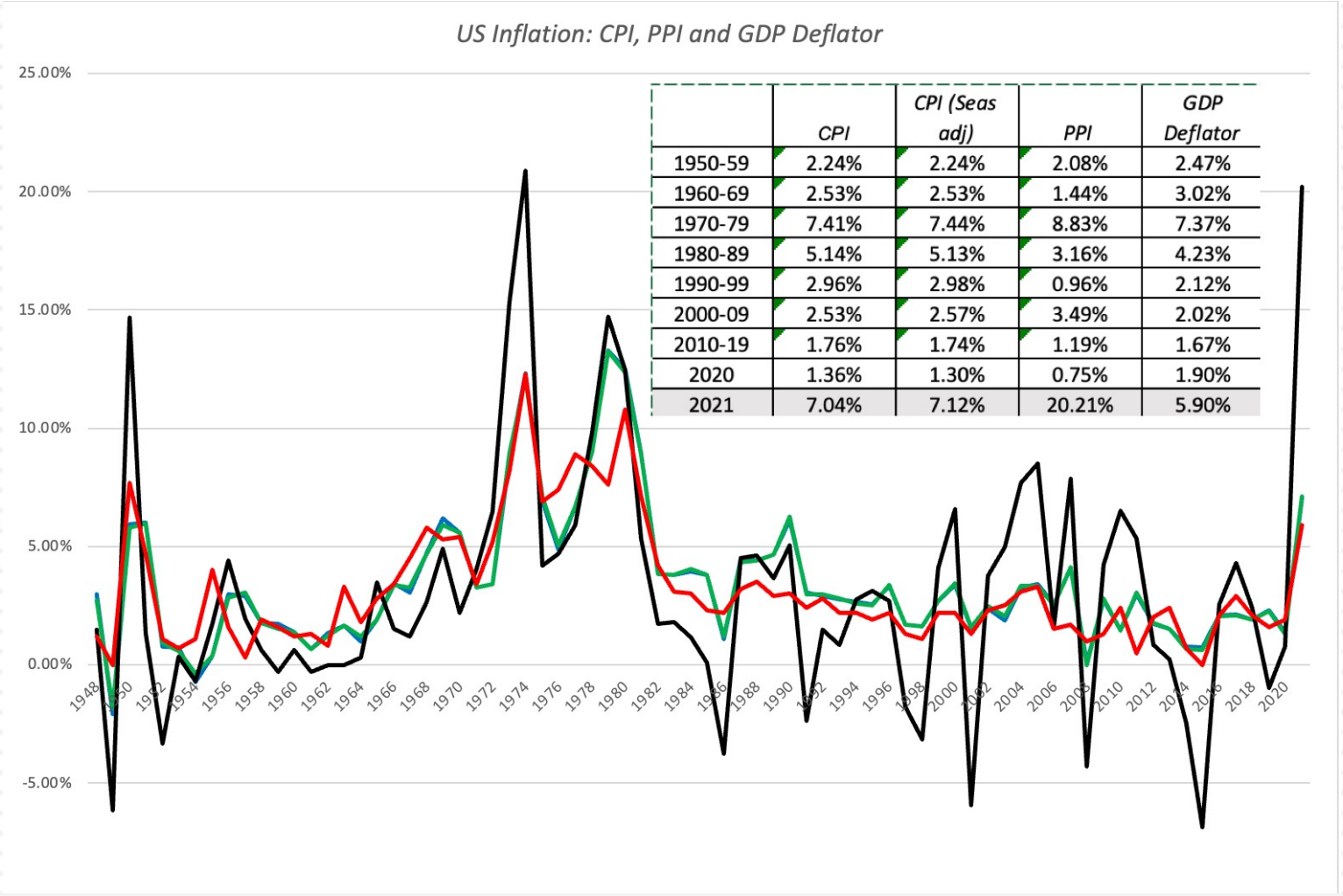
DATA UPDATE 3 FOR 2022: INFLATION, INTEREST RATES AND RETURNS!

The Inflation Factor

Inflation is back.. Or not…

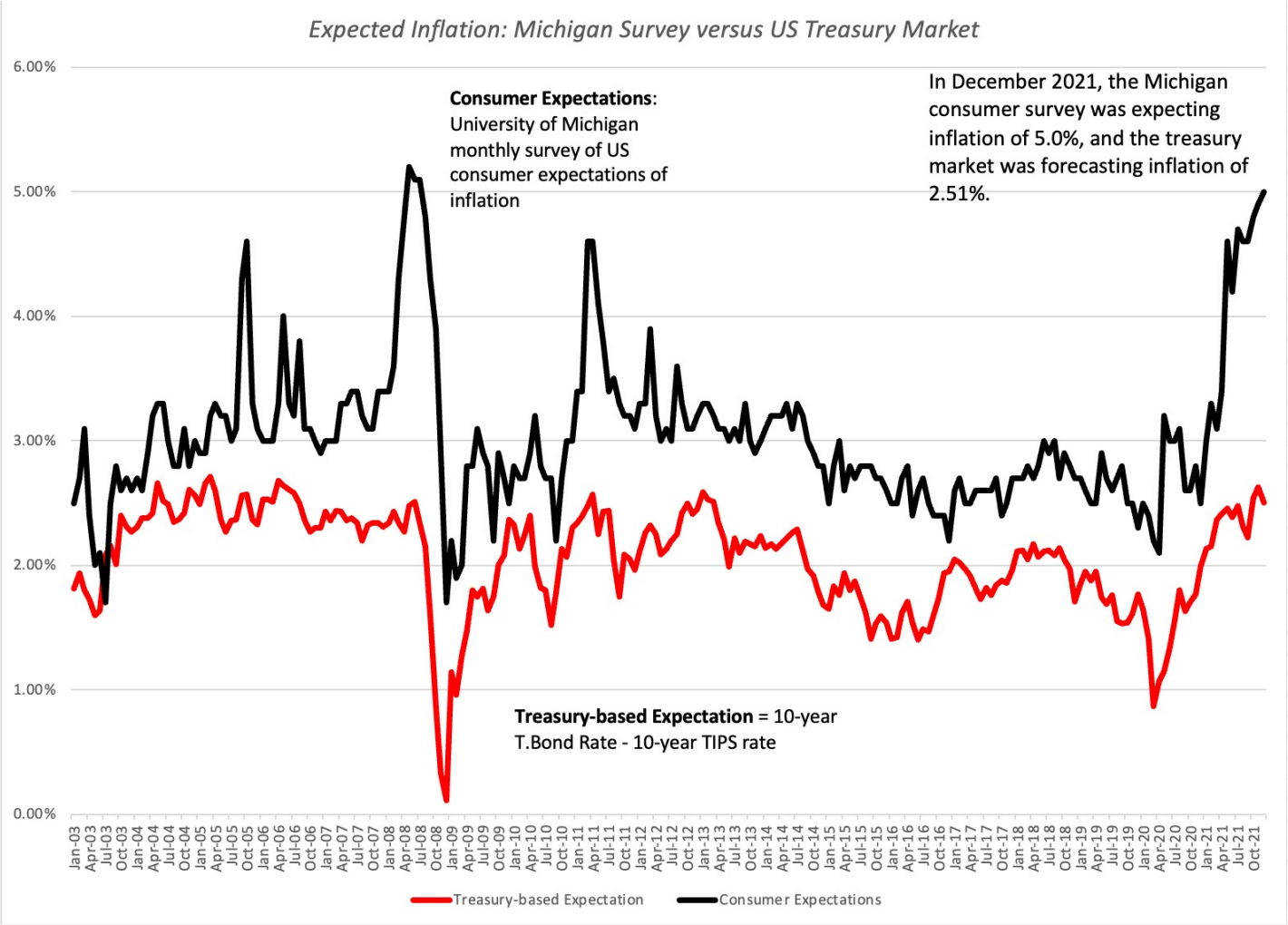
- Inflation numbers have been coming in high now, for more than a year, but for much of the early part of 2021, bankers, investors and politicians seemed to be either in denial or casually dismissive of its potential for damage.
  - Initially, the high inflation numbers were attributed to the speed with the economy was recovering from COVID, and once that excuse fell flat, it was the supply chain that was help responsible.
- By the end of 2021, it was clear that this bout of inflation was not as transient a phenomenon as some had made it out to be, and the big question leading in 2022, for investors and markets, is how inflation will play out during the year, and beyond, and the consequences for stocks, bonds and currencies.

Inflation: Competing measures (of past inflation)

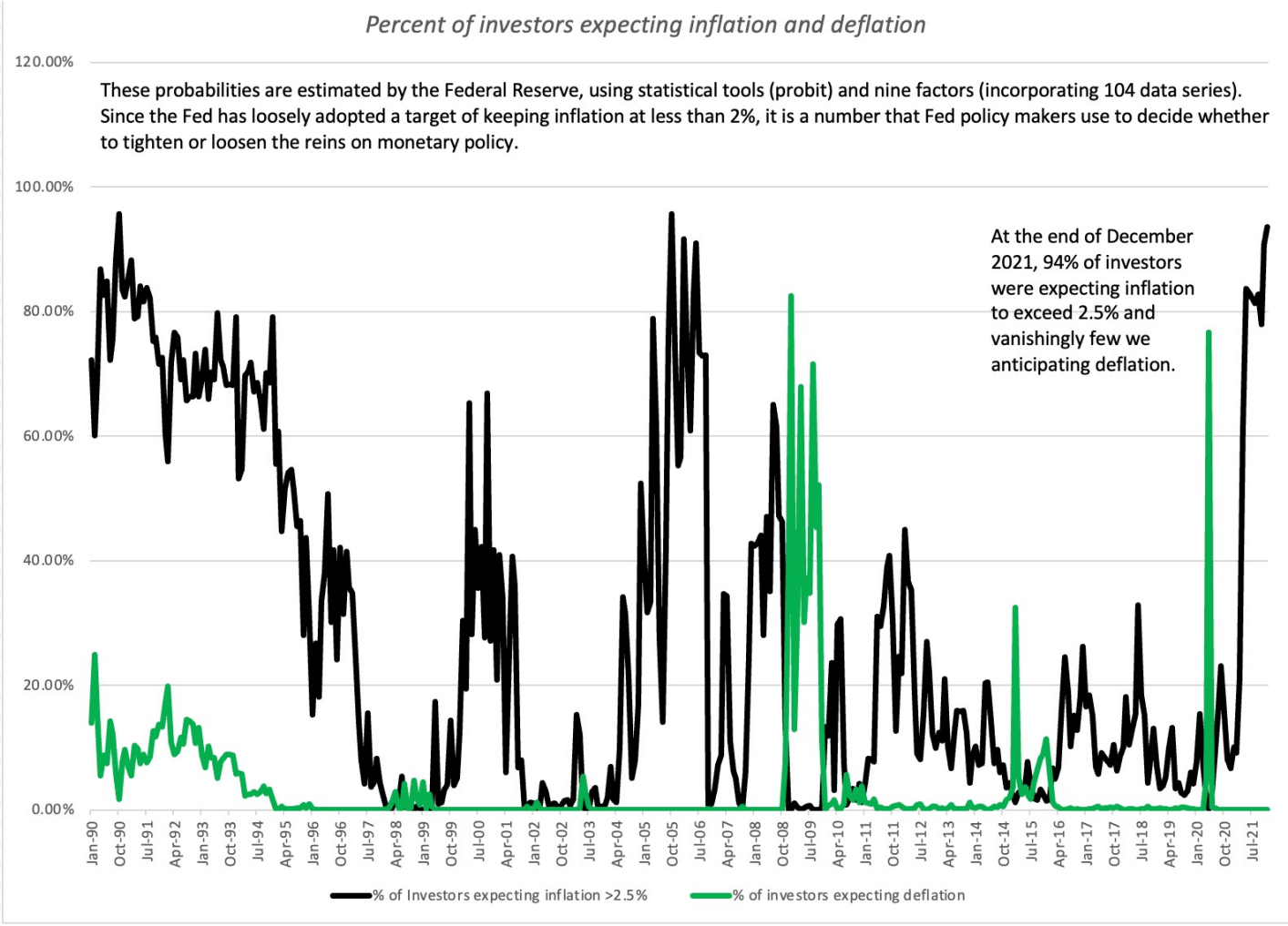


	CPI	CPI (Seas adj)	PPI	GDP Deflator
1950-59	2.24%	2.24%	2.08%	2.47%
1960-69	2.53%	2.53%	1.44%	3.02%
1970-79	7.41%	7.44%	8.83%	7.37%
1980-89	5.14%	5.13%	3.16%	4.23%
1990-99	2.96%	2.98%	0.96%	2.12%
2000-09	2.53%	2.57%	3.49%	2.02%
2010-19	1.76%	1.74%	1.19%	1.67%
2020	1.36%	1.30%	0.75%	1.90%
2021	7.04%	7.12%	20.21%	5.90%

And expected inflation…



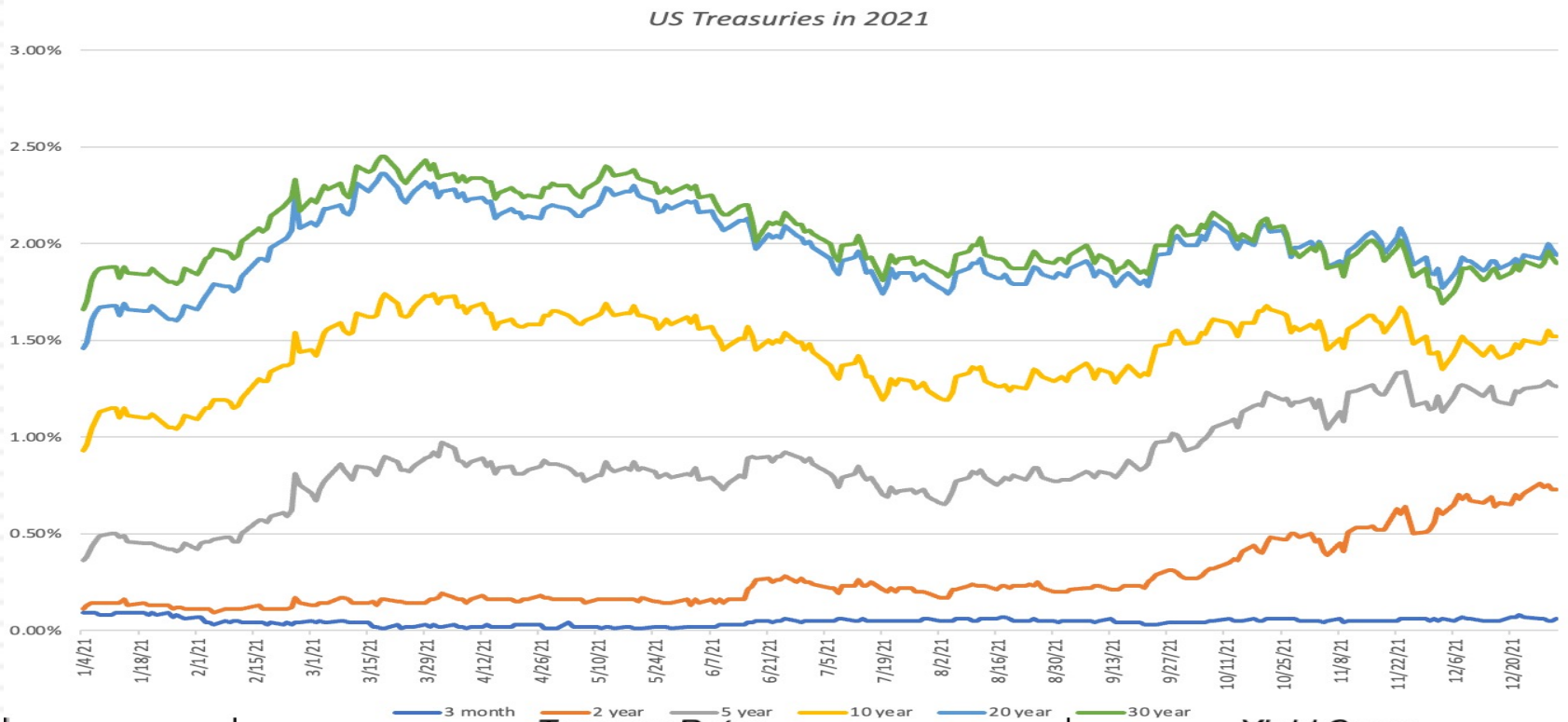
With rising investors concerns…



Summing up.. Where we are now..

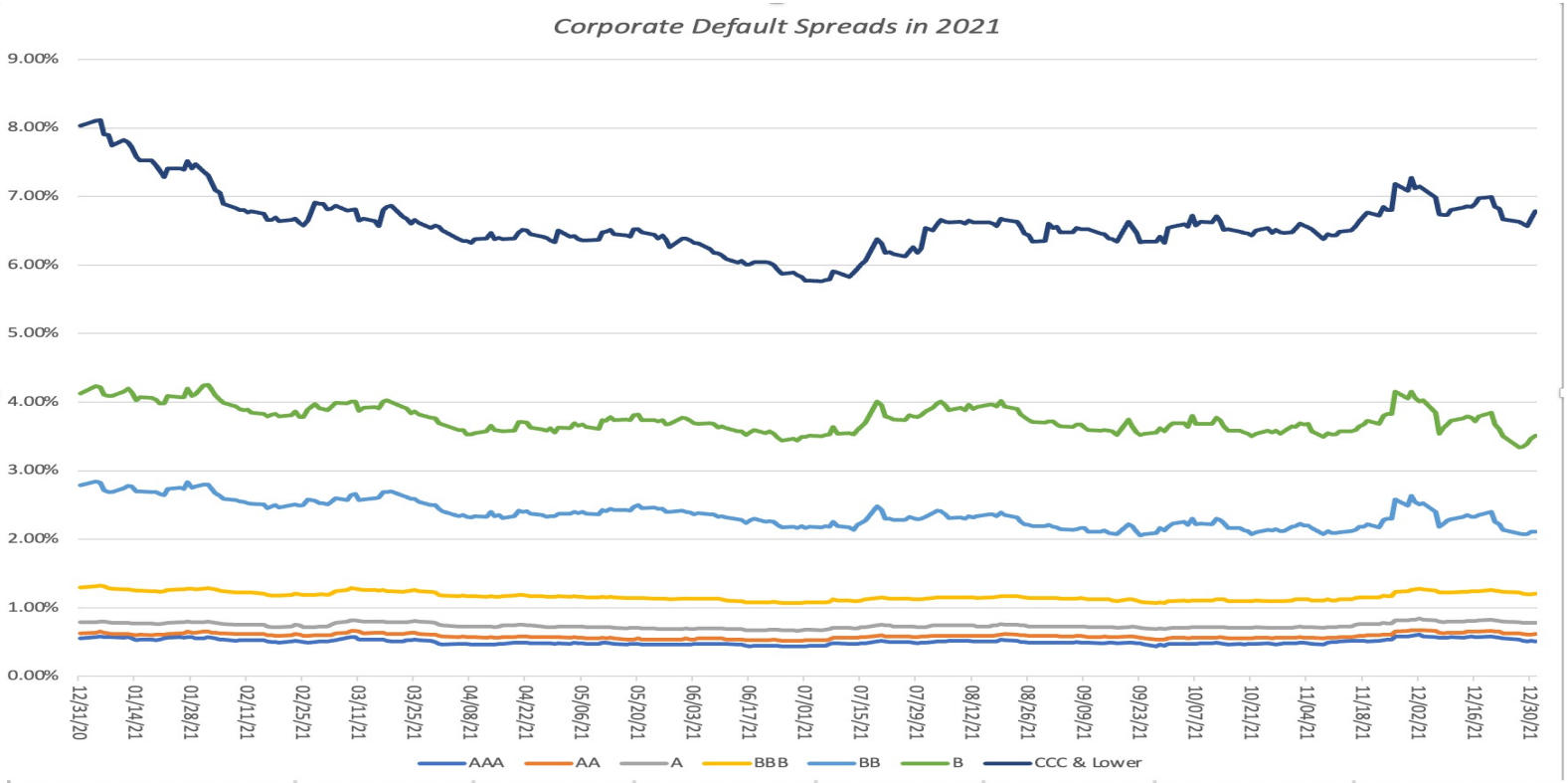
- The undeniable fact is that inflation came back in 2021, but the question of why it happened, and whether it will stay high, is hotly debated.
  - To those who believe that it is a spike that will dissipate over time, it is another casualty of COVID, as a combination of virus-driven supply chain issues and government spending to offset shutdowns has driven prices up. In this mostly benign story, inflation will go back down, once these pressure ease, though it is unclear to what level.
  - To others, and especially those old enough to remember the 1970s, it does seem like a return to more unsettled times, with potentially dangerous consequences for the economy and markets.

US Treasuries: The Year that was…



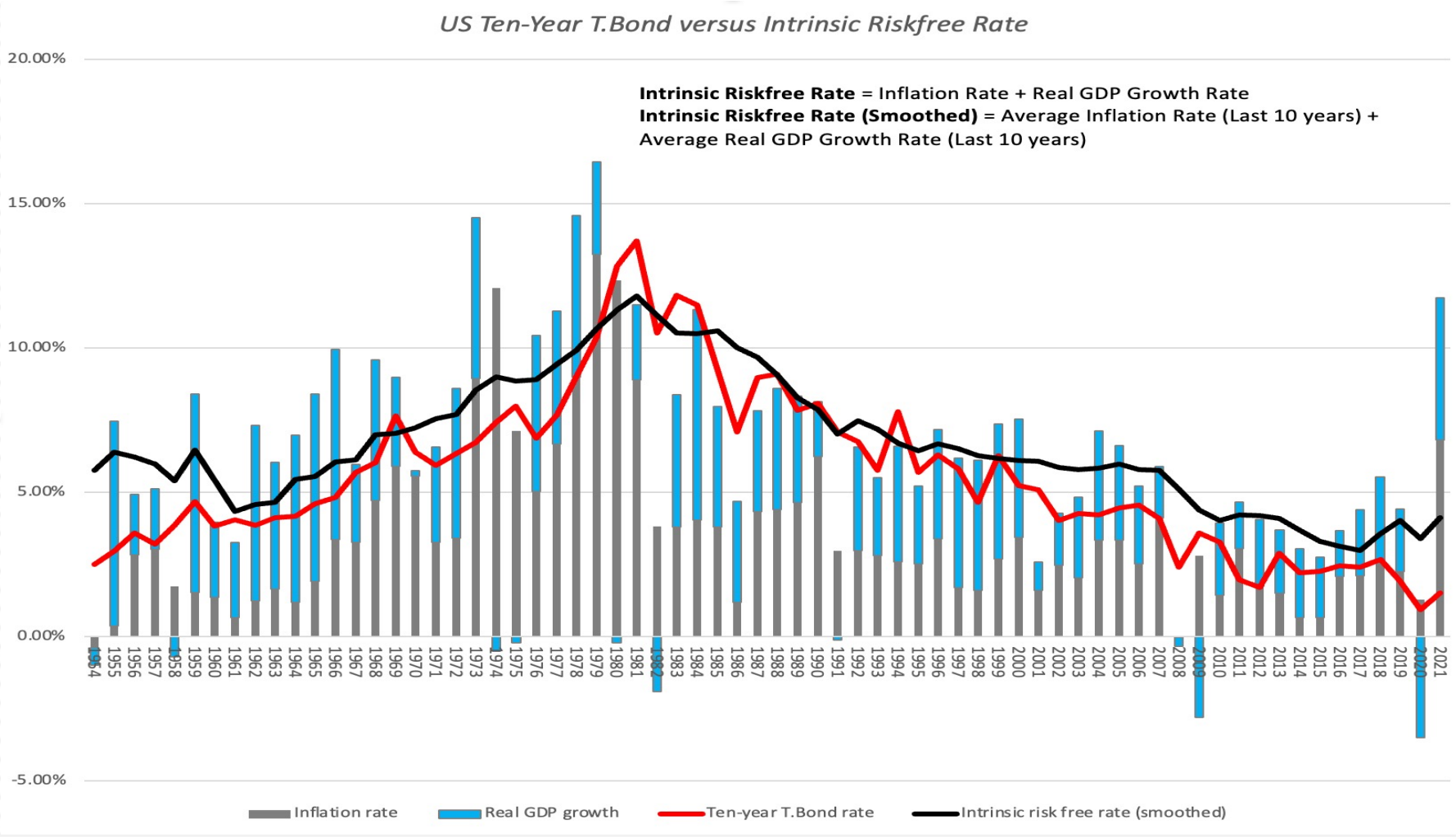
	Treasury Rates						Yield Curve		
	3 month	2 year	5 year	10 year	20 year	30 year	10 yr - 3 mth	10 yr - 2yr	30 yr - 10yr
12/31/20	0.09%	0.13%	0.36%	0.93%	1.45%	1.65%	0.84%	0.80%	0.72%
3/31/21	0.03%	0.16%	0.92%	1.74%	2.31%	2.41%	1.71%	1.58%	0.67%
6/30/21	0.05%	0.25%	0.87%	1.45%	2.00%	2.06%	1.40%	1.20%	0.61%
9/30/21	0.04%	0.28%	0.98%	1.52%	2.02%	2.08%	1.48%	1.24%	0.56%
12/31/21	0.06%	0.73%	1.26%	1.52%	1.94%	1.90%	1.46%	0.79%	0.38%
Change in 2021	-0.03%	0.60%	0.90%	0.59%	0.49%	0.25%	0.62%	-0.01%	-0.34%

Corporate Bonds: The Year that was..



	AAA	AA	A	BBB	BB	B	CCC & Lower
12/31/20	0.55%	0.63%	0.79%	1.30%	2.79%	4.13%	8.03%
03/31/21	0.47%	0.59%	0.75%	1.19%	2.44%	3.69%	6.56%
06/30/21	0.44%	0.52%	0.67%	1.07%	2.19%	3.49%	5.83%
09/30/21	0.47%	0.55%	0.70%	1.10%	2.18%	3.64%	6.54%
12/31/21	0.51%	0.62%	0.78%	1.21%	2.11%	3.51%	6.78%
Change in 2021	-0.04%	-0.01%	-0.01%	-0.09%	-0.68%	-0.62%	-1.25%

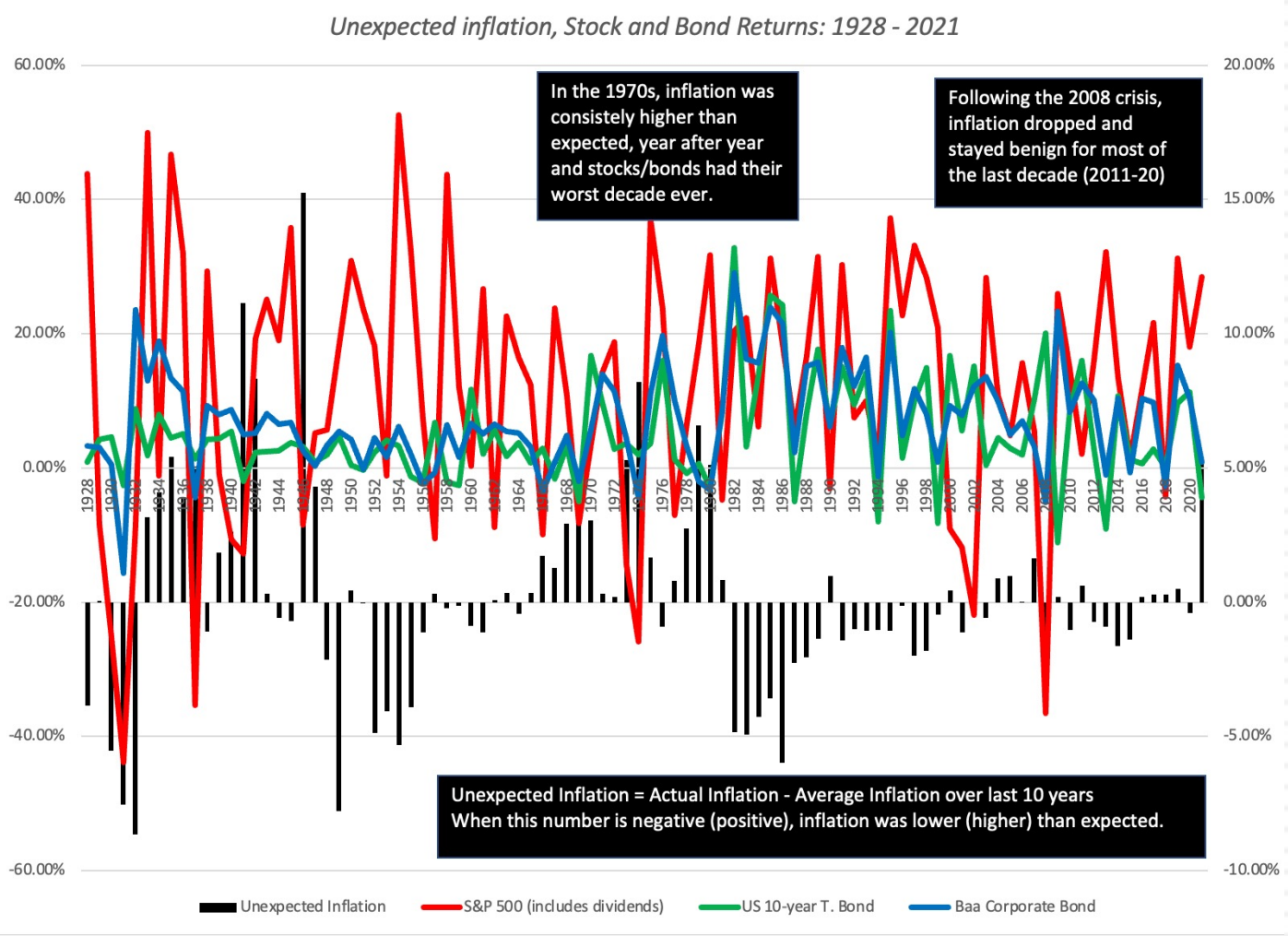
Interest Rates and Inflation



Expected and Unexpected Inflation

- It is expected inflation that drives interest rates, and that the actual inflation rate can come in above or below expectations.
- There is a contrast between *expected and unexpected inflation*, arguing that financial assets are affected differently by each component.
  - If expected inflation is high, but it is predictable, investors and businesses have the opportunity to incorporate that inflation into their decision making, with investors demanding higher interest rates on bond and expected returns on stocks, and businesses raising prices on their products/services to cover expected inflation.
  - Unexpected inflation is what catches us off guard, with unexpectedly high inflation leading to a reassessment of pricing (for all financial assets) and an uneven impact across businesses, leaving those with pricing power in a better position than those without that power.

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.

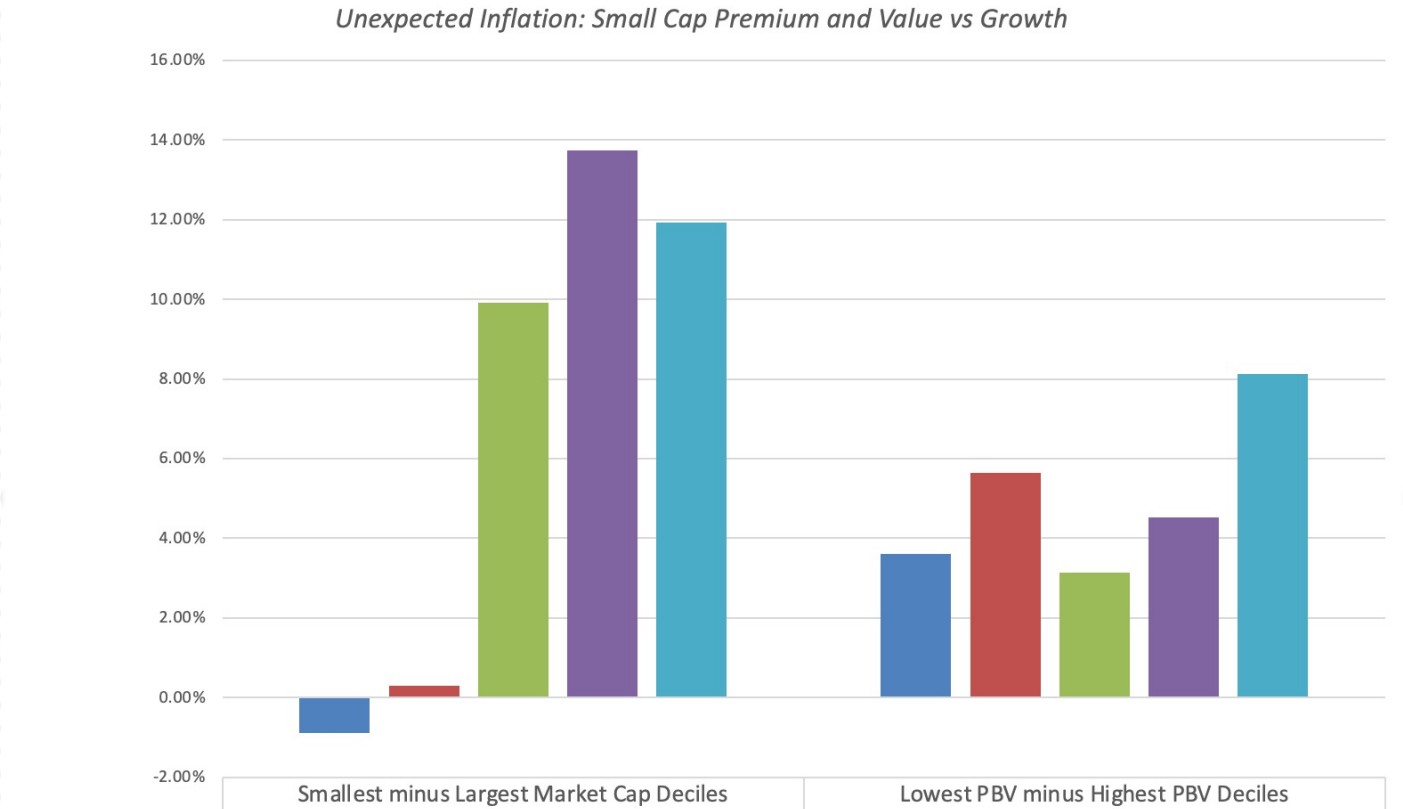
Treasury and corporate bonds generally deliver worse returns when inflation is greater than expected.

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 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%

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.

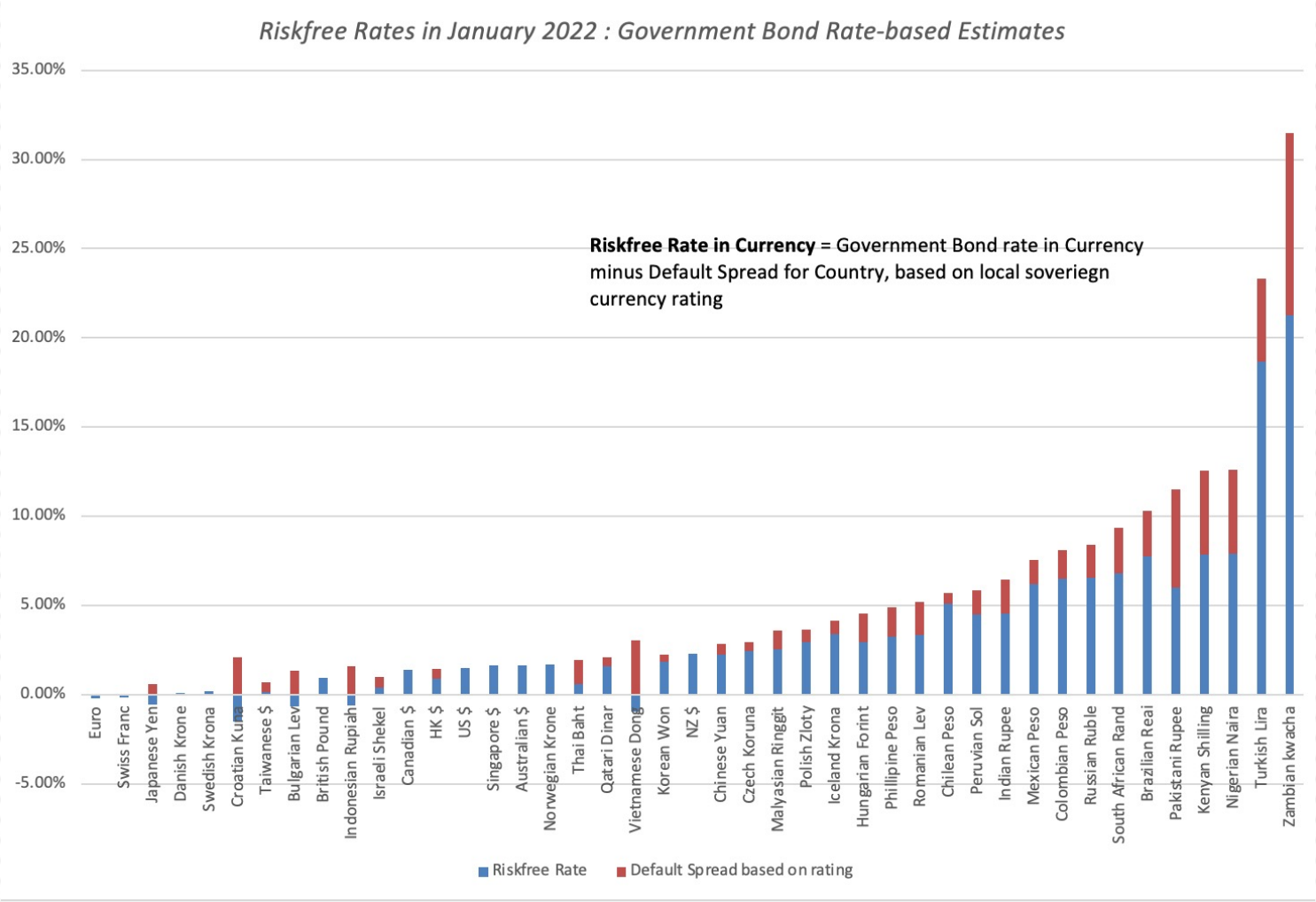
Inflation greater than expected.

	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%

Inflation and Currencies

- Much of this post has been about inflation in the US, and by extension, in US dollar terms, it is worth emphasizing that inflation is a currency-specific phenomenon.
- While inflation in the US dollar, by dint of its status as the currency in which commodities are priced, can sometimes spill over into other currencies, it remains true that you can have high inflation in one currency, while there is low inflation in other currencies.
- Inflation differences across currencies play out in two domains, with the first being interest rates in different currencies and the other being exchange rate.

Currency Risk free Rates



Riskfree Rates and Differential Inflation

- I am using the default spreads based upon the local currency sovereign ratings for the countries in question, with the government bond rate being the risk free rate only for currencies where the issuing government in triple-A rated. I
- If you dislike this assumption, or do not believe that the government bond rate is a market-set number in a particular market, there is a second approach, where you start with the risk free rate in US dollar or Euros, and adjust it for differential inflation, i.e., the difference in expected inflation between the US and the country in question:

$$\text{Riskfree Rate in FC} = (1 + \text{Riskfree rate}_{\text{US\$}}) + \frac{(1 + -\text{Exp Inflation}_{\text{FC}})}{(1 + -\text{Exp Inflation}_{\$})} - 1$$

Full Adjustment

$$\text{Riskfree Rate in foreign currency (FC)} = \text{Riskfree rate}_{\text{US\$}} + (\text{Exp Inflation}_{\text{FC}} - \text{Exp Inflation}_{\$})$$

Approximation

Exchange Rates and Inflation

- Just as interest rates in currencies are determined, in large part, by inflation differentials, exchange rates over time are also driven by those same inflation differentials. Drawing on one of the oldest relationships in exchange rates, purchasing power parity, you can extract the forward exchange rate in a currency:

Exchange rate stated as $ per unit of foreign currency

Expected inflation rates in $ and foreign currency

$$\frac{Forward\ Exchange\ Rate_{\$,FC}}{Spot\ Exchange\ Rate_{\$,FC}} = \frac{(1 + Expected\ Inflation\ Rate_{\$})}{(1 + Expected\ Inflation\ Rate_{FC})}$$

If you have estimates of expected inflation rates in two currencies, the forward rate will reflect the differential inflation.

Investment Implications

- If you believe that inflation will stay high, not just in the US, but across the globe, the exchange rate effects will be muted.
- If, on the other hand, you believe that the inflation shock will vary across countries, your actions will be more nuanced.
  - For the countries where you believe that local inflation will decrease, relative to the US, the US dollar will weaken against their currencies, augmenting returns you will earn in their markets (stock or bond).
  - For countries, where you see local inflation surging more than you expect to see in the US, the US dollar will strengthen against their currencies, reducing the returns you make in their markets.
- As with the discussion of asset returns, it is not expected inflation that is the source of exchange rate risk, since you can incorporate those expectations into exchange rates, but unexpected inflation, which, when extreme, can cause significant revaluations of currencies.

Conclusion

- As with any historical data assessment, I could give you the standard boilerplate disclaimer that past performance is not always a good predictor of the past, but to the extent that the past provides signals, your expectations of how inflation will play out in the coming year will play a key role in your asset allocation and stock selection decisions.
  - If you believe that last year's surge in inflation is a precursor to a long time period when inflation is likely to stay high, and come in above expectations, you should be shifting your holdings away from financial to real assets, and within your equity holdings, towards small cap stocks, stocks trading at lower pricing multiples (PE, Price to Book) and companies with more pricing power.
  - If, on the other hand, you believe that inflation worries are overdone, and that there will be a reversion back to the low inflation that we have seen in the last decade, staying invested in stocks, and especially in larger cap and high growth stocks, even if richly priced, makes sense.