TAA during a rising interest rate environment

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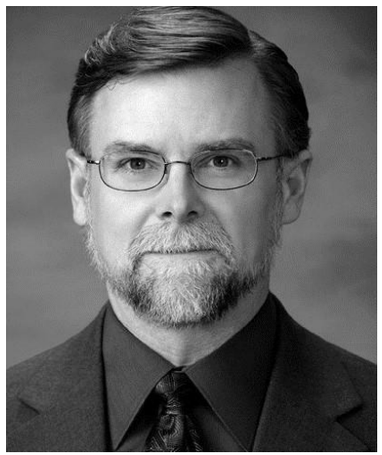

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Where are interest rates today?

Impossibly low . . . . . staring into the eyes of a massive increase

Interest rates

- Where are they today
- Is this low or high
- How did they get to today's level
- What happens next
- Why is this necessary
- What's normal
- What would be abnormal and seriously peculiar

Where are interest rates today

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Treasury Yields

NAME	COUPON	PRICE	YIELD
GB3:GOV **3 Month**	0.00	0.76	0.77%
GB6:GOV **6 Month**	0.00	1.20	1.23%
GB12:GOV **12 Month**	0.00	1.70	1.74%
GT2:GOV **2 Year**	2.25	99.61	2.45%
GT5:GOV **5 Year**	2.50	98.82	2.76%
GT10:GOV **10 Year**	1.88	91.92	2.82%
GT30:GOV **30 Year**	2.25	86.66	2.92%

Are interest rates low or high, today

- A 5-year Treasury is paying 2.76%
- If your marginal tax rate (state and federal) is 36%
- You are left with 1.77% after tax
- The market is expecting inflation to be 3.45% over the next 5 years
- You are left with a loss of -1.68% after subtracting out inflation

- You tell me . . . are interest rates low or high . . . if you anticipate losing -1.68% per year, every year, over the next 5 years

How did interest rates get to today's levels

- Slow economic growth
- Lack of attractive investment . . . by businesses
- Monetary stimulus
- People have been slow to realize just how much they are losing every year to taxes and inflation . . . they're still playing catchup

What happens to interest rates next

- Go up
  - A lot
  - Over decades . . . not over years

- Why
  - Because people don’t lend money with the objective of losing money
  - Negative interest rates (which is what we have today) can last for several years, but not indefinitely
  - People are not permanently irrational
  - They will stop lending their money . . . until such time as interest rates rise sufficiently to return a fair (if modest) return

Why is it necessary that interest rates rise from today's levels

- People are not permanently irrational
- They do not lend money with the objective of losing money
- When you lend money, you
  - Give up the use of that money
  - Suffer from illiquidity
  - Suffer from various risks
- People require a large enough return to fully offset these three disadvantages

What's normal for interest rates

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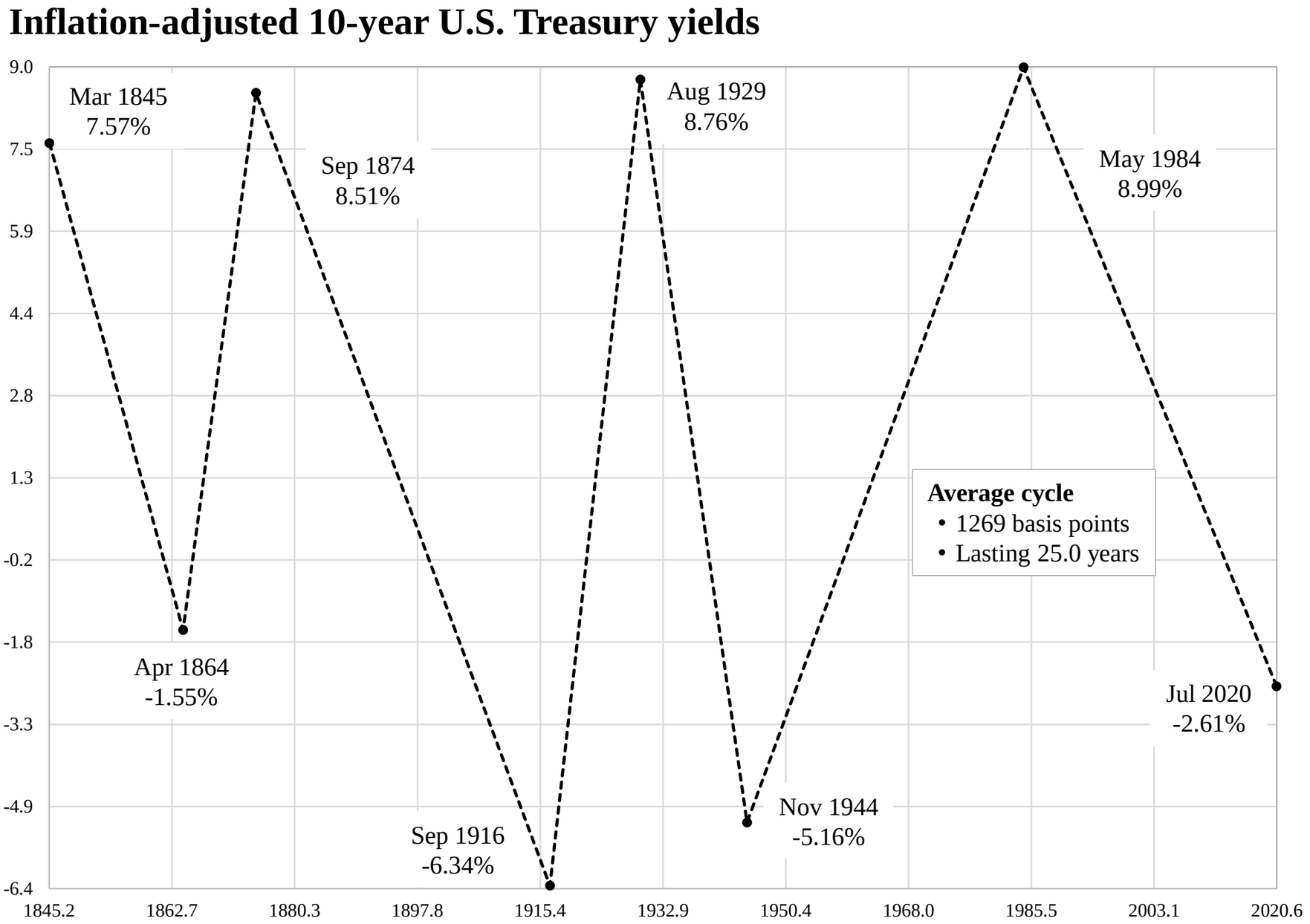


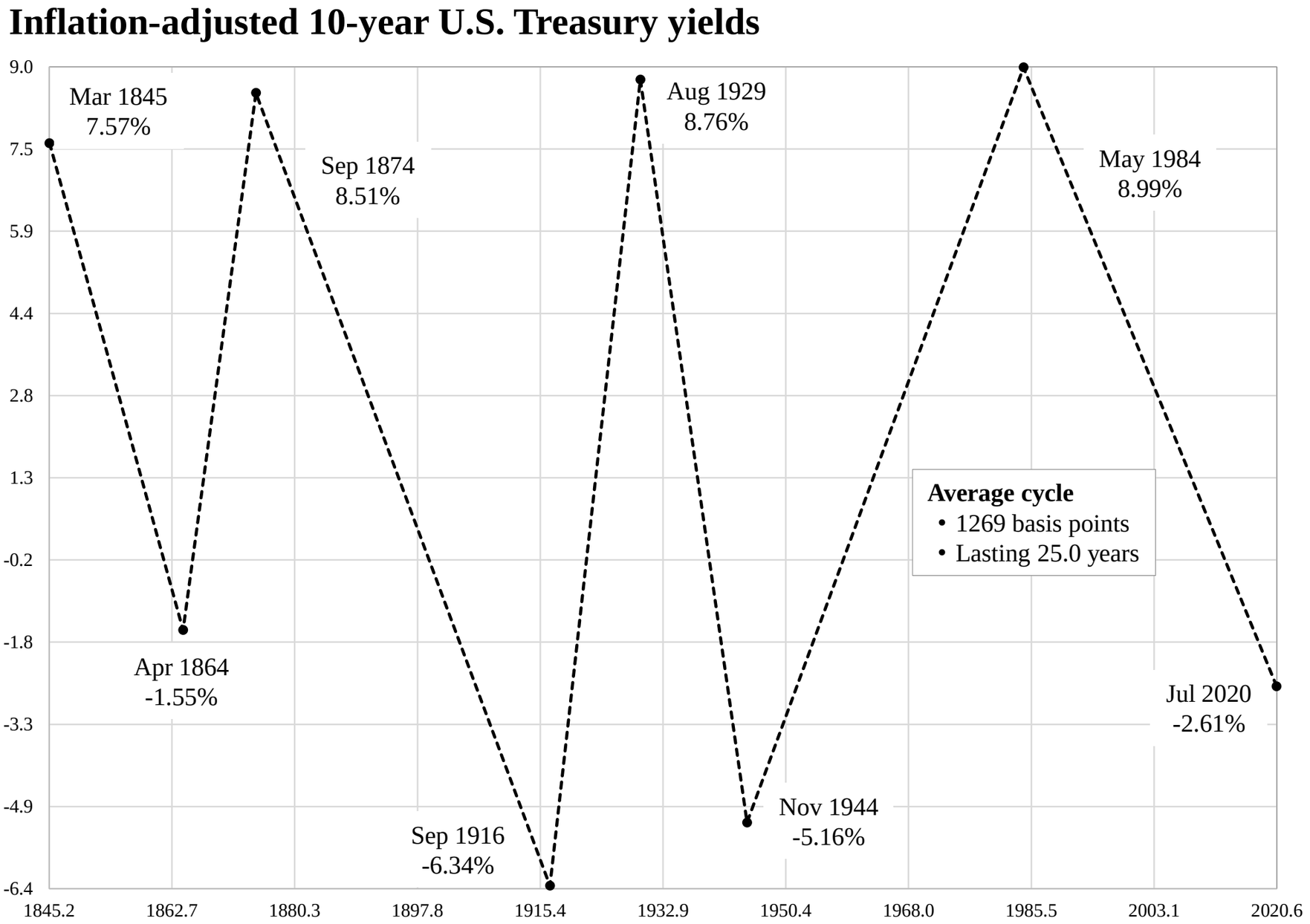
What would be abnormal and seriously peculiar for interest rates

- The 10-year Treasury stays at its current level
- It's currently at just 2.86%

- Which after taxes and inflation is losing you almost -1.12% every single year

- Equally abnormal and peculiar . . . would be that it fails to overshoot

What would be abnormal and seriously peculiar for interest rates



Where is inflation today?

Pretty darn high . . . . proceeding haltingly towards normality

Inflation

- Where is it today
- Is it low or high
- How did it get to today's level
- What happens next
- Why is this necessary
- What's normal
- What would be abnormal and seriously peculiar

Where is inflation today

- 8.5% on a year-over-year basis

- That was the March 31st number

Is inflation low or high, today

- 8.5% is abnormally high . . . . by a wide margin

- 2.3% is its very long run average
- 3.6% is its average since the end of WWII
- 4.1% is its average since the beginning of the Johnson administration (the beginning of large federal welfare programs)

How did inflation get to today's high level

- Why is inflation happening . . .
  - COVID
    - Millions left the labor force . . . stopped working
    - The global supply chain broke . . . and it takes years (not months) to reconnect it
    - Consumers got bored . . . and just started buying stuff . . . a lot of stuff
  - Federal government stimulus
    - Monetary - by Federal Reserve
    - Fiscal - spending by the US Congress
  - Ukraine
  - Deglobalization

What happens to inflation next

- It goes down
- The typical forecast has year-over-year CPI falling to 3.65% by Nov 30th of 2022
- And to 3.1% by July of 2023
- Security markets are forecasting inflation to AVERAGE just 2.95% over the next ten years

Why is it necessary that inflation falls from today's level

- Why must inflation fall from current levels?
  - COVID
    - Millions left the labor force . . . stopped working
    - The global supply chain broke . . . and it takes years (not months) to reconnect it
    - Consumers got bored . . . and just started buying stuff . . . a lot of stuff
  - Federal government stimulus
    - Monetary - by Federal Reserve
    - Fiscal - spending by the US Congress
  - Ukraine ⬆
  - Deglobalization ⬆

What's normal for inflation

	All time periods	Since end of WW-II (9/2/45)	Since beginning of Johnson administration (11/22/63)
Average	2.3%	3.6%	4.1%
Median	2.4%	2.8%	3.3%

What would be abnormal and seriously peculiar for inflation

- Inflation staying at 8.5% . . . . or at a similarly high level

- NO
- For inflation to stay this high the Federal government would need to make the following policy mistakes
  - Cut taxes
  - Expand spending
  - Print more money

- But all three of these are now moving in the opposite direction

Let’s consider TAA and how it performs when interest rates are rising

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International Stocks

7 European countries

2 countries from Asia and Australia

U.S. Stocks

7 categories of U.S. stocks

Bonds

6 categories of U.S. Treasuries (regular and inflation-protected)

1 type of U.S. corporate bonds (high yield)

Commodities

3 precious metals

1 type of diversified agricultural

Assumed one-way (a buy or a sell) transactions costs

All stocks and U.S. Treasury bonds	High-yield U.S. corporate bonds	Gold - physical (spot)	Diversified agricultural commodities	Platinum - physical (spot)	Palladium - physical (spot)
1	7.42	22.25	74.17	81.58	89

Performance since 1919

	TAA portfolio	65/0/35/0	75/0/25/0	35/30/35/0	40/35/25/0	35/30/26.25/8.75	40/35/18.75/6.25
Real return	10.80	6.40	6.86	6.19	6.66	6.11	6.60
Correlation with TAA portfolio	1	0.58	0.58	0.65	0.65	0.67	0.66
Annualized standard deviation	11.74	12.56	14.22	10.41	11.73	10.51	11.80
Return per unit of volatility	0.92	0.51	0.48	0.59	0.57	0.58	0.56

Growth of $1 in inflation-adjusted terms since 1919

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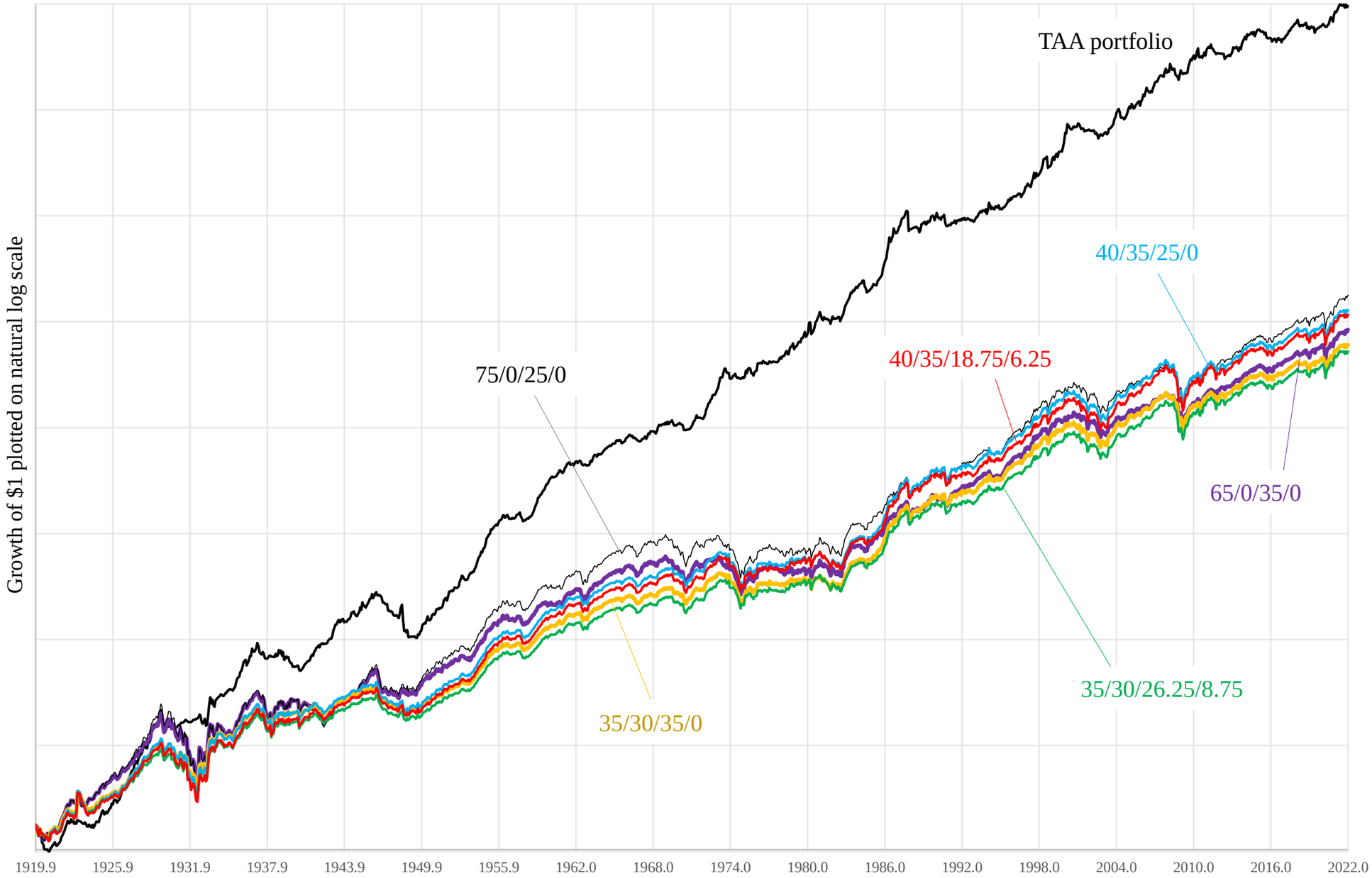

Annualized inflation-adjusted return for the typical 12.5-year period

Statistic	TAA portfolio	65/0/35/0	75/0/25/0	35/30/35/0	40/35/25/0	35/30/26.25/8.75	40/35/18.75/6.25
MEAN 12.5-year inflation-adjusted return (in %) over 1,076 different rolling time windows	11.32	6.04	6.47	6.09	6.57	6.04	6.53
MEDIAN 12.5-year inflation-adjusted return (in %) over 1,076 different rolling time windows	11.04	6.36	6.88	5.85	6.49	5.88	6.44

Percentile outcomes for a random 12.5-year long time period

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These are all after inflation has been subtracted out

Percentile	TAA portfolio	65/0/35/0	75/0/25/0	35/30/35/0	40/35/25/0	35/30/26.25/8.75	40/35/18.75/6.25
99.5	1.50	-1.00	-1.13	0.03	0.20	0.19	0.31
99	2.43	-0.78	-0.84	0.28	0.55	0.59	0.76
98	3.74	-0.60	-0.70	0.57	0.82	1.08	1.22
97	4.59	-0.42	-0.52	0.80	1.01	1.45	1.57
96	5.08	-0.22	-0.34	1.25	1.47	1.70	1.81
95	5.51	0.03	-0.16	1.43	1.65	1.88	2.00
90	7.70	1.04	1.08	2.05	2.37	2.51	2.69
85	8.37	2.20	2.29	2.61	2.98	2.91	3.19
80	8.86	3.30	3.22	3.24	3.52	3.56	3.75
75	9.12	3.89	3.98	3.83	3.93	3.99	4.09
70	9.54	4.31	4.76	4.28	4.47	4.43	4.55

Likelihood of success relative to stated objective

	TAA portfolio	65/0/35/0	75/0/25/0	35/30/35/0	40/35/25/0	35/30/26.25/8.75	40/35/18.75/6.25
Probability of earning more than 4.25% inflation-adjusted over a random 12.5-year time period	97.7	70.7	73.0	70.2	71.5	72.8	73.1

But what about when interest rates are rising?

When interest rates are rising - fast

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Statistics over entire time period (102 years) using inflation-adjusted monthly returns

		TAA portfolio	55/45 global stocks/bonds	65/35 global stocks/bonds	75/25 global stocks/bonds	85/15 global stocks/bonds	75/25 U.S. stocks/bonds	70/24/6 global stocks/bonds/ commodities
10% of the time when interest rates were rising the fastest	Real return	5.13	-3.27	-2.00	-0.72	0.56	-2.77	-0.62
	Annualized standard deviation	12.4	8.1	9.0	10.0	11.1	11.7	9.6
20% of the time when interest rates were rising the fastest	Real return	4.30	-3.34	-2.57	-1.81	-1.06	-5.14	-1.69
	Annualized standard deviation	13.1	7.7	8.8	9.9	11.1	12.1	9.5
30% of the time when interest rates were rising the fastest	Real return	5.49	-2.19	-1.48	-0.78	-0.09	-4.06	-0.57
	Annualized standard deviation	13.3	8.1	9.1	10.2	11.4	12.4	9.8

When inflation is rising

When inflation is rising - fast

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Statistics over entire time period (102 years) using inflation-adjusted monthly returns

		TAA portfolio	55/45 global stocks/bonds	65/35 global stocks/bonds	75/25 global stocks/bonds	85/15 global stocks/bonds	75/25 U.S. stocks/bonds	70/24/6 global stocks/bonds/ commodities
10% of the time when inflation was rising the fastest	Real return	-0.47	-7.46	-7.29	-7.13	-6.99	-8.66	-6.63
	Annualized standard deviation	13.6	9.9	11.0	12.1	13.3	13.9	11.4
20% of the time when inflation was rising the fastest	Real return	1.69	-3.45	-3.37	-3.31	-3.27	-2.76	-3.20
	Annualized standard deviation	12.9	8.9	9.8	10.8	11.9	13.6	10.2
30% of the time when inflation was rising the fastest	Real return	1.69	-1.32	-1.26	-1.22	-1.20	-0.99	-1.23
	Annualized standard deviation	12.5	8.6	9.6	10.7	11.8	13.3	10.2

When both interest rates and inflation are rising

When both inflation and interest rates are rising - fast

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Statistics over entire time period (102 years) using inflation-adjusted monthly returns

		TAA portfolio	55/45 global stocks/bonds	65/35 global stocks/bonds	75/25 global stocks/bonds	85/15 global stocks/bonds	75/25 U.S. stocks/bonds	70/24/6 global stocks/bonds/ commodities
10% of the time when **BOTH** interest rates and inflation are rising the fastest	Real return	2.22	-6.11	-5.00	-3.89	-2.78	-7.12	-3.83
	Annualized standard deviation	12.4	8.5	9.5	10.6	11.7	12.6	10.1
20% of the time when **BOTH** interest rates and inflation are rising the fastest	Real return	4.14	-4.16	-3.36	-2.56	-1.78	-5.75	-2.32
	Annualized standard deviation	13.1	8.3	9.4	10.5	11.7	12.4	10.0
30% of the time when **BOTH** interest rates and inflation are rising the fastest	Real return	4.81	-2.01	-1.26	-0.52	0.22	-3.57	-0.30
	Annualized standard deviation	13.1	7.9	8.9	10.0	11.1	12.1	9.6

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Growth versus Value - An update

Friday

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11:00 a.m. EASTERN

Important Disclosures

All data and statistics were provided by Global Financial Data, Inc. and the Kenneth R. French Data Library from Dartmouth University(unless otherwise indicated in the exhibit)

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