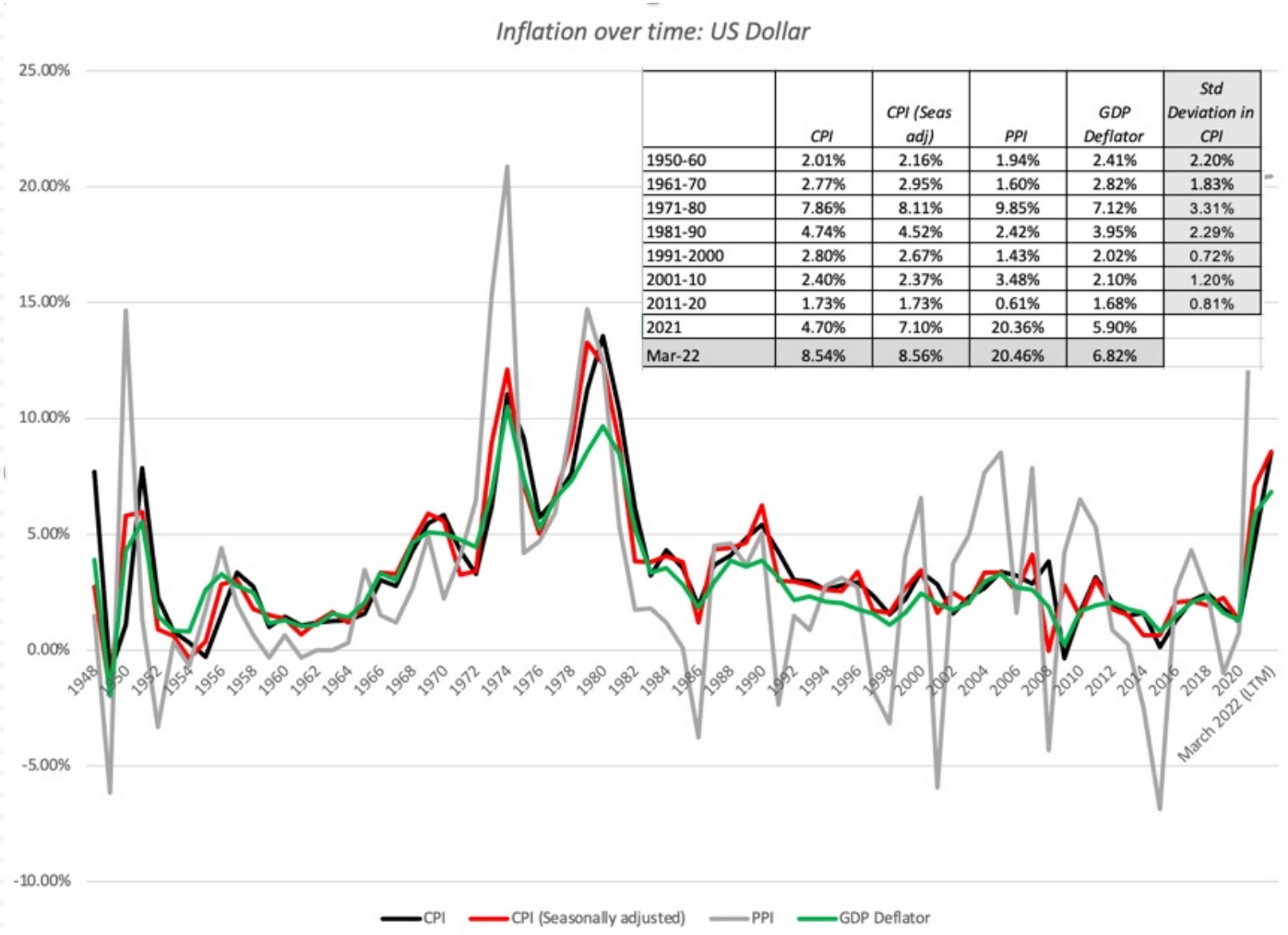
IN SEARCH OF A STEADY STATE: INFLATION, INTEREST RATES AND VALUE

The (inflation) genie escapes the bottle!

Searching for Balance

- The nature of markets is that they are never quite settled, as investors recalibrate expectations constantly and reset prices.
  - In most time periods, those recalibrations and resets tend to be small and in both directions, resulting in the ups and downs that pass for normal volatility.
  - WE are not in one of those time periods, as markets approach bipolar territory, with big moves up and down.
- The good news is that the culprit behind the volatility, inflation, is easy to identify, but the bad news is that inflation remains the most unpredictable of all macroeconomic factors to factor into stock prices and value.
- In this session, I will look at where we stand on inflation expectations, and the different paths we can be end up on, ranging from potentially catastrophic to mostly benign.

Inflation: Back in the news?

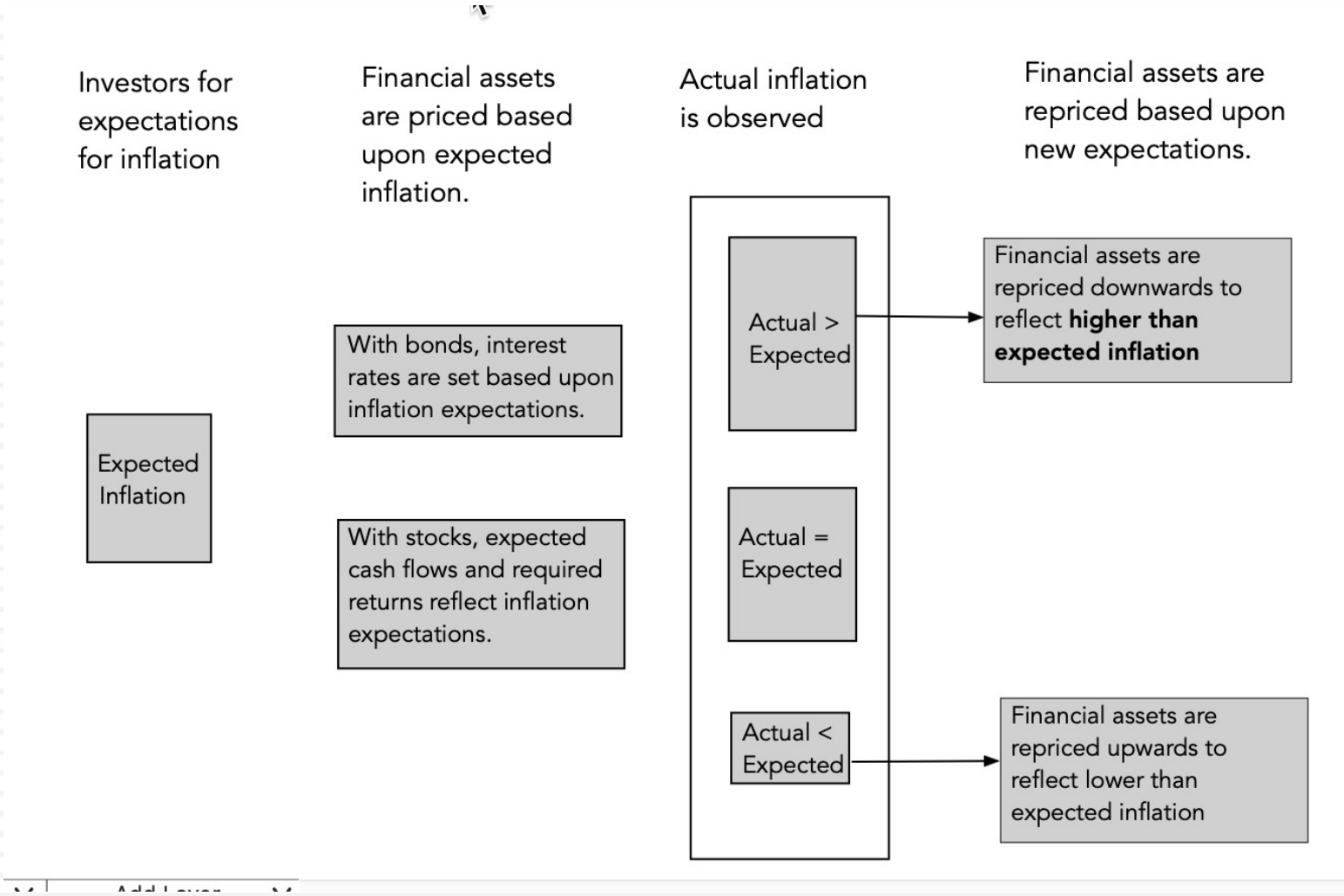


	CPI	CPI (Seas adj)	PPI	GDP Deflator	Std Deviation in CPI
1950-60	2.01%	2.16%	1.94%	2.41%	2.20%
1961-70	2.77%	2.95%	1.60%	2.82%	1.83%
1971-80	7.86%	8.11%	9.85%	7.12%	3.31%
1981-90	4.74%	4.52%	2.42%	3.95%	2.29%
1991-2000	2.80%	2.67%	1.43%	2.02%	0.72%
2001-10	2.40%	2.37%	3.48%	2.10%	1.20%
2011-20	1.73%	1.73%	0.61%	1.68%	0.81%
2021	4.70%	7.10%	20.36%	5.90%	
Mar-22	8.54%	8.56%	20.46%	6.82%	

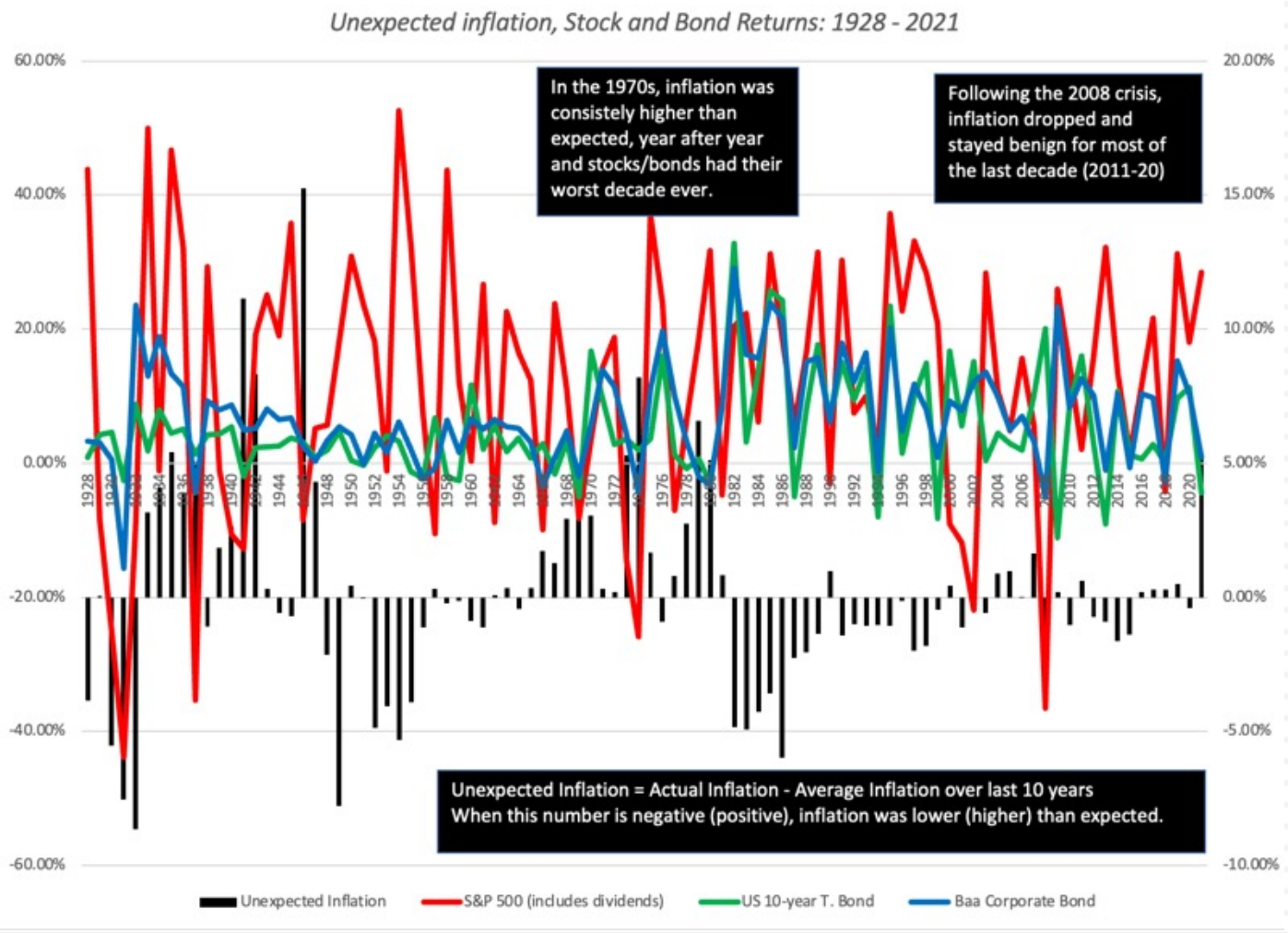
Inflation History

- While I report multiple measures of inflation, from the consumer price index (adjusted and unadjusted) to the producer price index to the price deflator used in the GDP, they all tell the same story.
  - We have had a long stretch of low and stable inflation, and that is especially true since the 2008 crisis.
  - In fact, the average inflation rate in the 2011-20 decade was the lowest of the seven decades that I cover in this chart.
  - Just as important, though, is the fact that variation in inflation, from year to year, was lower in 2011-2020 in every other decade, other than 1991-2000.

Expected and Unexpected Inflation



Unexpected Inflation and Financial Assets…



With a follow up…

Annual Returns on Stocks, Bills and Bonds: 1928 -2021

Stocks do best when inflation is close to expected and worst when inflation is far higher than expected.

Treasury and corporate bonds generally deliver worse returns when inflation is greater than expected.

Inflation less than expected.

Inflation greater than expected.

	S&P 500 (Stocks)		*3-month T.Bill*		*10-year T.Bond*		*Baa Corporate Bond*	
Qunitile	*Nominal*	*Real*	*Nominal*	*Real*	*Nominal*	*Real*	*Nominal*	*Real*
Bottom quintile	9.82%	9.80%	4.19%	4.17%	8.32%	8.30%	8.52%	8.50%
2nd quintile	17.50%	15.57%	2.96%	1.02%	7.80%	5.86%	9.17%	7.23%
3rd quintile	15.32%	13.04%	2.18%	-0.10%	1.69%	-0.59%	7.20%	4.92%
4th quintile	9.21%	5.36%	3.91%	0.06%	5.62%	1.77%	6.87%	3.02%
Top quintile	7.15%	0.01%	3.44%	-3.70%	2.29%	-4.84%	4.25%	-2.88%

Unexpected Inflation and Real Asset Returns..

Annual Returns on Gold (1970-2021) and Real Estate (1928 -2021)

Returns on gold, nominal and real, are significantly higher when inflation is greater than expected, and lower when it is lower than expected.

While nominal returns on real estate increase, as unexpected inflation gets higher, real returns show litle or no pattern.

Inflation less than expected.

Inflation greater than expected.

	Gold		*Real Estate*	
Qunitile	*Nominal*	*Real*	*Nominal*	*Real*
Bottom quintile	1.96%	-1.22%	1.54%	1.52%
2nd quintile	-2.15%	-4.45%	3.23%	1.29%
3rd quintile	16.97%	14.58%	4.81%	2.53%
4th quintile	5.23%	0.56%	4.46%	0.61%
Top quintile	46.34%	36.57%	7.62%	0.49%

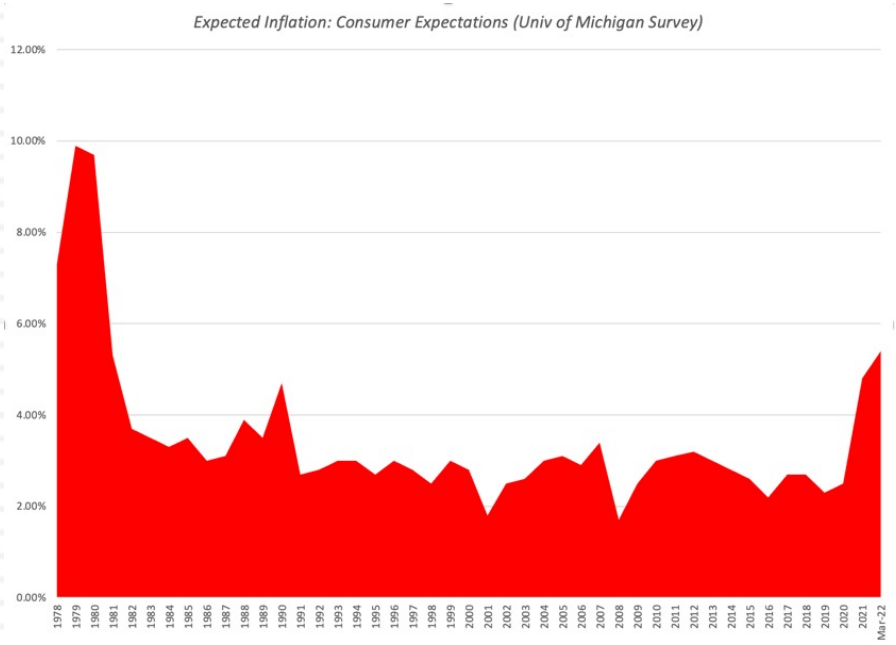
The Inflation Decade: 1971-1980

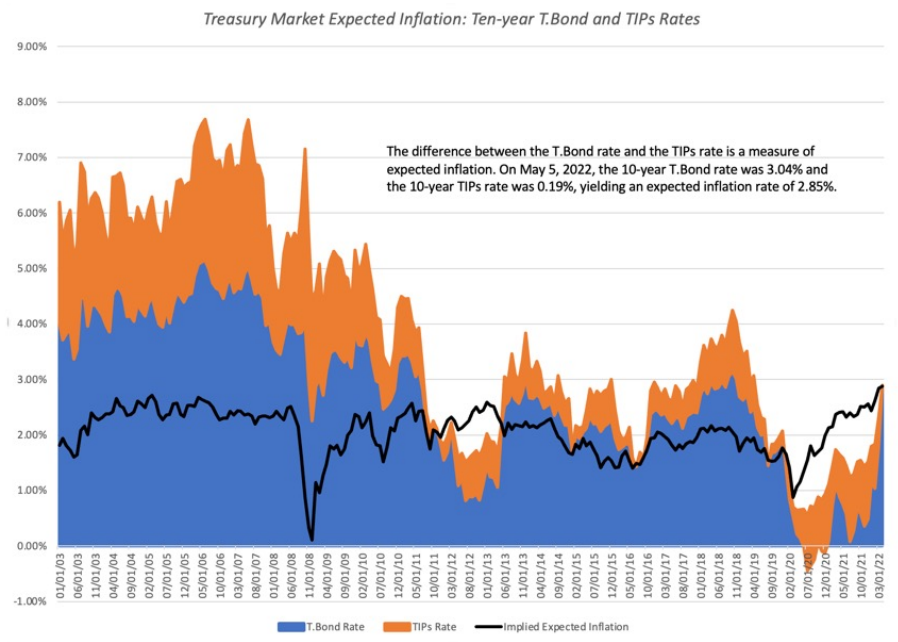
- Investors who are old enough to remember the 1970s point to it as a decade of high inflation, but that is only with the benefit of hindsight.
  - At the start of that decade, investors had no reason to believe that they were heading into a decade of higher inflation, and initial signs of price increases were attributed to temporary factors (with OPEC being a convenient target).
  - In fact, expected inflation lagged actual inflation through much of the decade, and the damage done to financial asset returns that decade came as much from actual inflation being higher than expected inflation, period after period, as from higher inflation.

The Inflation Surprise in 2021

- It is precisely because we have been spoiled by a decade of low and stable inflation that the inflation numbers in 2021 and 2022 have comes as such a surprise to economists, investors and even the Fed.
- Early on, the inflation surge was explained away by the reopening of the economy, after the COVID shutdown, and then by stressed supply chains, and expected inflation remained low.
- However, as inflation has remained stubbornly high, and neither COVID nor supply chains provide a sufficient rationale, market expectations of inflation have started to creep up.

Expected Inflation

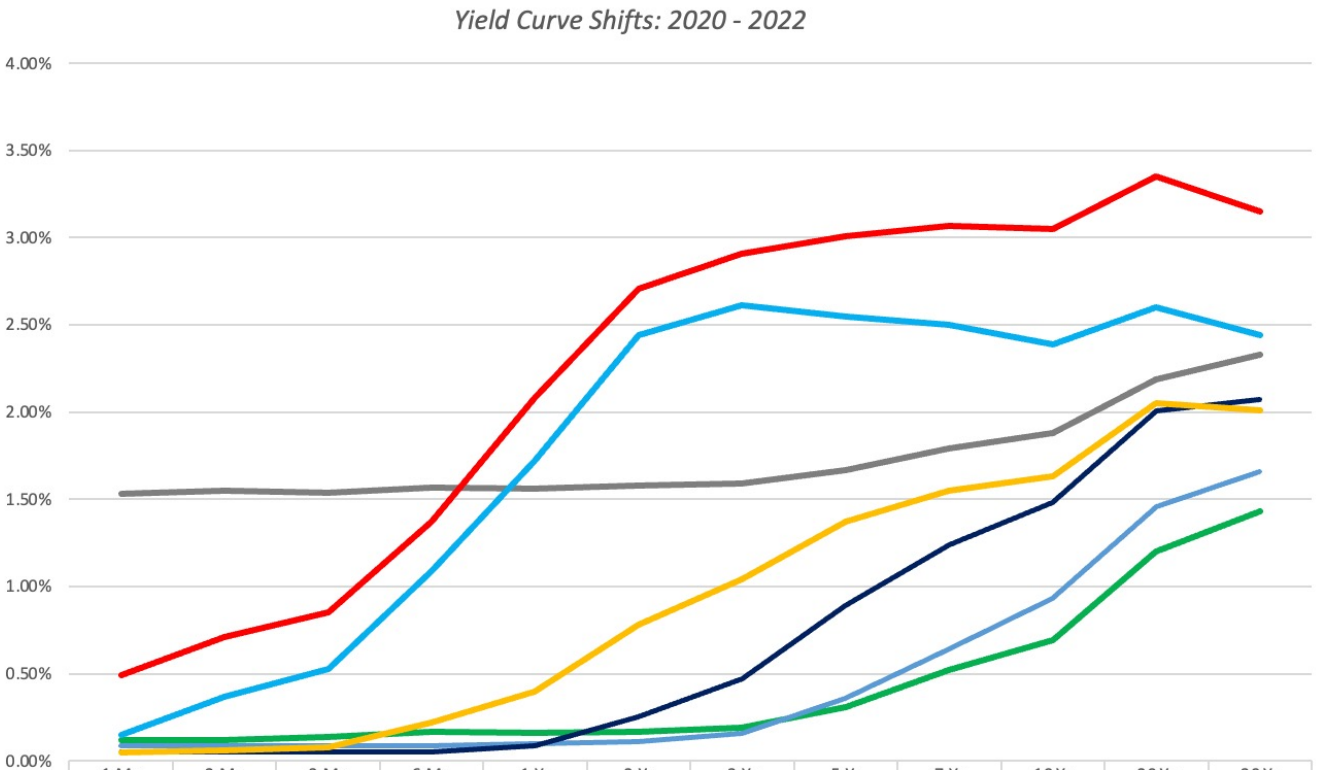




Explaining the divergence…

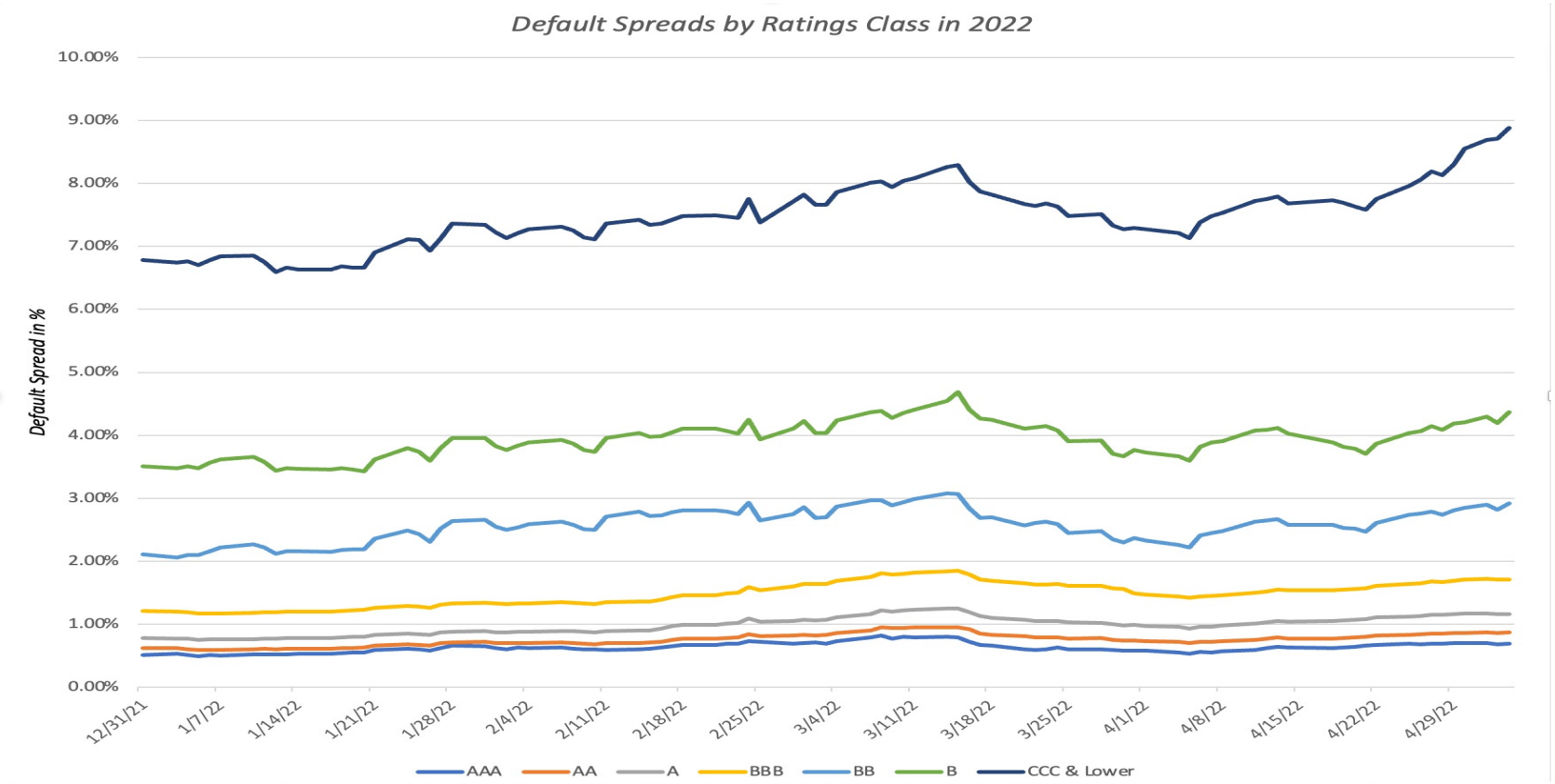
- Short term versus Long term: The consumer survey extracts an expectation of inflation in the near term, whereas the treasury markets are providing a longer term perspective, since I am using ten-year rates to derive the market-implied inflation.
- Consumers are over adjusting: The big inflation surges have happened in gasoline, food and housing, all items that consumers come into contact with on a continuous basis, and it is possible that they are over reaction and adjusting expected inflation up too much, as a consequence.
- Markets are under adjusting: Alternatively, it is possible that it is consumers who are being realistic and it is that the market which is under adjusting to higher inflation, partly because many investors have operated only in a low and steady inflation environment and partly because many of these investors have a belief that the Fed has super powers and "determines" what interest rates and inflation will be in the future.

Economic Consequences: Interest Rates



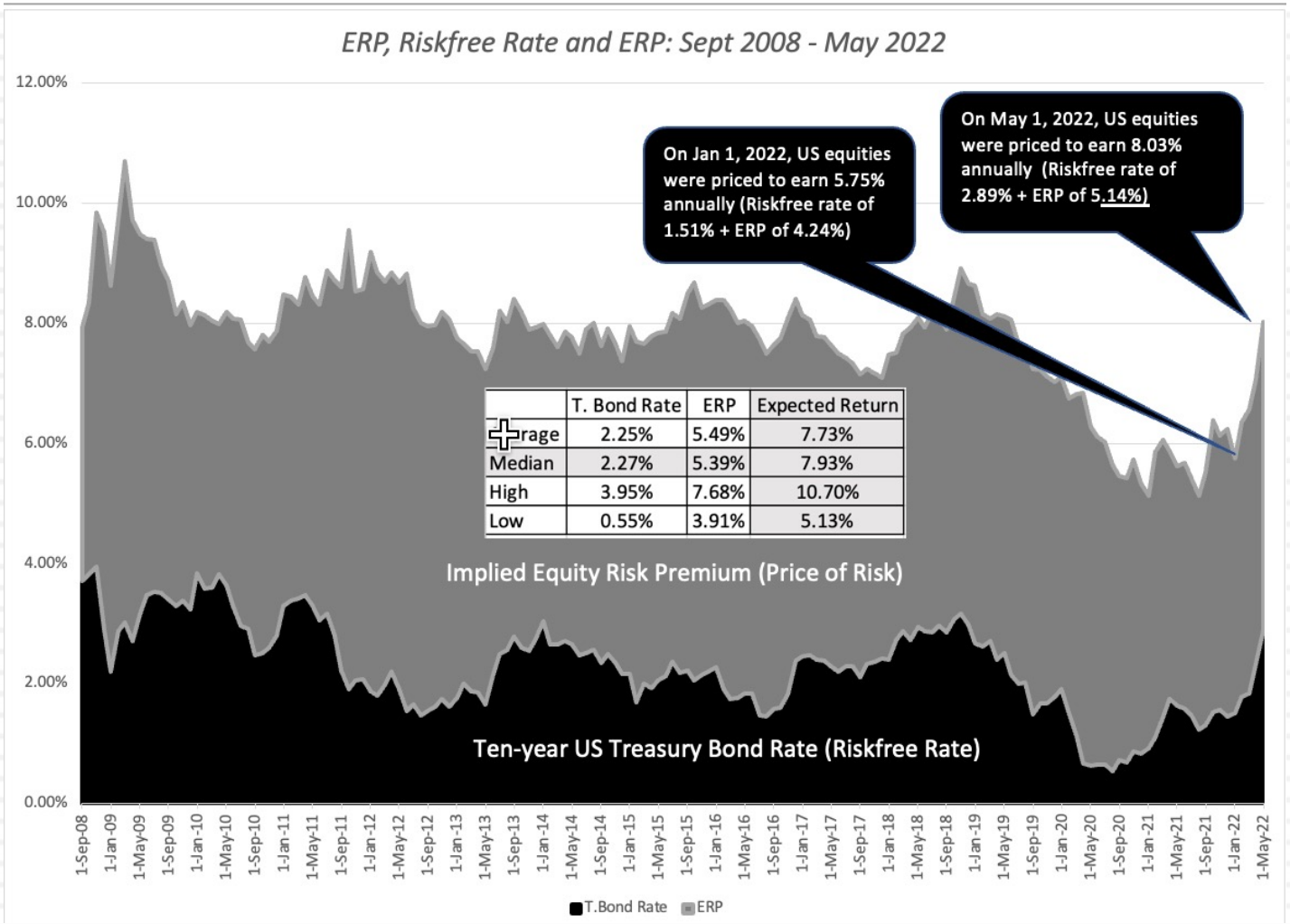
	1 Mo	2 Mo	3 Mo	6 Mo	1 Yr	2 Yr	3 Yr	5 Yr	7 Yr	10 Yr	20 Yr	30 Yr
1/1/20	1.53%	1.55%	1.54%	1.57%	1.56%	1.58%	1.59%	1.67%	1.79%	1.88%	2.19%	2.33%
7/1/20	0.12%	0.12%	0.14%	0.17%	0.16%	0.17%	0.19%	0.31%	0.52%	0.69%	1.20%	1.43%
1/1/21	0.09%	0.09%	0.09%	0.09%	0.10%	0.11%	0.16%	0.36%	0.64%	0.93%	1.46%	1.66%
7/1/21	0.05%	0.05%	0.05%	0.05%	0.09%	0.25%	0.47%	0.89%	1.24%	1.48%	2.01%	2.07%
1/1/22	0.05%	0.06%	0.08%	0.22%	0.40%	0.78%	1.04%	1.37%	1.55%	1.63%	2.05%	2.01%
4/1/22	0.15%	0.37%	0.53%	1.09%	1.72%	2.44%	2.61%	2.55%	2.50%	2.39%	2.60%	2.44%
5/5/22	0.49%	0.71%	0.85%	1.37%	2.08%	2.71%	2.91%	3.01%	3.07%	3.05%	3.35%	3.15%

Default Spreads…



Date	AAA	AA	A	BBB	BB	B	0
12/31/21	0.51%	0.62%	0.78%	1.21%	2.11%	3.51%	6.78%
2/1/22	0.62%	0.70%	0.87%	1.33%	2.55%	3.83%	7.22%
3/1/22	0.70%	0.83%	1.07%	1.64%	2.86%	4.23%	7.82%
4/1/22	0.58%	0.73%	0.97%	1.47%	2.33%	3.73%	7.27%
5/4/22	0.69%	0.87%	1.16%	1.71%	2.92%	4.37%	8.88%
Change in 2022	0.18%	0.25%	0.38%	0.50%	0.81%	0.86%	2.10%

And on expected returns on stocks…



	T. Bond Rate	ERP	Expected Return
Average	2.25%	5.49%	7.73%
Median	2.27%	5.39%	7.93%
High	3.95%	7.68%	10.70%
Low	0.55%	3.91%	5.13%

With worries about economic growth…

- Almost every economic forecasting service has increased their assessed probabilities for a recession, with variations on how deep and long a recession has to be to break inflation's back.
- In a note published in mid-April, Larry Summers and Alex Domash go as far as to put the likelihood of a recession at 100%, based upon a joint indicator, i.e., that a combination of inflation > 5% and unemployment<4% has always led to a recession within 12 to 24 months, using quarterly data from the 1950s to today.
- While I remain a skeptic about historic rules of thumb (downward sloping yield curve, for example) to make categorical statements about future economic growth, I think that we can state categorically that there is a greater chance of an economic slowdown now than just a few months ago.

Investment Consequences

- As the storm clouds of higher inflation and interest rates, in conjunction with slower or even negative economic growth, gather, it should come as no surprise that equity markets are struggling to find their footing.
  - At the close of trading on May 5, 2022, the S&P 500 stood at 4147, down 13.3% from the start of the year value, accompanied by increased volatility.
  - You are hearing from ”experts” offering divergent advice from sell and flee to buy into weakness.
- Investors are looking for safe havens, in case inflation is back, and they are being offered alternative ”asset” classes.

Determinants of Value

- Steady State Interest Rate: There are three possibilities for the future.
  - Bulk of the move is behind us. This is steady state.
  - A Seventies rerun, with expectations lagging inflation
  - Inflation is transient and returns to last decade levels
- Equity Risk Premium Path: The equity risk premium of 5.24%, estimated at the start of May 2022, is at the high end of historical equity risk premiums. That rate could
  - Continue to rise with high and volatile inflation
  - Stay steady at current levels
  - Drop, as inflation fears pass
- Earnings Estimates: The strength of the economy has been a big contributor to boosting actual and expected earnings on companies in the last two years, and these higher earnings have translated into more cash returned in dividends and buybacks. If recession fears play out, those earnings may be under stress.

S&P Valuation: Status Quo

Valuing the S&P 500 on May 5, 2022

Risk free Rate
Assume that the treasury bond rate will stay at or around 3% long term.

Expected Earnings in 2022 & 2023
Used analyst forecasts for earnings in 2022 and 2023

Growth rates in 2024-26
Growth rate decreases from 2023 level to stable growth in linear increments.

Growth rate beyond 2026
Expected growth rate is 3% in perpetuity (= Risk free rate in 2026)

	2021	2022	2023	2024	2025	2026	*Terminal Year*
Earnings	$208.49	227.29	250.11	269.35	283.75	292.27	301.03
Expected growth		9.02%	10.04%	7.69%	5.35%	3.00%	3.00%
Cash Payout Ratio	80.48%	80.48%	80.70%	80.92%	81.14%	81.37%	81.37%
Dividends + Buybacks =	$167.79	$182.92	$201.84	$217.96	$230.25	$237.81	244.94
Terminal Value =						$4,898.81	
Riskfree Rate	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Required Return	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
Present Value =		$169.37	$173.04	$173.03	$169.24	$3,495.90	
Intrinsic Value of Index =	4180.57						
Actual Index level =	4146.87						
% Under or Over Valuation =	-0.81%						

Intrinsic Value of Index
PV of expected cash flows for next 5 years + PV of terminal value

Terminal Value
= 244.94/ (.08 - .03) = 4898.81

Value Dynamics

Interest Rates, the Economy and the Price of Risk: Value Effects

The Volcker Rerun
In this scenario, the economy goes into a recession, but inflation drops precipitously and interest rates decline. Price effect will depend on what risk premiums revert to.

Much Ado about Nothing?
In this scenario, the economy stays afloat, earnings come in close to expeciations, inflation reverts to Fed targets and the price of risk levels off.

Valuing the S&P 500 on May 5, 2022

	Earnings = 20% below Estimates			*Earnings = 10% below Estimates*			*Earnings = Estimates*		
Riskfree Rate	*4%*	*5%*	*6%*	*4%*	*5%*	*6%*	*4%*	*5%*	*6%*
2%	4567	3640	3022	5137	4095	3400	5708	4550	3778
3%	4189	3344	2782	4713	3763	3129	5236	4181	3477
4%	3825	3059	2549	4303	3442	2867	4781	3824	3186
5%	3473	2784	2324	3907	3132	2615	4341	3480	2905
6%	3134	2518	2107	3525	2832	2370	3917	3147	2633

Index was trading at 4147 on 5/5/22. Shaded cells are higher than 4147

The Seventies Show
In this scenario, the economy goes into a recession and inflation remains stubbornly high . Damage will depend on how risk premiums do.

Live and let live (with inflation)
In this scenario, inflation stays high, but earnings remain resilient. Price effect depends largely on how much risk premiums rise to reflect inflaitono uncertainty.

Inflation and Value: Just the facts!

Inflation effect: Depends on Pricing power
Divergence: Companies with pricing power should be able to pass through inflation into their product/service prices, allowing revenues to grow with inflation.

Inflation effect: Cost components & structure
Divergence: Companies with significant costs (low gross margins) and inputs that are more exposed to inflation (commodities) will see margins decrease, relative to other companies.

Inflation effect: Uncertainty about future inflation
Divergence: Companies with longer term investments will invest less, as uncertainty about future inflation makes it more difficult to justify large up front investments.

Revenue Growth
Function of the size of the total accessible market & market share

Operating Margins
Determined by pricing power and cost efficiencies

Growth/Investment Efficiency
Measure of how much investment is needed to deliver growth

Value of Business

Expected FCFF = Revenues * Operating Margin - Taxes - Reinvestment

Risk-adjusted Discount Rate

Failure Risk
Chance of grevious or catastrophic event putting business model at risk.

Cost of Equity
Rate of return that equity investors demand

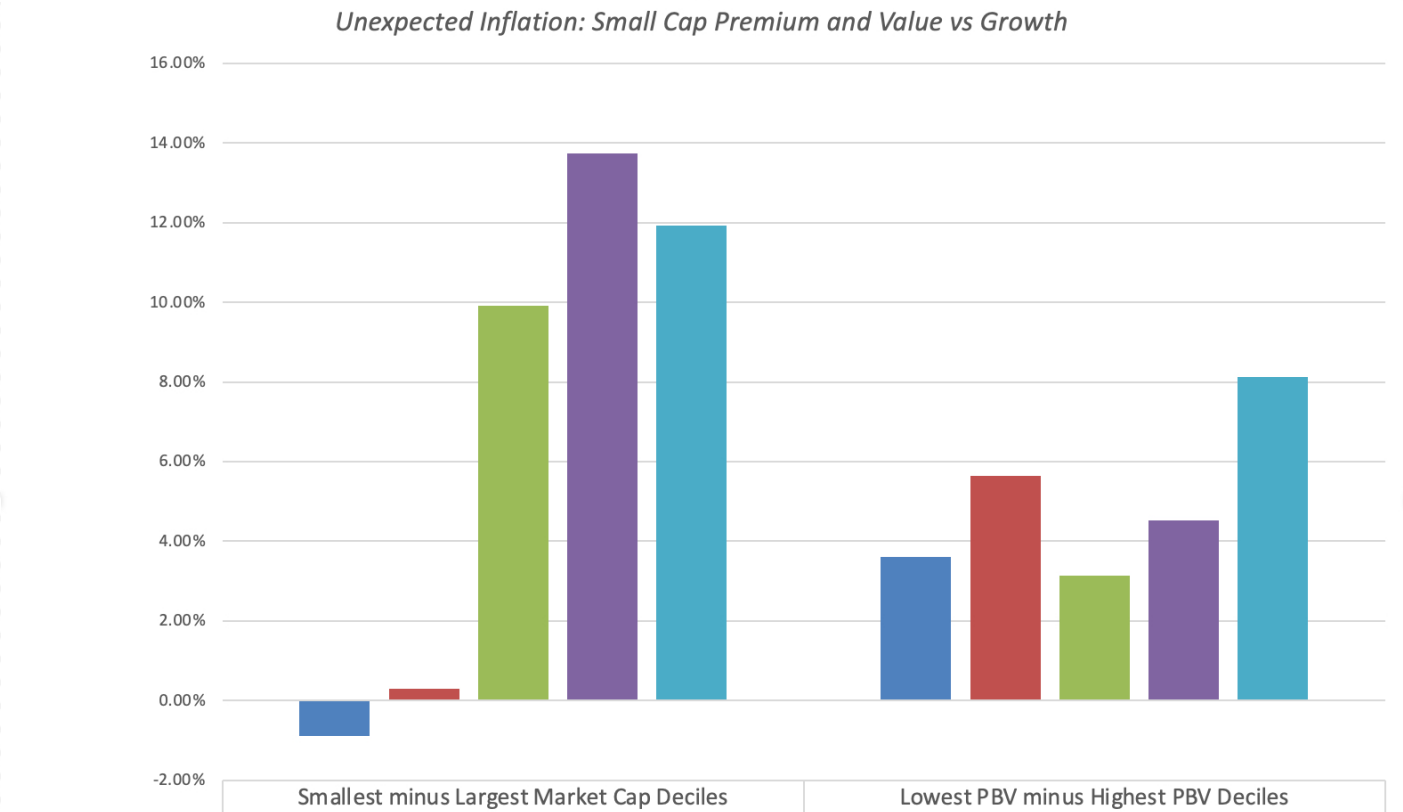
Cost of Debt
Cost of borrowing money, net of tax advantages

Inflation effect: Increase failure risk
Divergence: Failure risk will rise at cash flow negative companies (both very young & old).

Inflation effect: Increase cost of equity
Divergence: Inflation will increase the risk free rate, and uncertainty about inflation will increase teh equity risk premium, with costs of equity rising more for riskier firms.

Inflation effect: Increase cost of debt
Evidence: The cost of debt will rise as expected iinflation rises, pushing up the risk free rate and default spreads. If inflation is higher than expected, there is a benefit.

Unexpected Inflation and Stock Groupings..



	Smallest minus Largest Market Cap Deciles	Lowest PBV minus Highest PBV Deciles
Bottom quintile	-0.89%	3.61%
2nd quintile	0.29%	5.64%
3rd quintile	9.92%	3.13%
4th quintile	13.74%	4.52%
Top quintile	11.94%	8.12%

The Return of Value (and Small Cap) Investing?

- For value investors, who have spent a decade wandering in the wilderness, the return of inflation may seem like a chance at redemption, but there are two caveats:
  - While the table shows that low PE and low PBV ratio stocks did better than high PE and high PBV stocks during inflationary periods, they still delivered sub-standard returns, just less sub-standard than other groupings.
  - There is little evidence that active value investing derived any benefits from high inflation. In short, as in almost every other time period in the last century, a value index fund would have beaten most active value investors.
- With small cap investing, which has not delivered a premium since 1981, the circumstances (market structure, trading costs/difficulty, information access) have changed enough that they may be no repeat of the 1970s.

Other investment classes: Real Estate and Gold

- One of the costs that come with the last scenario is that inflation eats away at trust in not just currencies, but in all financial assets, and that investors will turn away from stocks and bonds.
- In the 1970s, the asset classes that benefited the most from this flight were gold and real estate, and the question is which asset classes will best play this role now, if inflation is here to stay.
  - I do think that securitizing real estate has made it behave more like financial assets and removed some of its power to hedge against inflation, but there may be segments (such as rental properties, where rent can be raised to match inflation) that retain their inflation fighting magic.
  - Gold's history as a collectible with standing will continue, but the truth is that it is not big enough as an asset class for us to all hold it.

Cryptos, NFTS and other Collectibles

- That, of course, brings us to cryptos, NFTs and other, more recent, entrants into the investment choice list. In theory, you could make the argument that these new investment choices will operate like gold, but you have two serious barriers to overcome.
  - The first is that they have not been along for long, and history is full of collectibles, from Beanie Babies to Pokemon cards, that people paid high prices for, but failed to hold their value.
  - The second is that in the limited history that we have for cryptos and NFTs, they have behaved less like collectibles (holding or increasing in value, as stocks and bonds collapse) and more like very risk stock.
- In fact, higher and sustained inflation may be the ultimate test of whether there is any substance to the bitcoin as millennial gold story, and the results may make or break those holding cryptos for the financial apocalypse that they see coming.

In Conclusion…

- The inflation genie is out of the bottle, and if history is any guide, getting it back in is going to take more time and create more pain than we realize.
  - It is the lesson that the US learned in the 1970s, and that other countries have learned or chosen to not learn from their own encounters with inflation.
  - It is the reason that when inflation made itself visible in the early part of 2021, I argued that the Fed should take it seriously, and respond quickly, even if there existed the possibility that it was transient.
- The Fed and the administration chose a different path, one that can be described as whistling in the graveyard, not just ignoring the danger with happy talk, but also actively taking decisions that only exacerbated the danger.
  - They find themselves between a rock (more inflation) and a hard place (a recession), and while you may be tempted to say "I told you so", the truth is that we will all feel the pain.
  - If central banking good sense prevails, we are faced with a recession of uncertain length and depth. If political expediency leads to accepting inflation, a generation of businesspeople, investors and public policy makers will have to learn to live with higher and more volatile inflation.