Bull and bear markets - Past, present, future

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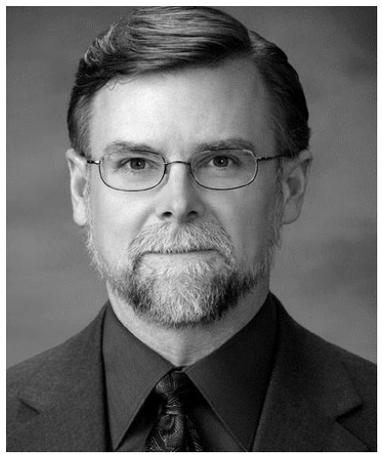

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Why . . .

Clients react very poorly to surprise

It’s all about . . . setting and then maintaining healthy client expectations

Why this topic

- Clients react quite poorly to surprise
- My experience . . . clients can deal with anything . . . if they are adequately prepared . . . sufficiently in advance
- Bulls and bears are a big deal . . . incorrect handling can be permanently life-changing
- Their existence is one of the reasons that TAA works
- Sometimes we KNOW they are more likely . . . sometimes we KNOW they are seriously unlikely
- They are radically different . . . from one asset category to the next

What's a bull market

- Bull
  - Easy
  - When the market's going up . . . i.e., not in a bear

What's a bear market

- Bear
  - Market declines by a sufficient amount over a sufficient period
  - Blows the fuses . . . or trips the circuit breakers
  - In other words . . . they
    - Fundamentally shift the risk tolerance level of investors
    - Clean out the speculators
    - Eliminate the crazy talk
    - Purge the get-rich-quick schemes
    - Cause everyone to move to Missouri . . . the "show me state"
    - Above all . . . they reestablish genuine investment opportunity

Think of successful forest management

A solid analogy

Forest management

- A healthy thriving forest requires

- Forest fires
- Windstorms

- Without them the forest eventually becomes sickly, stops growing, and declines

- These perils serve to
  - Reallocate forest resources from less productive to more productive
  - Eliminate the slow growing and stagnant

Management of the macro economy . . . the real economy

- A healthy thriving macro economy requires

- Recessions
- Unemployment
- Bankruptcies

- Without them the economy eventually becomes sickly, stops growing, and declines

- These perils serve to
  - Reallocate labor and capital from less productive to more productive
  - Eliminate the slow growing and stagnant

Management of investment markets

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- Healthy thriving investment markets require

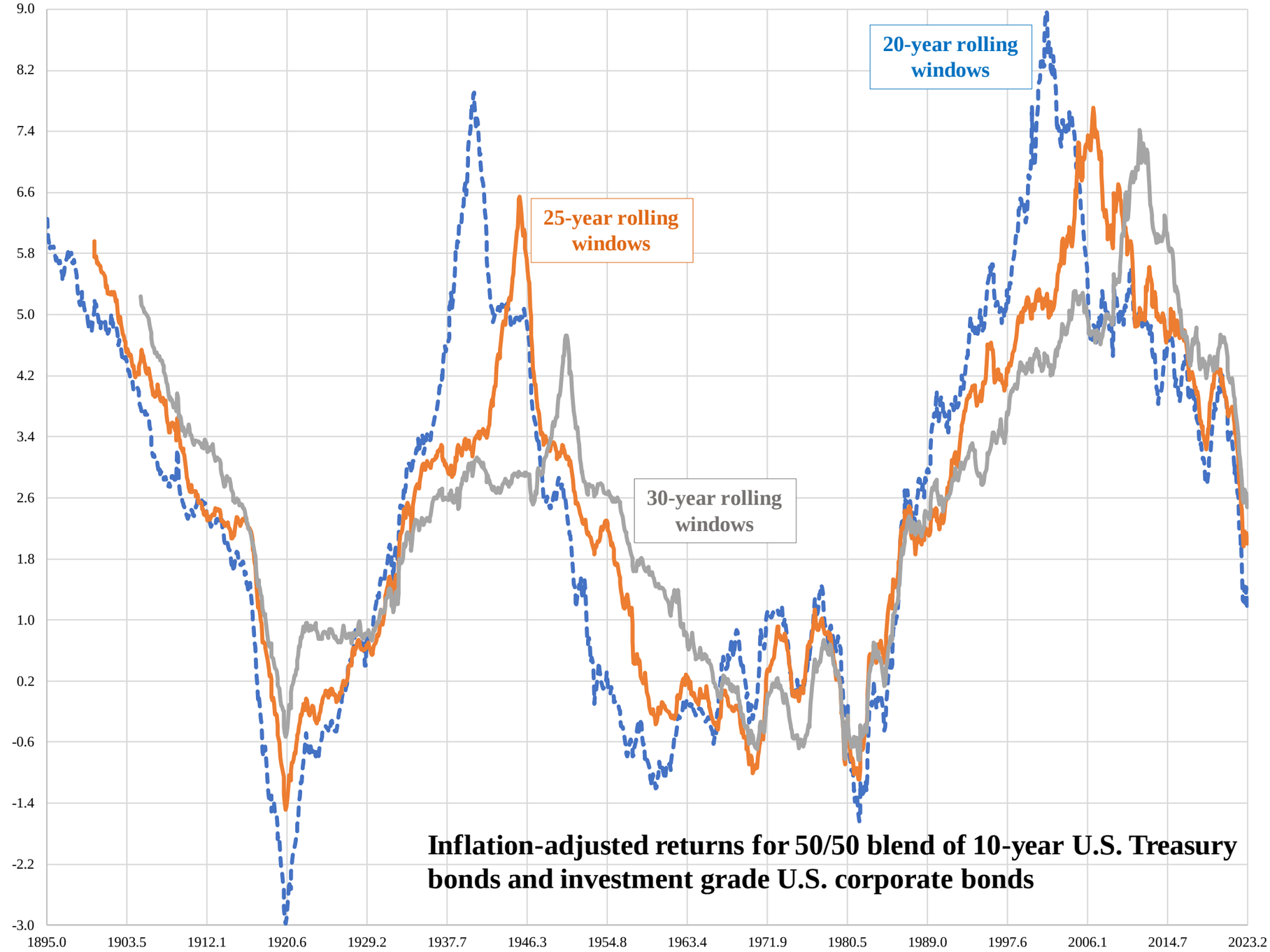
- Bear markets
- Individual investors “losing their shirts”
- The failure of individual investment firms

- Without them, investment markets become sickly, stop growing, and decline

- These perils serve to
  - Reallocate investment capital from less productive to more productive
  - Starve the slow growing and stagnant
  - Purge the disruptive speculators from the marketplace
  - Correct the all-important tradeoff between risk and return

We want and need bear markets and economic recessions

Asset Class Returns are Inherently Unstable



Stocks

Bear markets for inflation-adjusted U.S. stocks since 1845

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BEAR market	Number of years to regain what was lost during this bear market
	-30	1.25	Aug 1853	Nov 1854	27.6	27	-25.1	3.3
	-31	0.83	Dec 1856	Oct 1857	19.2	10	-36.4	2.9
	-35	0.67	Jul 1864	Mar 1865	32.4	38	-47.1	4.2
	-32	1.25	Mar 1876	Jun 1877	7.8	7	-26.2	2.2
	-37	1.17	Sep 1906	Nov 1907	13.8	14	-32.7	2.2
	-27	2.00	Oct 1912	Oct 1914	11.0	38	-14.8	3.0
	-48	4.08	Nov 1916	Dec 1920	15.9	41	-14.8	7.7
	-79	2.75	Aug 1929	May 1932	37.3	36	-43.7	15.7
	-50	1.08	Feb 1937	Mar 1938	31.6	23	-47.1	8.0
	-39	2.58	Sep 1939	Apr 1942	19.3	42	-17.3	4.7
	-37	1.75	May 1946	Feb 1948	14.5	29	-23.4	4.6
	-35	1.58	Nov 1968	Jun 1970	14.8	26	-24.1	4.0
	-52	1.75	Dec 1972	Sep 1974	15.2	14	-34.2	12.1
	-30	0.25	Aug 1987	Nov 1987	33.9	0	-76.3	1.9
	-47	2.08	Aug 2000	Sep 2002	17.8	36	-26.4	12.7
	-52	1.33	Oct 2007	Feb 2009	19.2	25	-42.1	5.4
	?	?	Dec 2021	?	?	?	?	?
Median BEAR market	-37	1.46			18.5	26	-29.6	4.4
Mean BEAR market	-41	1.65			20.7	25	-33.2	5.9

Bear markets for inflation-adjusted U.S. stocks since 1845

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BEAR market	Number of years to regain what was lost during this bear market
Median BEAR market	-37	1.46			18.5	26	-29.6	4.4
Mean BEAR market	-41	1.65			20.7	25	-33.2	5.9

Bull markets for inflation-adjusted U.S. stocks since 1845

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BULL market
	51	8.58	Jan 1845	Aug 1853	7.3	57	4.9
	49	2.08	Nov 1854	Dec 1856	17.4	72	21.0
	287	6.75	Oct 1857	Jul 1864	19.4	62	22.2
	177	11.00	Mar 1865	Mar 1876	10.6	67	9.7
	1057	29.25	Jun 1877	Sep 1906	10.9	59	8.7
	79	4.92	Nov 1907	Oct 1912	12.1	63	12.6
	50	2.08	Oct 1914	Nov 1916	9.6	76	21.7
	709	8.67	Dec 1920	Aug 1929	13.7	72	27.3
	382	4.75	May 1932	Feb 1937	38.5	68	39.2
	65	1.50	Mar 1938	Sep 1939	32.8	61	39.8
	168	4.08	Apr 1942	May 1946	12.1	78	27.3
	1145	20.75	Feb 1948	Nov 1968	12.3	66	12.9
	60	2.50	Jun 1970	Dec 1972	11.0	70	20.8
	312	12.92	Sep 1974	Aug 1987	15.7	55	11.6
	512	12.75	Nov 1987	Aug 2000	13.5	66	15.3
	81	5.08	Sep 2002	Oct 2007	10.0	70	12.3
	539	12.83	Feb 2009	Dec 2021	14.0	68	15.6
Median BULL market	177	6.75			12.3	67	15.6
Mean BULL market	337	8.85			15.4	66	19.0

Bull markets for inflation-adjusted U.S. stocks since 1845

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BULL market
	51	8.58	Jan 1845	Aug 1853	7.3	57	4.9
	49	2.08	Nov 1854	Dec 1856	17.4	72	21.0
	287	6.75	Oct 1857	Jul 1864	19.4	62	22.2
	177	11.00	Mar 1865	Mar 1876	10.6	67	9.7
	1057	29.25	Jun 1877	Sep 1906	10.9	59	8.7
	79	4.92	Nov 1907	Oct 1912	12.1	63	12.6
	50	2.08	Oct 1914	Nov 1916	9.6	76	21.7
	709	8.67	Dec 1920	Aug 1929	13.7	72	27.3
	382	4.75	May 1932	Feb 1937	38.5	68	39.2
	65	1.50	Mar 1938	Sep 1939	32.8	61	39.8
	168	4.08	Apr 1942	May 1946	12.1	78	27.3
	1145	20.75	Feb 1948	Nov 1968	12.3	66	12.9
	60	2.50	Jun 1970	Dec 1972	11.0	70	20.8
	312	12.92	Sep 1974	Aug 1987	15.7	55	11.6
	512	12.75	Nov 1987	Aug 2000	13.5	66	15.3
	81	5.08	Sep 2002	Oct 2007	10.0	70	12.3
	539	12.83	Feb 2009	Dec 2021	14.0	68	15.6
Median BULL market	177	6.75			12.3	67	15.6
Mean BULL market	337	8.85			15.4	66	19.0

Bonds

Bear markets for inflation-adjusted U.S. bonds since 1845

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BEAR market	Number of years to regain what was lost during this bear market
	-22	2.67	Mar 1863	Nov 1865	6.1	31	-9.1	5.4
	-50	11.42	Dec 1908	May 1920	4.8	41	-5.9	18.1
	-31	16.58	Jan 1941	Aug 1957	3.3	45	-2.2	44.6
	-40	16.33	May 1965	Sep 1981	6.4	45	-3.0	19.5
	?	?	Jul 2020	?	?	?	?	?
Median BEAR market	-35	13.87			5.4	43	-4.5	18.8
Mean BEAR market	-36	11.75			5.1	40	-5.0	21.9

Bull markets for inflation-adjusted U.S. bonds since 1845

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BULL market
	184	17.58	Aug 1845	Mar 1863	5.3	70	6.1
	1075	43.08	Nov 1865	Dec 1908	3.5	75	5.9
	379	20.67	May 1920	Jan 1941	5.2	73	7.9
	26	7.75	Aug 1957	May 1965	2.6	70	3.0
	1008	38.83	Sep 1981	Jul 2020	6.8	61	6.4
Median BULL market	379	20.67			5.2	70	6.1
Mean BULL market	534	25.58			4.7	70	5.9

Commodities

Bear markets for inflation-adjusted commodities since 1851

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BEAR market	Number of years to regain what was lost during this bear market
	-69	51.08	Aug 1864	Sep 1915	6.8	36	-2.2	107.7
	-50	3.83	May 1917	Mar 1921	12.8	41	-16.4	8.2
	-64	6.92	Jul 1925	Jun 1932	10.2	37	-13.8	11.7
	-38	1.17	Mar 1937	May 1938	10.3	14	-33.6	4.2
	-38	2.25	Mar 1947	Jun 1949	15.1	33	-18.9	3.8
	-32	2.67	Feb 1951	Oct 1953	6.4	25	-13.4	20.7
	-47	2.67	Nov 1974	Jul 1977	20.7	41	-21.3	13.5
	-37	1.17	Oct 1980	Dec 1981	11.5	14	-32.3	7.5
	-33	4.17	Sep 1990	Nov 1994	11.6	48	-9.3	6.2
	-49	1.33	Oct 1997	Feb 1999	17.4	13	-39.8	2.8
	-37	1.17	Nov 2000	Jan 2002	13.7	21	-32.3	2.2
	-67	0.67	Jun 2008	Feb 2009	22.8	0	-80.7	20.5 E
	-67	4.83	Apr 2011	Feb 2016	18.9	36	-20.4	17.2 E
	-54	1.58	Sep 2018	Apr 2020	30.3	47	-38.4	3.4
Median BEAR market	-48	2.46			13.3	34	-20.8	7.8
Mean BEAR market	-49	6.11			14.9	29	-26.6	16.4

Bull markets for inflation-adjusted commodities since 1851

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BULL market
	87	12.67	Dec 1851	Aug 1864	9.7	58	5.1
	78	1.67	Sep 1915	May 1917	9.3	85	41.1
	104	4.33	Mar 1921	Jul 1925	14.0	65	17.9
	184	4.75	Jun 1932	Mar 1937	23.1	58	24.6
	139	8.83	May 1938	Mar 1947	17.0	53	10.4
	62	1.67	Jun 1949	Feb 1951	10.4	85	33.6
	379	21.08	Oct 1953	Nov 1974	12.3	55	7.7
	82	3.25	Jul 1977	Oct 1980	17.0	79	20.2
	242	8.75	Dec 1981	Sep 1990	14.9	56	15.1
	58	2.92	Nov 1994	Oct 1997	12.2	71	17.0
	112	1.75	Feb 1999	Nov 2000	22.2	71	53.8
	212	6.42	Jan 2002	Jun 2008	21.5	62	19.4
	59	2.17	Feb 2009	Apr 2011	20.6	77	23.9
	33	2.58	Feb 2016	Sep 2018	12.7	61	11.7
	?	?	Apr 2020	?	?	?	?
Median BULL market	96	3.79			14.5	64	18.7
Mean BULL market	131	5.92			15.5	67	21.5

Value risk premium

Value less growth

Bull and bear markets for the value risk premium since 1926

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return
	-52	5.25	Feb 1927	May 1932	16.1	32	-13.1
	78	0.25	May 1932	Aug 1932	42.3	100	902.9
	-38	0.33	Aug 1932	Dec 1932	13.2	0	-76.4
	94	0.67	Dec 1932	Aug 1933	33.0	75	170.7
	-50	1.58	Aug 1933	Mar 1935	23.6	26	-35.5
	86	2.00	Mar 1935	Mar 1937	15.4	71	36.3
	-46	2.42	Mar 1937	Aug 1939	15.4	34	-22.5
	2376	49.25	Aug 1939	Nov 1988	10.6	54	6.7
	-28	3.08	Nov 1988	Dec 1991	5.7	38	-10.1
	49	6.42	Dec 1991	May 1998	8.3	57	6.4
	-33	1.58	May 1998	Dec 1999	10.2	26	-22.4
	162	7.00	Dec 1999	Dec 2006	11.2	69	14.7
	-37	2.17	Dec 2006	Feb 2009	16.1	27	-19.0
	28	0.58	Feb 2009	Sep 2009	11.8	86	51.7
	-58	11.00	Sep 2009	Sep 2020	11.0	40	-7.7
	?	?	Sep 2020	?	?	?	?
Median BULL market	86	2.00			11.8	71	36.3
Median BEAR market	-42	2.29			14.3	29	-20.7

Bull and bear markets for the value risk premium since 1926

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return
Median BULL market	86	2.00			11.8	71	36.3
Median BEAR market	-42	2.29			14.3	29	-20.7

Small cap risk premium

Small cap less large cap

Bear markets for the U.S. small cap risk premium since 1926

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BEAR market
	-64	3.58	May 1928	Dec 1931	16.2	28	-24.6
	-37	0.50	Aug 1932	Feb 1933	17.8	17	-60.6
	-29	1.17	Apr 1934	Jun 1935	20.8	36	-25.2
	-50	2.42	Mar 1937	Aug 1939	20.2	34	-24.8
	-36	7.92	May 1946	Apr 1954	8.4	37	-5.5
	-58	5.92	Jan 1969	Dec 1974	15.7	35	-13.8
	-60	7.42	Jul 1983	Dec 1990	8.9	30	-11.5
	-49	5.08	Feb 1994	Mar 1999	11.7	31	-12.3
	-30	0.25	Feb 2000	May 2000	18.2	0	-75.9
	-26	2.92	Mar 2006	Feb 2009	9.1	31	-9.6
	-39	9.50	Mar 2011	Sep 2020	10.8	47	-5.1
	?	?	Feb 2021	?	?	?	?
Median BEAR market	-39	3.58			15.7	31	-13.8
Mean BEAR market	-43	4.24			14.4	30	-24.4

Bear markets for the U.S. small cap risk premium since 1926

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BEAR market
Median BEAR market	-39	3.58			15.7	31	-13.8
Mean BEAR market	-43	4.24			14.4	30	-24.4

Bull markets for the U.S. small cap risk premium since 1926

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BULL market
	63	0.67	Dec 1931	Aug 1932	43.0	50	107.9
	143	1.17	Feb 1933	Apr 1934	56.2	71	114.3
	95	1.75	Jun 1935	Mar 1937	21.1	76	46.3
	262	6.75	Aug 1939	May 1946	20.7	64	21.0
	228	14.75	Apr 1954	Jan 1969	10.1	55	8.4
	274	8.58	Dec 1974	Jul 1983	12.5	70	16.6
	38	3.17	Dec 1990	Feb 1994	11.5	66	10.8
	64	0.92	Mar 1999	Feb 2000	27.5	82	71.3
	156	5.83	May 2000	Mar 2006	13.7	60	17.5
	31	2.08	Feb 2009	Mar 2011	11.9	68	13.9
	45	0.42	Sep 2020	Feb 2021	14.2	100	144.5
Median BULL market	95	2.08			14.2	68	21.0
Mean BULL market	127	4.19			22.0	69	52.0

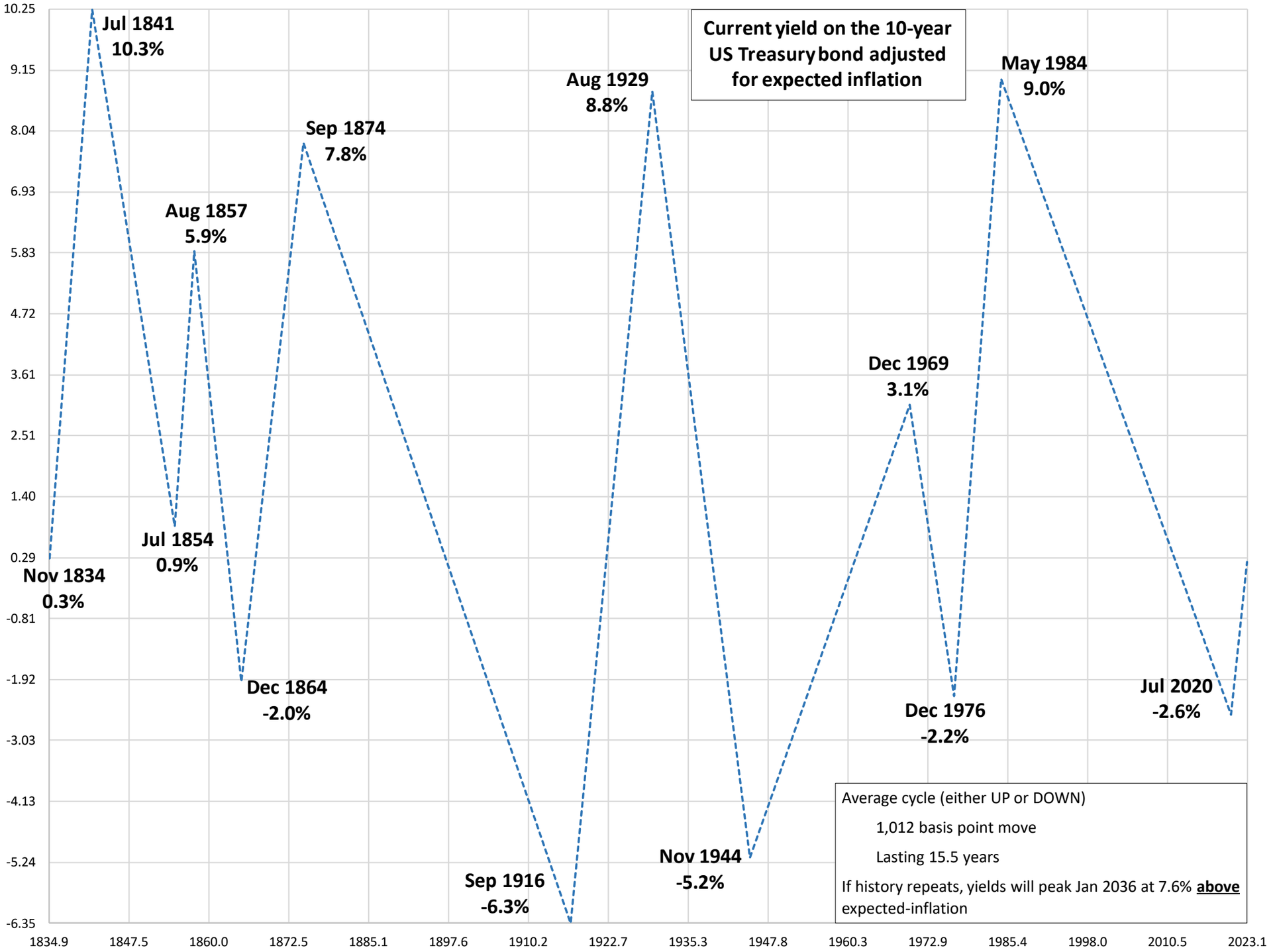
Bull markets for the U.S. small cap risk premium since 1926

	Cumulative percentage return, unannualized	Duration in years	Start date	End date	Volatility, annualized standard deviation of monthly returns	Percentage of monthly returns that were POSITIVE	Annualized return during BULL market
Median BULL market	95	2.08			14.2	68	21.0
Mean BULL market	127	4.19			22.0	69	52.0

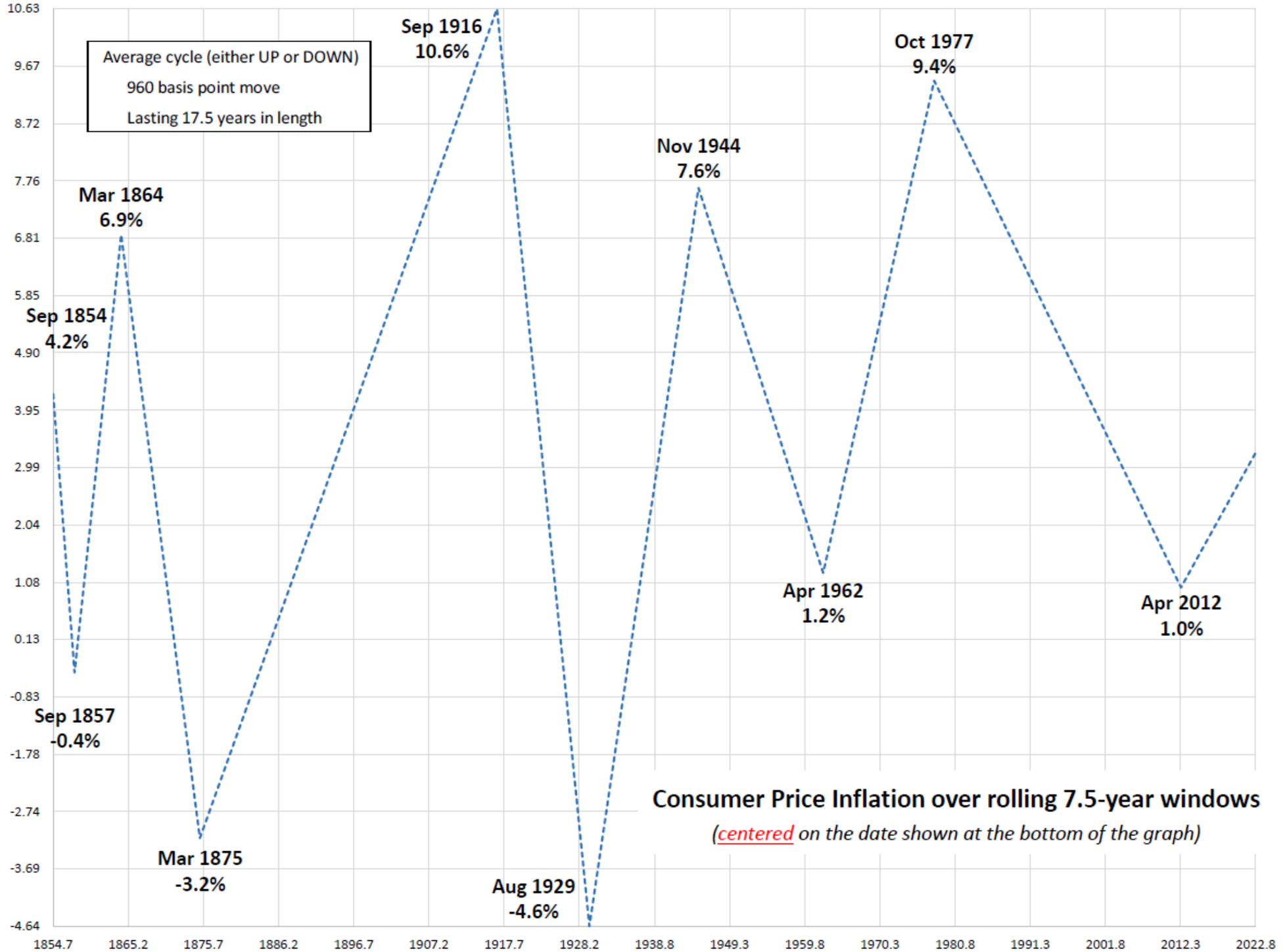
Real interest rates

Inflation adjusted

Nominal interest rates less expected inflation


Current yield on the 10-year US Treasury bond adjusted for expected inflation
Jul 1841 10.3%
Nov 1834 0.3%
Jul 1854 0.9%
Aug 1857 5.9%
Dec 1864 -2.0%
Sep 1874 7.8%
Sep 1916 -6.3%
Aug 1929 8.8%
Nov 1944 -5.2%
Dec 1969 3.1%
Dec 1976 -2.2%
May 1984 9.0%
Jul 2020 -2.6%
10.25
9.15
8.04
6.93
5.83
4.72
3.61
2.51
1.40
0.29
-0.81
-1.92
-3.03
-4.13
-5.24
-6.35
1834.9
1847.5
1860.0
1872.5
1885.1
1897.6
1910.2
1922.7
1935.3
1947.8
1960.3
1972.9
1985.4
1998.0
2010.5
2023.1
Average cycle (either UP or DOWN)
1,012 basis point move
Lasting 15.5 years
If history repeats, yields will peak Jan 2036 at 7.6% above expected-inflation

Inflation


Average cycle (either UP or DOWN)
960 basis point move
Lasting 17.5 years in length
Sep 1916
10.6%
Oct 1977
9.4%
Nov 1944
7.6%
Mar 1864
6.9%
Sep 1854
4.2%
Apr 1962
1.2%
Apr 2012
1.0%
Sep 1857
-0.4%
Mar 1875
-3.2%
Aug 1929
-4.6%
10.63
9.67
8.72
7.76
6.81
5.85
4.90
3.95
2.99
2.04
1.08
0.13
-0.83
-1.78
-2.74
-3.69
-4.64
1854.7
1865.2
1875.7
1886.2
1896.7
1907.2
1917.7
1928.2
1938.8
1949.3
1959.8
1970.3
1980.8
1991.3
2001.8
2012.3
2022.8
Consumer Price Inflation over rolling 7.5-year windows
(centered on the date shown at the bottom of the graph)

Causality

Why do bulls/bears occur

What causes bull and bear markets

- **Bear markets**
  - Valuations become too stretched
  - An inherent imbalance of sufficient instability/fragility has developed
  - Desire to de-risk

- **Bull markets**
  - Range of macroeconomic developments supportive of a bull for that asset category
  - Desire to take on more risk
  - Supportive monetary policy . . . forcing the underlying discount rate significantly lower

Why talk about bulls and bears

- Prepare your clients for what will come
  - They react poorly to surprise
  - Allows for a consistent stable approach . . . one more likely to succeed

- Allows you to construct more useful and intelligent portfolios
  - Does it need to mitigate the next bear
  - How closely must it ride the next bull
  - What are the tradeoffs required . . . . taxes, tracking, surety
  - Is there a prospective opportunity to capture . . . . maybe the value risk premium today

Caution . . . Please don’t . . . .

- Please don’t confuse real and nominal interest rates
- Doing so is . . . Hurtful
- Interest rates = Expected Inflation + Real interest rate
- These are two radically and fundamentally different things
  - Inflation
  - Real interest rates

One more reason to consider TAA

By TAA's very design . . . . it partially mitigates the negative aspects of bears

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TAA - does it work, why, how, can we prove it

Friday

July 14th

11:00 a.m. EASTERN

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The investment performance shown, if indicated, is HYPOTHETICAL. It is based on the back tests of historical data. Hypothetical performance results have many inherent limitations, some of which are described below. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown. In fact, there are frequently sharp differences between hypothetical performance results and the actual results subsequently achieved by any particular trading program.

One of the limitations of hypothetical performance results is that they are generally prepared with the benefit of hindsight. In addition, hypothetical trading does not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risk in actual trading. For example, the ability to withstand losses or adhere to a particular trading program in spite of trading losses are material points which can also adversely affect actual trading results. There are numerous other factors related to the markets in general or to the implementation of any specific trading program which cannot be fully accounted for in the presentation of hypothetical performance results and all of which can adversely affect actual trading results.

The composition of a benchmark index may not reflect the manner in which a Julex portfolio is constructed in relation to expected or achieved returns, investment holdings, portfolio guidelines, restrictions, sectors, correlations, concentrations, volatility, or tracking error targets, all of which are subject to change over time.

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Disclosures Part II

All data and statistics were provided by Global Financial Data, Inc. and NDR, Inc. (unless otherwise indicated in the exhibit)

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