2020 CRESTMONT RESEARCH STOCK MARKET MATRIX

INDIVIDUAL INVESTOR (TAXPAYER)

NOMINAL RETURNS

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

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

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

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, transaction costs/fees (bid/ask spread, commissions, fees, etc.), and taxes; nominal returns include 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

CRESTMONT RESEARCH

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FROM P/E	1899=1	Yr: 19	TO 00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
18.6	1	1900	30	19	8	6	10	10	6	5	8	7	6	6	5	5	5	6	5	4	5	4
22.7	1	1901		9	-2	-1	6	6	2	2	5	5	4	4	3	3	3	4	3	3	4	3
22.0	1	1902			-12	-6	4	6	1	1	5	4	4	4	3	2	3	4	3	2	3	3
17.6	1	1903				0	14	12	5	4	8	6	6	6	4	4	4	5	4	3	4	4
16.3	1	1904					30	19	6	5	9	8	7	7	5	4	4	5	5	4	5	4
19.3	2	1905						9	-4	-2	5	4	3	4	2	2	2	4	3	2	3	3
18.7	2	1906							-16	-7	3	2	2	3	1	1	1	3	2	1	3	2
13.4	2	1907								2	14	9	7	7	4	3	4	5	4	3	4	4
13.1	2	1908									28	13	9	8	5	3	4	6	4	3	5	4
14.9	2	1909										-1	0	2	0	-1	0	3	2	1	3	2
13.5	2	1910											2	4	0	-1	1	3	2	1	3	2
14.2	2	1911												6	-1	-2	0	4	2	1	3	2
13.7	2	1912													-8	-6	-1	3	1	0	3	2
11.9	2	1913														-4	2	7	4	2	5	3
11.1	2	1914															8	13	6	3	6	4
11.5	2	1915																18	6	1	6	4
12.0	2	1916																	-5	-6	2	0
8.8	2	1917																		-7	6	2
6.4	2	1918																			21	7
6.5	3	1919																				-5
5.3	2	1920																				
5.4	2	1921																				
7.5	3	1922																				
7.9	3	1923																				
8.4	3	1924																				
10.1	4	1925																				
11.7	5	1926																				
15.9	6	1927																				
21.8	8	1928																				
27.6	10	1929																				
21.5	8	1930																				
14.7	6	1931																				
8.1	3	1932																				
11.1	4	1933																				
12.2	4	1934																				
13.1	5	1935																				
19.3	7	1936																				
18.5	8	1937																				
13.9	6	1938																				
15.6	6	1939																				
14.7	6	1940																				
12.2	5	1941																				
9.2	5	1942																				
11.0	7	1943																				
11.3	7	1944																				
13.3	9	1945																				
14.0	10	1946																				
11.2	9	1947																				
10.7	10	1948																				
9.9	10	1949																				
11.2	12	1950																				
12.0	15	1951																				
12.5	17	1952																				
12.0	17	1953																				
13.7	21	1954																				
17.5	29	1955																				
18.3	32	1956																				
15.6	31	1957																				
15.1	32	1958																				
18.4	40	1959																				
17.4	39	1960																				
20.5	46	1961																				
18.8	43	1962																				
20.3	48	1963																				
22.6	56	1964																				
23.3	60	1965																				
21.3	58	1966																				
21.6	63	1967																				
21.5	67	1968																				
19.4	67	1969																				
15.2	58	1970																				
16.9	68	1971																				
17.8	75	1972																				
16.1	75	1973																				
10.9	59	1974																				
10.2	62	1975																				
11.5	74	1976																				
10.4	73	1977																				
9.4	73	1978																				
8.9	80	1979																				
8.8	93	1980																				
8.5	102	1981																				
7.3	98	1982																				
9.6	131	1983																				
9.4	133	1984																				
10.7	155	1985																				
13.4	195	1986																				
16.0	225	1987																				
14.4	204	1988																				
16.6	247	1989																				
16.5	253	1990																				
17.9	282	1991																				
19.6	306	1992																				
20.7	328	1993																				
20.5	333	1994																				
22.7	390	1995																				
25.9	470	1996																				
31.0	592	1997																				
36.0	706	1998																				
42.1	831	1999																				
41.7	867	2000																				
32.1	719	2001																				
25.9	602	2002																				
24.1	591	2003																				
26.4	691	2004																				
26.0	739	2005																				
26.0	804	2006																				
26.8	906	2007																				
20.8	758	2008																				
16.9	597	2009																				
20.7	722	2010																				
21.8	805	2011																				
21.4	880	2012																				
23.2	1050	2013																				
25.5	1216	2014																				
26.2	1279	2015																				
26.1	1298	2016																				
29.9	1516	2017																				
31.5	1679	2018																				
29.4	1778	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	TO 20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
18.6	1	1900	4	4	5	5	5	6	6	7	8	8	7	6	3	4	5	5	6	6	5	5
22.7	1	1901	3	3	4	4	4	5	5	6	7	8	7	5	3	4	4	4	5	5	4	4
22.0	1	1902	3	2	3	3	4	5	5	6	7	8	7	5	3	3	4	4	5	5	4	4
17.6	1	1903	4	3	4	4	4	5	6	7	8	8	7	6	3	4	4	4	5	5	4	5
16.3	1	1904	4	3	4	4	5	6	6	7	8	9	8	6	3	4	4	5	6	6	5	5
19.3	2	1905	3	2	3	3	4	5	5	6	7	8	7	5	2	3	4	4	5	5	4	4
18.7	2	1906	3	2	1	3	3	4	5	6	7	8	7	5	2	3	3	4	5	5	4	4
13.4	2	1907	4	3	4	4	4	6	6	7	8	9	8	6	3	4	4	4	6	6	4	5
13.1	2	1908	4	3	4	4	5	6	6	7	8	9	8	6	3	4	4	4	6	6	5	5
14.9	2	1909	2	1	3	3	3	5	5	6	7	9	7	5	2	3	3	4	5	5	4	4
13.5	2	1910	2	1	3	3	4	5	6	7	8	9	8	5	2	3	4	4	5	5	4	4
14.2	2	1911	3	2	1	3	3	4	5	6	7	8	10	8	5	3	4	4	5	5	4	4
13.7	2	1912	3	2	0	3	3	3	5	6	7	8	10	8	5	2	3	4	5	5	4	4
11.9	2	1913	3	1	4	4	5	6	7	8	10	11	9	6	2	4	4	4	6	6	4	5
11.1	2	1914	4	2	5	5	5	7	8	9	11	12	10	7	3	4	4	5	6	6	5	5
11.5	2	1915	4	1	4	5	5	7	8	9	11	12	10	7	2	4	4	5	6	6	5	5
12.0	2	1916	0	-2	2	3	4	6	7	8	10	12	9	6	1	3	4	4	6	6	4	4
8.8	2	1917	2	-1	4	4	5	7	8	10	12	13	11	7	2	4	4	4	6	6	5	5
6.4	2	1918	7	1	7	7	7	10	10	12	14	15	12	8	3	4	5	5	7	7	5	5
6.5	3	1919	-8	2	3	4	8	9	11	13	15	15	11	7	1	3	4	4	6	6	4	5
5.3	2	1920		-10	7	6	7	11	12	14	16	17	13	8	2	4	5	5	7	7	5	5
5.4	2	1921			27	16	14	17	17	18	20	21	16	10	3	5	6	6	9	8	6	6
7.5	3	1922				6	8	14	14	16	19	21	15	8	1	4	4	5	7	7	5	5
7.9	3	1923					10	18	17	19	22	23	16	9	0	3	4	5	7	7	5	5
8.4	3	1924						27	21	23	25	26	18	9	-1	3	4	4	7	7	4	5
10.1	4	1925							16	20	24	26	16	6	-4	0	1	2	6	5	3	3
11.7	5	1926								25	28	30	16	4	-7	-2	0	1	5	4	2	2
15.9	6	1927									32	32	13	-1	-12	-6	-4	-2	3	3	0	1
21.8	8	1928										32	4	-10	-21	-12	-9	-6	-1	0	-3	-2
27.6	10	1929											-18	-25	-33	-21	-15	-11	-4	-4	-6	-5
21.5	8	1930												-33	-40	-22	-14	-10	-2	-1	-5	-3
14.7	6	1931													-47	-16	-7	-3	5	5	0	1
8.1	3	1932														-33	22	18	25	20	11	11
11.1	4	1933															12	11	23	17	8	8
12.2	4	1934																10	28	19	6	7
13.1	5	1935																	49	24	5	6
19.3	7	1936																		2	-12	-5
18.5	8	1937																			-24	-9
13.9	6	1938																				8
15.6	6	1939																				
14.7	6	1940																				
12.2	5	1941																				
9.2	5	1942																				
11.0	7	1943																				
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20.5	333	1994																				
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26.0	739	2005																				
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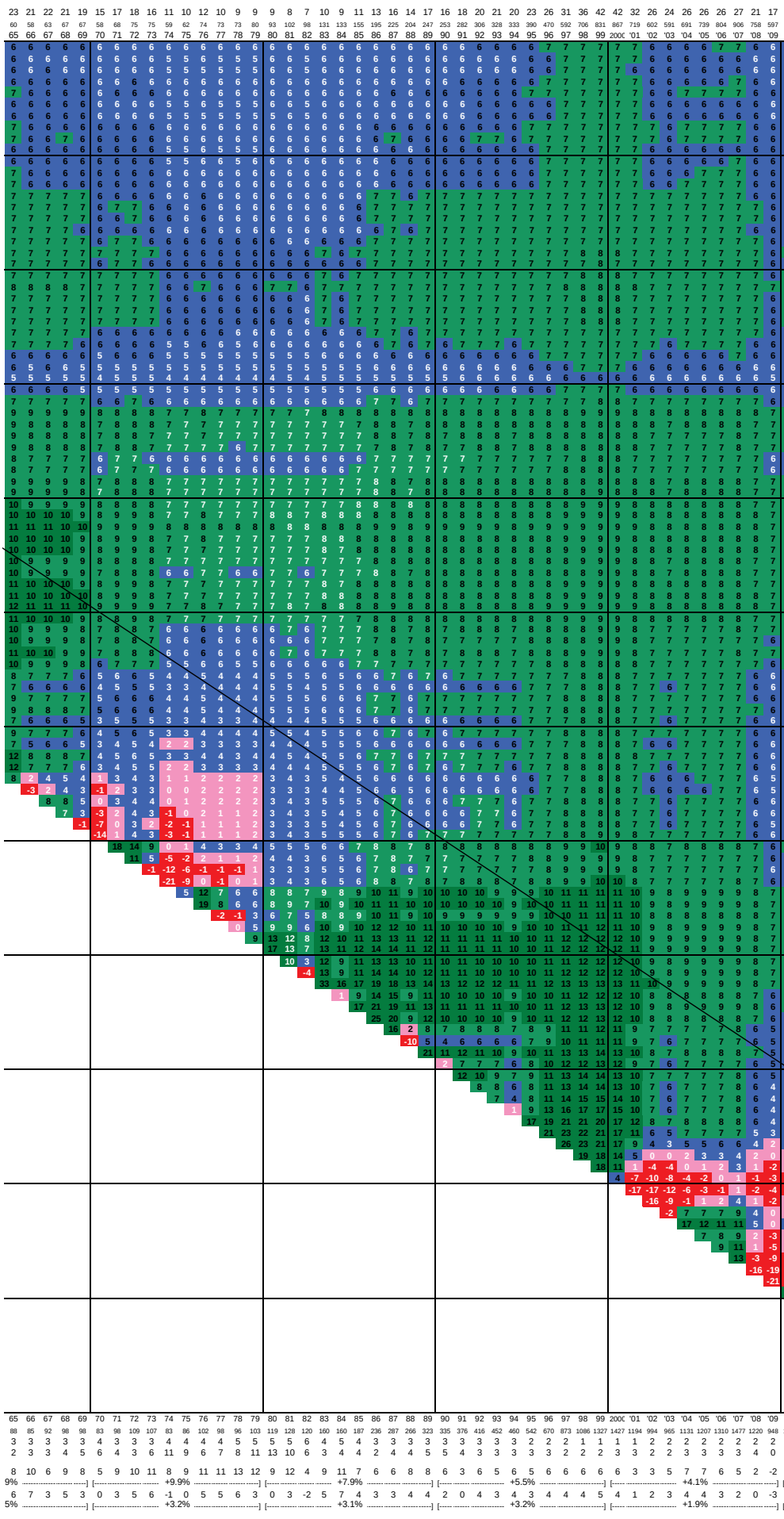
23.2	1050	2013																				
25.5	1216	2014																				
26.2	1279	2015																				
26.1	1298	2016																				
29.9	1516	2017																				
31.5	1679	2018																				
29.4	1778	2019																				
		Yr: 19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	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	4	4	5	5	5	5	4	4	5	7	9	5	5	4	4	5	6	5
CPI (Inflation %)			0	2	1	-2	-2	0	-2	-9	-10	-5	3	2	1	4	-2	-1	1	5	11	6
GDP (Nominal %)			3	4	7	-1	1	7	-12	-16	-23	-4	17	11	14	10	-6	7	10	26	28	22
GDP (Annualized %)			[----				+3.1%					----]	[----				-1.1%					----]
GDP (Real %)			2	6	1	2	7	-9	-6	-13	-1	11	9	13	5	-3	8	9	18	19	17	8
GDP (Annualized %)			[----				+3.4%					----]	[----				+1.0%					----]

FROM P/E	1899=1	Yr: 19	TO 40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
18.6	1	1900	5	4	4	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6
22.7	1	1901	4	4	3	4	4	4	5	4	4	4	5	5	5	5	5	6	6	6	6	6
22.0	1	1902	4	4	3	4	4	4	5	4	4	4	5	5	5	5	5	6	6	6	6	6
17.6	1	1903	4	4	4	4	4	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6
16.3	1	1904	4	4	4	4	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6
19.3	2	1905	4	3	3	4	4	4	5	4	4	4	5	5	5	5	5	6	6	6	6	6
18.7	2	1906	4	3	3	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	6
13.4	2	1907	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	7
13.1	2	1908	4	4	4	4	4	5	5	5	5	5	5	6	6	6	6	6	7	6	6	7
14.9	2	1909	4	3	3	4	4	4	5	4	4	4	5	5	5	5	5	6	6	6	6	6
13.5	2	1910	4	3	3	4	4	4	5	4	4	4	5	5	5	5	6	6	6	6	6	6
14.2	2	1911	4	3	3	4	4	5	5	4	4	4	5	5	5	5	6	6	6	6	6	6
13.7	2	1912	4	3	3	4	4	5	5	4	4	4	5	5	5	5	6	6	6	6	6	6
11.9	2	1913	4	4	3	4	4	5	5	5	5	5	5	6	6	6	6	7	7	6	6	7
11.1	2	1914	5	4	4	5	5	5	5	5	5	5	5	6	6	6	6	7	7	7	7	7
11.5	2	1915	4	4	3	4	5	5	5	5	5	5	5	6	6	6	6	7	7	7	7	7
12.0	2	1916	4	3	3	4	4	5	5	4	5	4	5	5	6	6	6	7	7	6	6	7
8.8	2	1917	4	4	3	4	4	5	5	5	5	5	5	6	6	6	6	7	7	7	7	7
6.4	2	1918	5	4	4	5	5	6	6	5	5	5	6	6	6	6	7	7	7	7	7	7
6.5	3	1919	4	4	3	4	4	5	5	5	5	5	5	6	6	6	6	7	7	7	7	7
5.3	2	1920	5	4	3	5	5	5	6	5	5	5	6	6	6	6	7	7	7	7	7	7
5.4	2	1921	5	5	4	5	6	6	6	6	6	6	6	7	7	7	7	8	8	8	8	8



	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 %)