2017 CRESTMONT RESEARCH STOCK MARKET MATRIX

TAX-EXEMPT INVESTOR NOMINAL RETURNS

Nominal Returns (not inflation adjusted), including dividends (reinvested), transaction costs, and taxes deferred

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

2017 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; nominal returns including 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

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FROM	TO	P/E Ratio	1899 = 1	←"TO" Year	FROM	
P/E	Yr: 19					
18.6	1900	1900	1	1900		Rodin Completes 'The Thinker'
22.7	1901	1901	1	1901	1901	First Electric Typewriter
22.0	1902	1902	1	1902	1902	Navy Installs Radio
17.6	1903	1903	1	1903	1903	Wright Bros Fly
16.3	1904	1904	1	1904	1904	Crayola & Jell-O
19.3	2	1905	2	1905	1905	Pen Gets Pocket Clip
18.7	2	1906	2	1906	1906	S.F. Earthquake
13.4	2	1907	2	1907	1907	Photostarts Marketed
13.1	2	1908	2	1908	1908	Model T Introduced
14.9	2	1909	2	1909	1909	Chlorine In Drinking Water
13.5	2	1910	2	1910	1910	Electric Range Invented
14.2	2	1911	2	1911	1911	Sherman Anti-Trust Act; Airmail Begins
13.7	2	1912	2	1912	1912	Titanic Sinks; U.S. Radio Act
11.9	2	1913	2	1913	1913	Income Tax & Federal Reserve
11.1	2	1914	2	1914	1914	WWI Starts; First Transcon. Phone Call
11.5	2	1915	2	1915	1915	Americans Avg 40 Phone Calls A Year
12.0	2	1916	2	1916	1916	Keds & Electric Clock Invented
8.8	2	1917	2	1917	1917	US Enters WWI; Einstein Theorizes Lasers
6.4	2	1918	2	1918	1918	WWI Ends
6.5	3	1919	3	1919	1919	Prohibition; Shortwave Radio; Dial Phones
5.3	3	1920	3	1920	1920	Women's Right To Vote
5.4	2	1921	2	1921	1921	World Series On Radio; Quartz Crystals
7.5	3	1922	3	1922	1922	100,000 Radios Made In U.S.; 3 Frequencies
7.9	3	1923	3	1923	1923	500,000 Radios Made; Neon Signs
8.4	3	1924	3	1924	1924	2.5 Million Radios Made; Frozen Food Invented
10.1	4	1925	4	1925	1925	Commercial Picture Fax By Radio In U.S.
11.7	5	1926	5	1926	1926	First Publicly Shown 'Talkie'
15.9	6	1927	6	1927	1927	2-Way Radio Phone: U.S. To London ($15/min)
21.8	8	1928	8	1928	1928	Teletype Machine; Test TV In 3 Homes
27.6	11	1929	11	1929	1929	Crash of '29; Car Radio
21.5	9	1930	9	1930	1930	Photo Flash Bulbs
14.7	6	1931	6	1931	1931	Radios In 40% Of Homes; Scotch Tape
8.1	3	1932	3	1932	1932	Radar; 8 mm Cameras; Electric Eye Scanner
11.1	4	1933	4	1933	1933	End of Prohibition; FM Radio; Wallboard
12.2	5	1934	5	1934	1934	Radios In 50% Of Homes; AP Wirephoto
13.1	5	1935	5	1935	1935	Social Security Act Passed
19.3	8	1936	8	1936	1936	BBC First TV Service, 3 Hours A Day
18.5	8	1937	8	1937	1937	Hindenburg Airship Crash
13.9	6	1938	6	1938	1938	National Minimum Wage Enacted
15.6	7	1939	7	1939	1939	WW II Begins; Regular TV In U.S.; Helicopter
14.7	6	1940	6	1940	1940	FM Radio; Radar; 1st Social Security Check
12.2	6	1941	6	1941	1941	Pearl Harbor Attack; 2-Way Police Radio
9.2	5	1942	5	1942	1942	U.S. Office Of Censorship Due To War
11.0	7	1943	7	1943	1943	Phone Line Repeaters Help Service
11.3	8	1944	8	1944	1944	D-Day, Normandy
13.3	10	1945	10	1945	1945	World War II Ends; FCC Sets VHF Channels
14.0	12	1946	12	1946	1946	ENIAC, 1st Computer; First Copy Machine Sold
11.2	11	1947	11	1947	1947	Transistor Invented; Microwave Oven
10.7	12	1948	12	1948	1948	Israel Established; RCA High Speed Fax
9.9	12	1949	12	1949	1949	NATO Established; Network TV In U.S.
11.2	15	1950	15	1950	1950	Korean War Begins; Credit Card Created
12.0	19	1951	19	1951	1951	Color TV; Modern Plastic Invented
12.5	22	1952	22	1952	1952	Phone Area Codes; EDVAC Computer
13.0	23	1953	23	1953	1953	Korean War Ends; Magnetic Core Memory
13.7	29	1954	29	1954	1954	TVs In 54% Of Homes; Transistor Radios
17.5	40	1955	40	1955	1955	Tests Begin On Digital Fiber Optics
18.3	47	1956	47	1956	1956	Transatlantic Phone Cable; The Pager
15.6	45	1957	45	1957	1957	Sputnik, First Satellite; EEC Formed
15.1	48	1958	48	1958	1958	Stereo LP Records; Data On Phone Lines
18.4	60	1959	60	1959	1959	COBOL; Microchip; Plain Paper Xerox
17.4	60	1960	60	1960	1960	90% Homes w/TVs; Laser; Weather Satellite
20.5	71	1961	71	1961	1961	Berlin Wall Built; IBM Selectric Typewriter
18.8	68	1962	68	1962	1962	Cuban Missile Crisis; Mariner II At Venus
20.3	77	1963	77	1963	1963	Kennedy Killed, Income Tax 91% To 70%
22.6	91	1964	91	1964	1964	Vietnam Begins; Home VCR
23.3	99	1965	99	1965	1965	First Minicomputer; Car Phones; Hypertext
21.3	97	1966	97	1966	1966	Dow @ 1,000; 8-Tracks In Cars; Fax Machine
21.6	106	1967	106	1967	1967	Floppy Disk; Cordless Phones; Dolby
21.5	115	1968	115	1968	1968	Intelsat Global Satellite Link; Intel 1KB RAM
19.4	115	1969	115	1969	1969	Neil Armstrong Walks On Moon; ATMs
15.2	100	1970	100	1970	1970	Barcodes; First Internet Connections
16.9	119	1971	119	1971	1971	Microchip, Price Controls; Answering Machine
17.8	133	1972	133	1972	1972	Dow Closes Above 1,000; Pong; HBO
16.1	133	1973	133	1973	1973	U.S. Leaves Vietnam; International Internet
10.9	105	1974	105	1974	1974	Nixon Resigns; Wage & Price Controls End
10.2	111	1975	111	1975	1975	Microsoft; Optical Videodisk Demo
11.5	135	1976	135	1976	1976	Apple I; Cray-1; Home Satellite Dish
10.4	134	1977	134	1977	1977	Elvis Dies; TRS-80 PC; Fiber Optic Call
9.4	136	1978	136	1978	1978	Modems; Cell Phone Tests; Intel 16-bit Chip
8.9	151	1979	151	1979	1979	Compuserve Begins; Visicalc Spreadsheet
8.8	181	1980	181	1980	1980	CPI 13.5%; CNN; Sony Camcorder
8.5	202	1981	202	1981	1981	IBM PC Introduced; 300 bps Modems
7.3	197	1982	197	1982	1982	Dow Over 1,000; Compact Disk; 5.5 Mil. PCs
9.6	271	1983	271	1983	1983	AT&T Breakup; 288k Chips; Domain Names
9.4	280	1984	280	1984	1984	3 1/2" Floppy; Intel 32-bit; 1 MB Chips
10.7	335	1985	335	1985	1985	Cellphones; 2400k Modems; Windows OS
13.4	432	1986	432	1986	1986	Laser Printers; TV On 7 Hrs/Day In U.S.
16.0	532	1987	532	1987	1987	Stock Market Crash; 50% Have Cable TV
14.4	503	1988	503	1988	1988	Transatlantic Fiberoptic Cable; Internet T1
16.6	623	1989	623	1989	1989	Poland Solidarity; Nintendo Profits @ $1 Bil.
16.5	658	1990	658	1990	1990	World Wide Web (www)
17.9	753	1991	753	1991	1991	Gulf War; USSR Breakup; 75% Have VCRs
19.6	844	1992	844	1992	1992	65 Mil. PCs; 200k On ADL; CDs > Cassettes
20.7	928	1993	928	1993	1993	Pentium Chip; HTML; V-Chip
20.5	958	1994	958	1994	1994	First WTC Attack; Satellite TV; 33% w/PC
22.7	1139	1995	1139	1995	1995	NAFTA Enacted; Dot.com; Internet Audio
25.9	1419	1996	1419	1996	1996	100k Web Sites; 30 Mil In U.S. On Internet
31.0	1854	1997	1854	1997	1997	Internet Video; 43% In U.S. Have PCs
36.0	2303	1998	2303	1998	1998	Russia Debt Default; 75 Mil U.S. On Internet
42.1	2809	1999	2809	1999	1999	Satellite Can See 3' Objects On Earth
41.7	3024	2000	3024	2000	2000	Dow Hits 11,723; NASDAQ Hits 5,048
32.1	2538	2001	2538	2001	2001	WTC Attack (9/11); >50% U.S. On Internet; iPod
25.9	2125	2002	2125	2002	2002	HDTV Grows; Wi-Fi Laptops; DVD Sales>VCR
24.1	2080	2003	2080	2003	2003	Iraq Conflict; Home Networks; T-Bills @ <1%
26.4	2453	2004	2453	2004	2004	Hybrid Cars; Flat Panel TVs; Blogs; VoIP
26.0	2641	2005	2641	2005	2005	Hurricanes; $70 Oil; Podcasts; Housing Boom
26.0	2892	2006	2892	2006	2006	YouTube; Dow High; Pluto Demoted; Fed Pause
26.8	3288	2007	3288	2007	2007	iPhone; Sub-Prime; Going Green; Facebook
20.8	2751	2008	2751	2008	2008	Recession; Wall Street Crisis; $144 Oil; Obama
16.9	2166	2009	2166	2009	2009	H1N1; Jackson Dies; GM Bankruptcy; Digital TV
20.7	2630	2010	2630	2010	2010	iPad; Greece Debt Crisis; Twitter; QE2
21.8	2956	2011	2956	2011	2011	The Cloud; Arab Spring; OWS; E-books
21.4	3257	2012	3257	2012	2012	Google Glass; Mars Rover; iPhone5; Fiscal Cliff
23.2	3924	2013	3924	2013	2013	Fed Taper; Detroit Ch 9; NSA; ACA Launch; Nest
25.5	4658	2014	4658	2014	2014	Ebola; ISIS; Amazon Drones; Wearable Tech
26.2	5024	2015	5024	2015	2015	ZIRP Ends; Iran Deal; Refugees; Driverless Car
26.1	5165	2016	5165	2016	2016	Brexit; Trump; <$30 Oil; Cyborg Stingray
	Yr: 19				2017	Bitcoin Mania; Robot Citizen; Teleporting; WattUp

S&P 500 Index Value		
S&P 500 Div Yield (%)	4.1%	Avg (S&P 500 Div Yield %)
CPI (Inflation %)	3.1%	Avg (CPI Inflation %)
GDP (Nominal %)	6.3%	Avg (GDP Nominal %)
GDP (Annualized %)		
GDP (Real %)	3.3%	Avg (GDP Real %)
GDP (Annualized %)		