3	2	1	1
22.7	1	1901			3	-6	-4	3	4	0	0	3	2	3	2	1	1	1	2	0	-1	-1
22.0	1	1902				-13	-7	4	4	-1	0	3	2	3	2	1	1	1	2	0	-1	-1
17.6	1	1903					0	13	11	2	3	5	4	5	4	3	2	2	3	1	0	0
16.3	1	1904						28	17	3	4	6	5	5	5	3	2	3	3	1	-1	0
19.3	1	1905							6	-8	-3	2	0	2	2	0	0	0	1	-1	-2	-2
18.7	2	1906								-20	-8	0	-1	1	1	-1	-1	0	1	-1	-3	-3
13.4	1	1907									6	12	6	7	6	3	2	2	3	1	-1	-1
13.1	1	1908										18	7	8	6	2	1	2	3	0	-2	-1
14.9	2	1909											-4	3	2	-1	-2	-1	1	-2	-4	-3
13.5	1	1910												10	5	0	-2	0	2	-2	-4	-3
14.2	2	1911													0	-5	-5	-2	0	-3	-6	-5
13.7	2	1912														-10	-7	-3	0	-4	-7	-5
11.9	1	1913															-5	1	4	-3	-6	-5
11.1	1	1914																7	8	-2	-7	-5
11.5	1	1915																	10	-6	-11	-7
12.0	2	1916																		-19	-20	-12
8.8	1	1917																			-21	-8
6.4	1	1918																				6
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																				
		Yr: 19	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
S&P 500 Index Value			6	8	8	7	7	9	10	8	8	10	9	9	10	9	8	8	9	8	8	9
S&P 500 Div Yield (%)			4	4	4	5	5	4	4	5	5	4	5	5	5	6	6	5	5	7	8	6
CPI (Inflation %)			7	-2	6	1	0	1	3	6	-4	8	4	-8	7	3	1	1	8	17	18	15
GDP (Nominal %)			4	13	3	6	5	9	8	3	-7	12	5	3	8	5	-6	6	27	20	26	11
GDP (Annualized %)			[----				+5.3%					----]	[----				+10.0%					----]
GDP (Real %)			2	12	2	3	4	9	4	-2	-5	12	0	3	6	4	-8	4	16	0	8	-3
GDP (Annualized %)			[----				+3.9%					----]	[----				+2.9%					----]

FROM	P/E (1899=1)	Yr: 19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
		TO	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
			1	1	1	1	1	2	2	3	3	5	4	3	2	2	3	3	4	4	3	3
18.6	1	1900	0	0	1	1	2	2	3	4	5	6	5	4	2	3	3	3	4	4	3	3
22.7	1	1901	-2	-2	0	0	0	1	2	3	4	5	4	3	1	2	2	2	3	3	3	3
22.0	1	1902	-2	-2	0	0	0	1	2	3	4	5	4	3	1	2	2	2	4	3	3	3
17.6	1	1903	-1	-1	0	1	1	2	3	4	5	6	5	3	1	3	3	3	4	4	3	3
16.3	1	1904	-1	-1	1	1	1	2	3	4	5	6	5	4	2	3	3	3	4	4	3	3
19.3	1	1905	-3	-3	-1	-1	0	1	2	3	4	5	4	3	1	2	2	2	3	3	2	3
18.7	2	1906	-4	-3	-1	-1	0	1	2	3	4	5	4	3	0	2	2	2	3	3	2	3
13.4	1	1907	-2	-2	0	0	1	2	3	4	5	6	5	4	1	3	3	3	4	4	3	3
13.1	1	1908	-3	-3	0	0	0	2	2	4	5	6	5	4	1	2	3	3	4	4	3	3
14.9	2	1909	-5	-4	-2	-1	-1	1	2	3	4	6	5	3	0	2	2	2	4	4	3	3
13.5	1	1910	-5	-4	-1	-1	0	1	2	3	5	6	5	3	1	2	2	3	4	4	3	3
14.2	2	1911	-6	-6	-3	-2	-1	1	1	3	5	6	5	3	0	2	2	2	4	4	3	3
13.7	2	1912	-7	-6	-3	-2	-1	1	2	3	5	6	5	3	0	2	2	2	4	4	3	3
11.9	1	1913	-7	-6	-2	-1	0	2	3	4	6	7	6	4	1	3	3	3	5	4	3	3
11.1	1	1914	-7	-6	-1	-1	0	2	3	5	7	8	7	4	1	3	3	3	5	5	4	4
11.5	1	1915	-9	-8	-3	-2	-1	2	3	5	7	8	7	4	1	3	3	3	5	5	3	4
12.0	2	1916	-14	-11	-5	-3	-2	1	2	4	7	8	6	4	0	2	3	3	5	5	3	3
8.8	1	1917	-12	-9	-1	0	1	4	5	7	9	11	9	6	2	4	4	4	6	6	4	5
6.4	1	1918	-7	-5	4	4	5	8	9	11	13	14	12	8	4	6	6	6	8	8	6	6
6.5	1	1919	-18	-9	4	4	5	8	9	11	14	15	12	8	3	6	6	6	8	8	6	6
5.3	1	1920	0	17	12	12	14	14	16	18	20	16	11	6	8	8	8	10	9	7	7	7
5.4	1	1921		36	19	16	18	17	19	21	23	18	12	6	8	9	8	11	10	8	8	7
7.5	1	1922			4	7	12	13	16	19	21	16	10	3	6	7	7	9	8	6	6	6
7.9	1	1923				10	17	16	19	22	24	17	11	3	6	7	7	10	9	6	7	6
8.4	1	1924					24	20	22	25	27	19	11	3	6	6	7	10	9	6	6	6
10.1	2	1925						15	21	26	27	18	9	0	4	5	5	8	7	5	5	4
11.7	2	1926							28	31	32	18	8	-3	3	3	4	8	7	4	4	4
15.9	3	1927								35	34	15	3	-8	-1	0	1	6	5	2	3	2
21.8	3	1928									33	6	-6	-16	-7	-5	-3	2	2	-1	0	0
27.6	5	1929										-15	-21	-28	-15	-11	-8	-1	-1	-4	-3	-3
21.5	4	1930											-26	-34	-15	-9	-6	1	1	-2	-1	-2
14.7	3	1931												-41	-9	-3	-1	8	6	2	3	2
8.1	2	1932													40	24	18	25	19	11	11	9
11.1	2	1933														9	9	20	15	6	7	5
12.2	3	1934															8	26	16	5	6	4
13.1	3	1935																48	21	4	6	3
19.3	4	1936																	-1	-12	-5	-5
18.5	4	1937																		-22	-8	-7
13.9	3	1938																			10	2
15.6	3	1939																				-6
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																				
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26.4	95	2004																				
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26.8	116	2007																				
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25.5	144	2014																				
26.2	155	2015																				
26.1	157	2016																				
29.9	181	2017																				
31.5	201	2018																				
29.4	212	2019																				
		Yr: 19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
S&P 500 Index Value			8	7	8	9	9	11	13	15	20	26	21	14	7	9	10	11	15	15	11	12
S&P 500 Div Yield (%)			5	5	6	6	6	5	5	5	4	4	5	7	9	5	5	4	4	5	6	5
CPI (Inflation %)			2	0	2	1	0	2	1	-2	-2	0	-2	-9	-10	-5	3	2	1	4	-2	-1
GDP (Nominal %)			17	-16	0	17	3	4	7	-1	1	7	-12	-16	-23	-4	17	11	14	10	-6	7
GDP (Annualized %)			[----				+3.1%					----]	[----				-1.1%					----]
GDP (Real %)			-2	-4	7	14	3	2	6	1	2	7	-9	-6	-13	-1	11	9	13	5	-3	8
GDP (Annualized %)			[----				+3.4%					----]	[----				+1.0%					----]

FROM	P/E (1899=1)	Yr: 19	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
		TO	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
			3	3	2	2	3	3	3	3	3	3	4	4	4	4	4	5	5	5	5	5
18.6	1	1900	3	3	2	3	3	3	3	3	3	3	3	4	4	4	4	5	5	5	5	5
22.7	1	1901	3	2	2	2	2	3	3	2	2	2	3	3	3	3	4	4	4	4	4	4
22.0	1	1902	3	2	2	2	2	3	3	2	2	2	3	3	3	3	4	4	4	4	4	4
17.6	1	1903	3	3	2	3	3	3	3	3	3	3	3	3	4	4	4	4	5	4	4	5
16.3	1	1904	3	3	2	3	3	3	3	3	3	3	3	3	4	4	4	5	5	5	5	5
19.3	1	1905	2	2	1	2	2	3	3	2	2	2	3	3	3	3	4	4	4	4	4	4
18.7	2	1906	2	2	1	2	2	3	3	2	2	2	3	3	3	3	4	4	4	4	4	4
13.4	1	1907	3	3	2	3	3	3	3	3	3	3	3	3	4	4	4	5	5	5	5	5
13.1	1	1908	3	3	2	3	3	3	3	3	3	3	3	3	4	4	4	5	5	5	5	5
14.9	2	1909	3	2	1	2	2	3	3	2	2	2	3	3	3	3	4	4	5	4	4	5
13.5	1	1910	3	2	2	2	3	3	3	2	2	2	3	3	3	3	4	5	5	5	5	5
14.2	2	1911	3	2	1	2	2	3	3	2	2	2	3	3	3	3	4	4	5	4	4	5
13.7	2	1912	3	2	1	2	2	3	3	2	2	2	3	3	3	3	4	5	5	5	5	5
11.9	1	1913	3	3	2	3	3	3	4	3	3	3	3	4	4	4	4	5	5	5	5	5
11.1	1	1914	3	3	2	3	3	4	4	3	3	3	3	4	4	4	4	5	5	5	5	5
11.5	1	1915	3	3	2	3	3	4	4	3	3	3	3	4	4	4	4	5	5	5	5	5
12.0	2	1916	3	2	2	3	3	3	3	3	3	3	3	4	4	4	4	5	5	5

P/E Ratio	1899 = 1	ç "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	WW II 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
				4.1% Avg (S&P 500 Div Yield %)
				3.1% Avg (CPI Inflation %)
				+6.1% Avg (GDP Nominal %)
				+3.3% Avg (GDP Real %)