SOW THE WIND, REAP THE WHIRLWIND: INFLATION'S RETURN!

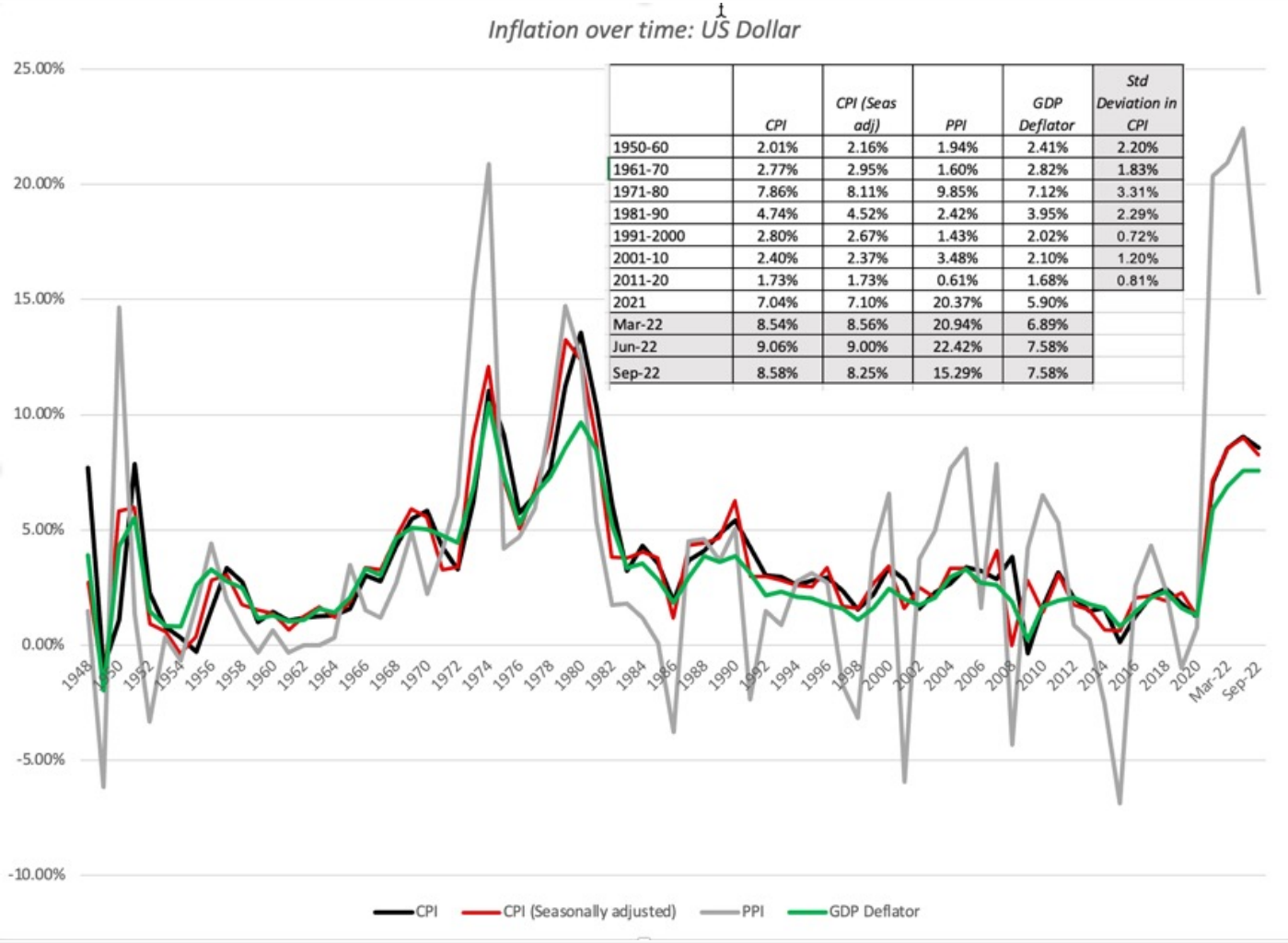
Inflation on center stage!

Inflation: Expected and Unexpected

Repeat and Retrace: The Return of Inflation

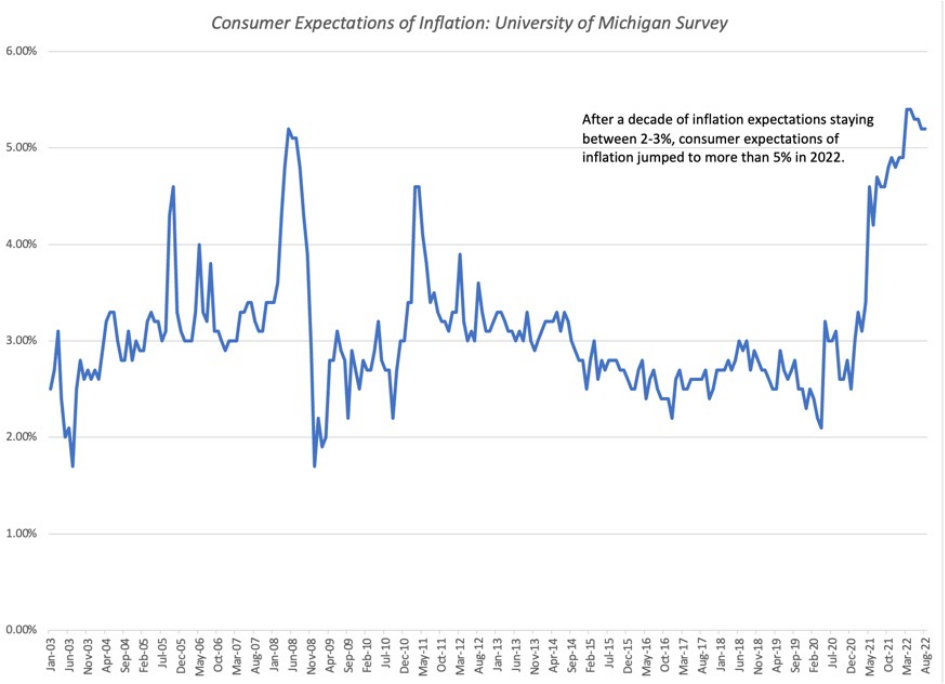
- In my early 2021 posts on inflation, I argued that while the higher inflation that we were just starting to see could be explained away as transitory, prudence required that policy makes treat it as a long term threat and dealt with quickly. Not only did they not do so, but the fiscal and monetary actions they took in 2021 exacerbated inflationary pressures.
- By the start of 2022, the window for early action had closed and for much of this year, inflation has been the elephant in the room, the force driving markets, forcing central banks to be reactive, and its presence has induced me to write three posts on its impact.
  - In my first on May 6, 2022, I put the surge in inflation, in 2022, in historical context and argued that it is unexpected inflation that shakes up the economy and caused damage to financial assets, and that until we reached a steady state, where expectations and actual inflation converge, markets would continue to be unsettled.
  - In a follow-up post on May 20, I looked at the disparate effects of inflation on individual companies, positing that safer companies with pricing power are more protected against inflation than riskier companies in competitive businesses.
  - In a third post on July 1, 2022, I pointed to inflation as a key culprit in the retreat of risk capital, i.e., capital invested in the riskiest segments of every market, and presented evidence of the impact on risk premiums (bond default spreads and equity risk premiums) in markets. In terms of content, I am afraid this post will contain nothing new, but the fresh uncertainties about inflation, and its impact, that have opened up this summer require at least an updating of the numbers.

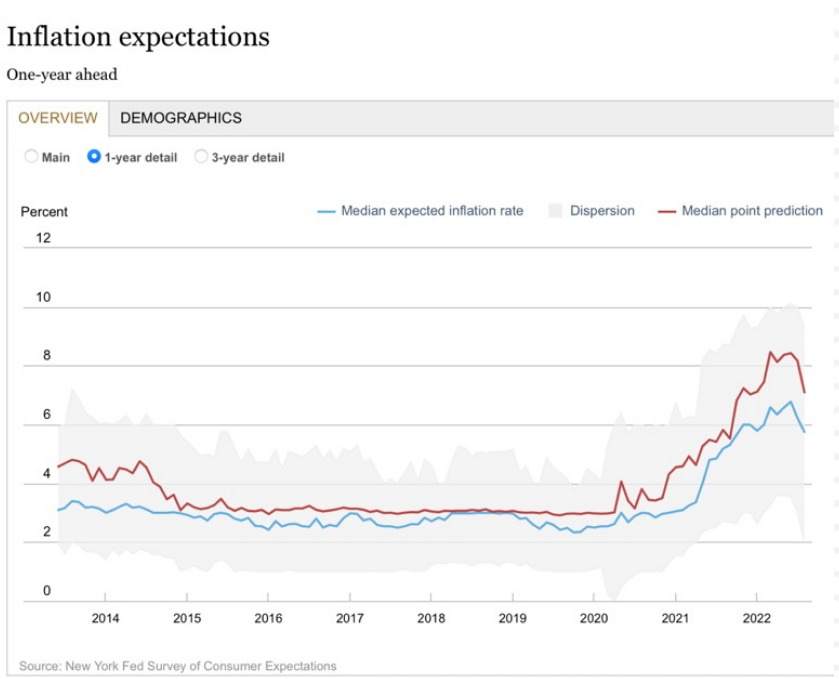
Inflation: Historical Perspective



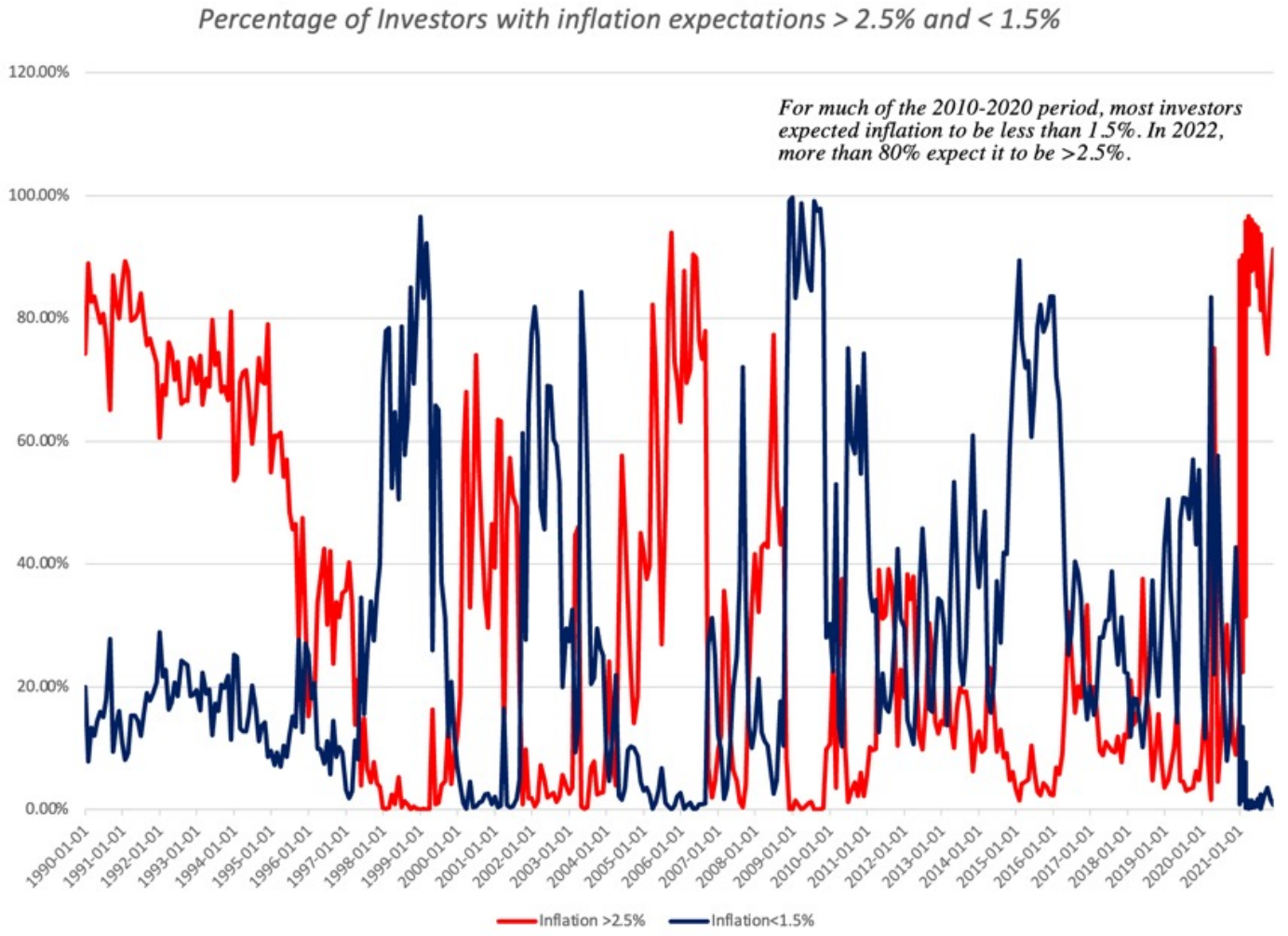
	CPI	CPI (Seas adj)	PPI	GDP Deflator	Std Deviation in CPI
1950-60	2.01%	2.16%	1.94%	2.41%	2.20%
1961-70	2.77%	2.95%	1.60%	2.82%	1.83%
1971-80	7.86%	8.11%	9.85%	7.12%	3.31%
1981-90	4.74%	4.52%	2.42%	3.95%	2.29%
1991-2000	2.80%	2.67%	1.43%	2.02%	0.72%
2001-10	2.40%	2.37%	3.48%	2.10%	1.20%
2011-20	1.73%	1.73%	0.61%	1.68%	0.81%
2021	7.04%	7.10%	20.37%	5.90%	
Mar-22	8.54%	8.56%	20.94%	6.89%	
Jun-22	9.06%	9.00%	22.42%	7.58%	
Sep-22	8.58%	8.25%	15.29%	7.58%	

Inflation: Expectations from Surveys

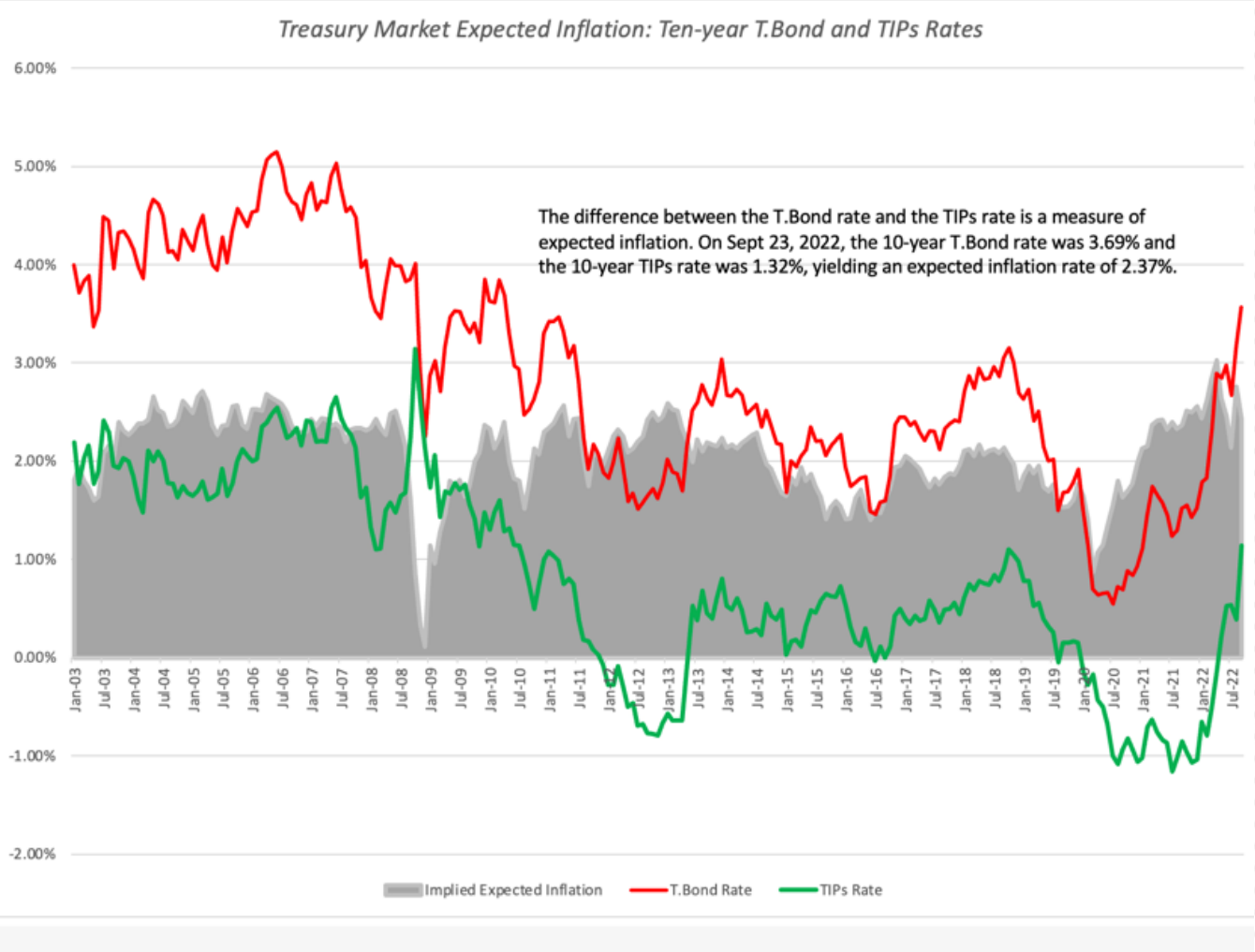




Reflected in probabilities…

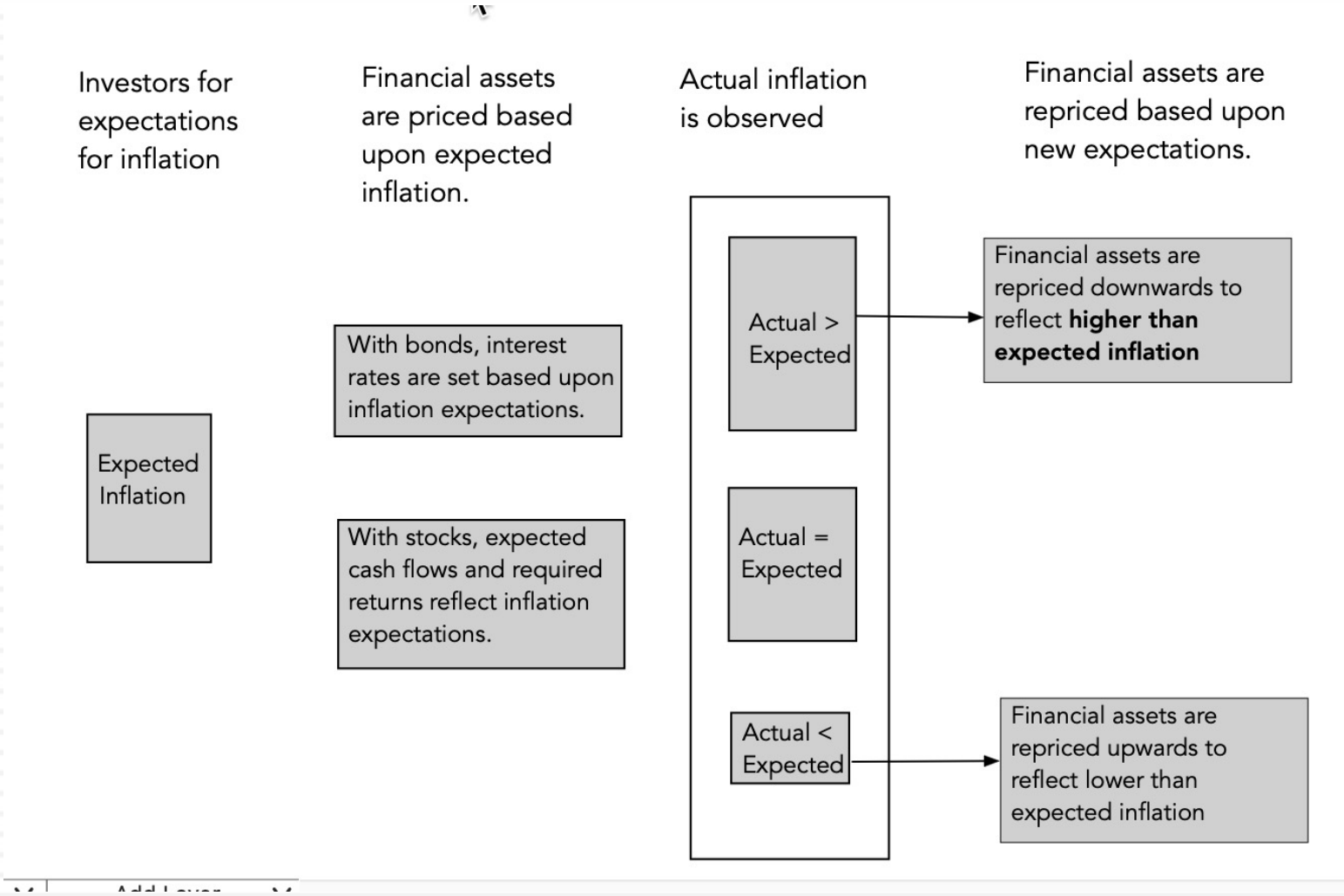


A Market-implied Expected Inflation



Inflation and Asset Class Returns

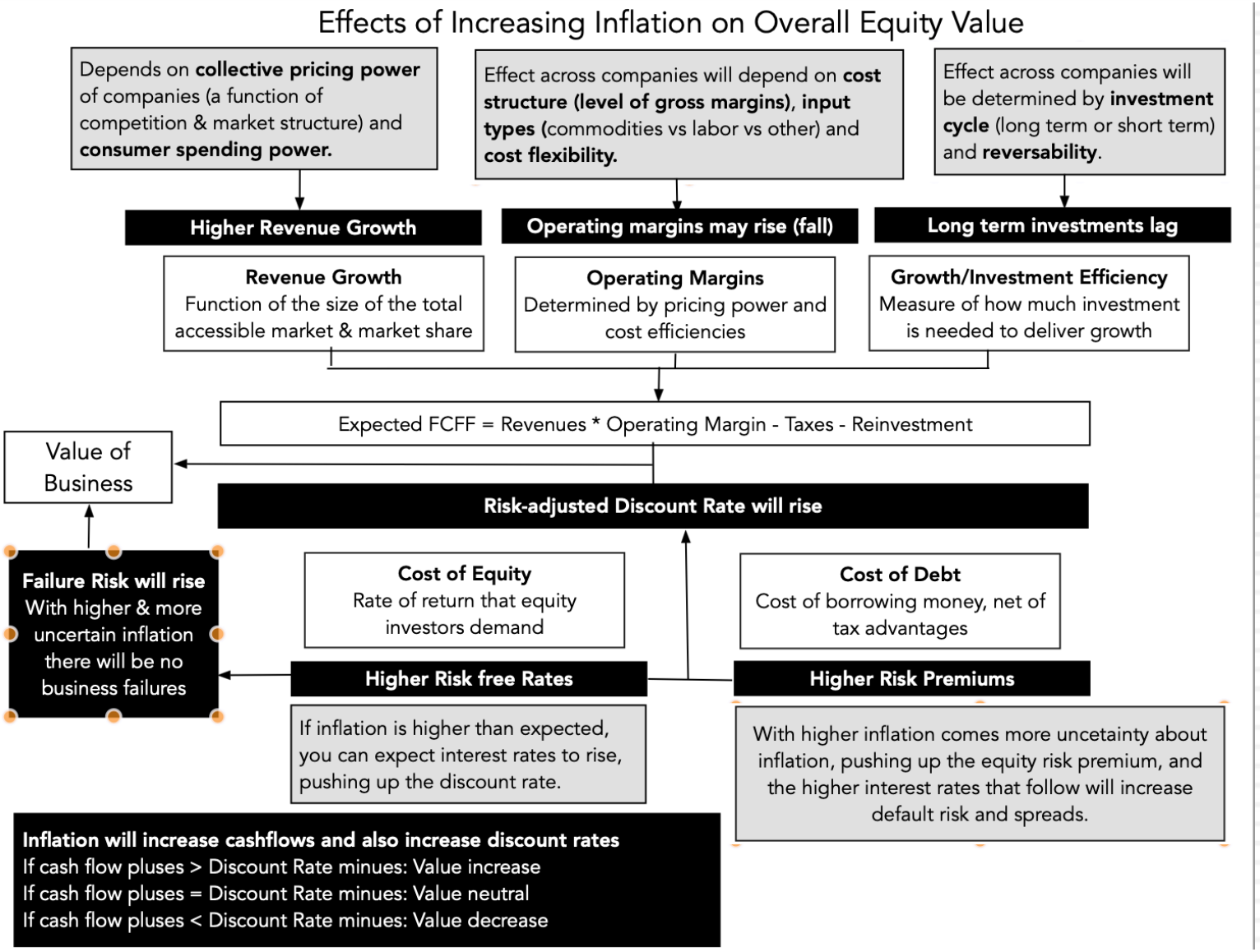
Inflation: Expected versus Unexpected



Inflation and Bonds

- Expected inflation and unexpected inflation play out in very different ways on bond value:
  - At the time that the contract is specified, the buyer of a bond takes into account the expected inflation, at that time, when deciding the coupon rate for the bond.
  - Subsequent to the contract being settled and the bond being issued, both the bond buyer and seller are exposed to actual inflation, which can be higher or lower than the inflation that was expected at the time the bond was issued. The return that the bond buyer will earn on the bond has two components, a coupon portion that will increase with expected inflation and a price appreciation portion that will move inversely with unexpected inflation.
- **Inflation value proposition 1:** ***In periods when inflation is lower than expected, treasury bond returns will be boosted by price appreciation and in periods when inflation is higher than expected, treasury bond returns will be dragged down by price depreciation***.
- **Inflation value proposition 2:** ***In periods when inflation is higher (lower) than expected, corporate default risk can increase (decrease), leading to corporate bond returns lagging (leading) treasury bond returns.***

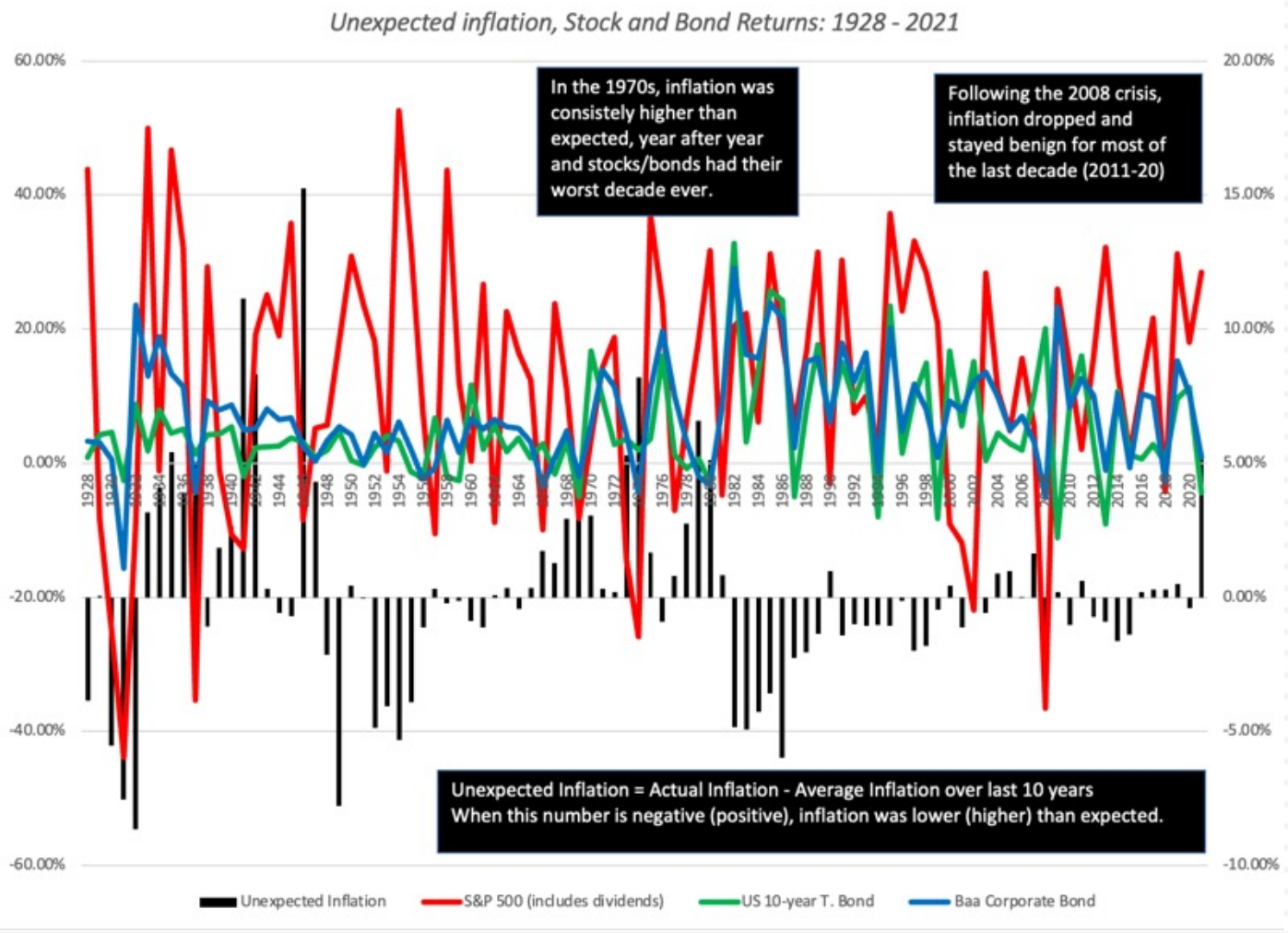
Inflation and Overall Equity Value



Financial Asset Returns: By Decade

			Average Annual Nominal Return				Average Annual Real Return			
Decade	*Expected Inflation*	*Unexpected Inflation*	*Stocks*	*T. Bills*	*T. Bonds*	*Baa Corp Bonds*	*Stocks*	*T. Bills*	*T. Bonds*	*Baa Corp Bonds*
1930-39	-1.92%	0.07%	4.27%	0.99%	4.01%	7.77%	6.19%	2.91%	5.93%	9.69%
1940-49	5.51%	3.08%	9.64%	0.48%	2.52%	5.18%	4.14%	-5.03%	-2.99%	-0.32%
1950-59	2.24%	-1.89%	20.93%	2.00%	0.83%	2.32%	18.69%	-0.24%	-1.41%	0.08%
1960-69	2.53%	0.84%	8.60%	3.98%	2.51%	3.23%	6.07%	1.45%	-0.02%	0.70%
1970-79	7.41%	2.80%	7.52%	6.29%	5.58%	7.29%	0.11%	-1.12%	-1.83%	-0.12%
1980-89	5.14%	-2.33%	17.95%	8.82%	12.59%	14.46%	12.81%	3.68%	7.45%	9.31%
1990-99	2.94%	-0.90%	18.82%	4.85%	7.83%	9.69%	15.88%	1.92%	4.89%	6.75%
2000-09	2.53%	-0.02%	1.16%	2.69%	6.62%	8.61%	-1.37%	0.16%	4.09%	6.08%
2010-19	1.76%	-0.38%	14.02%	0.52%	4.35%	7.23%	12.27%	-1.24%	2.59%	5.48%
2020	1.36%	-0.39%	18.01%	0.09%	11.33%	10.41%	16.65%	-1.27%	9.97%	9.05%

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%

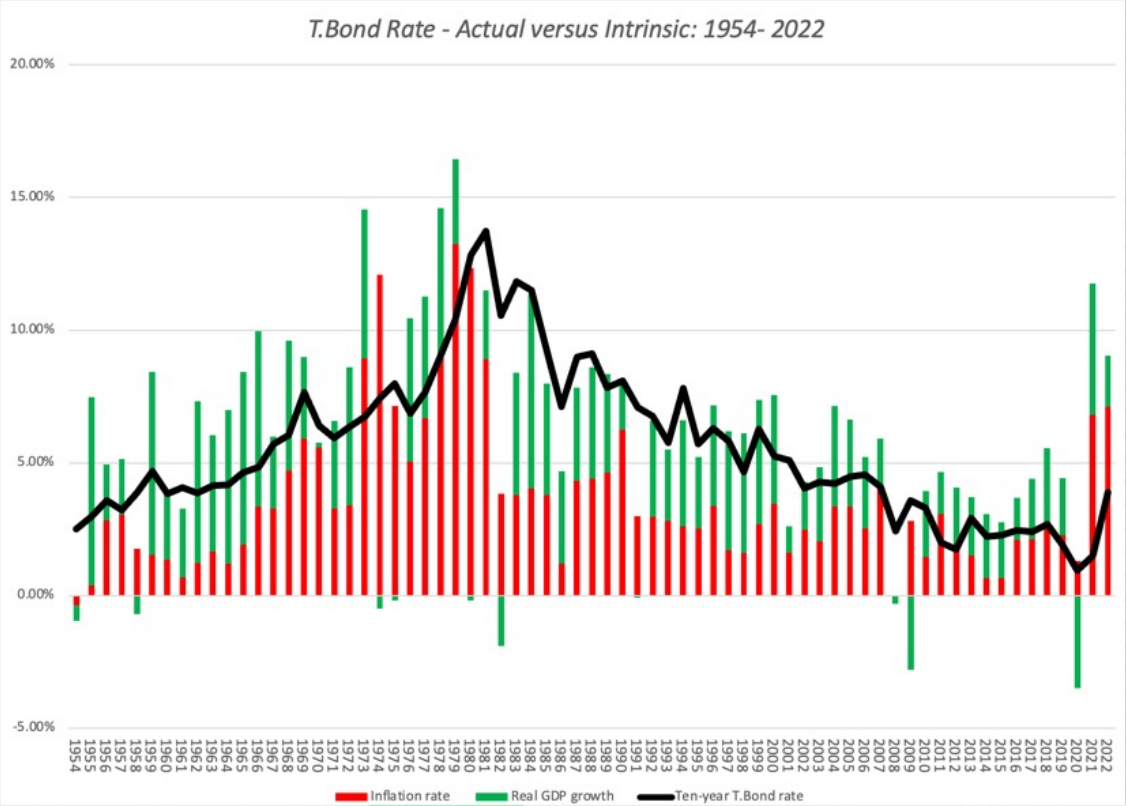
Other investment classes: Real Estate and Gold

- 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.

Inflation: First Order Effects

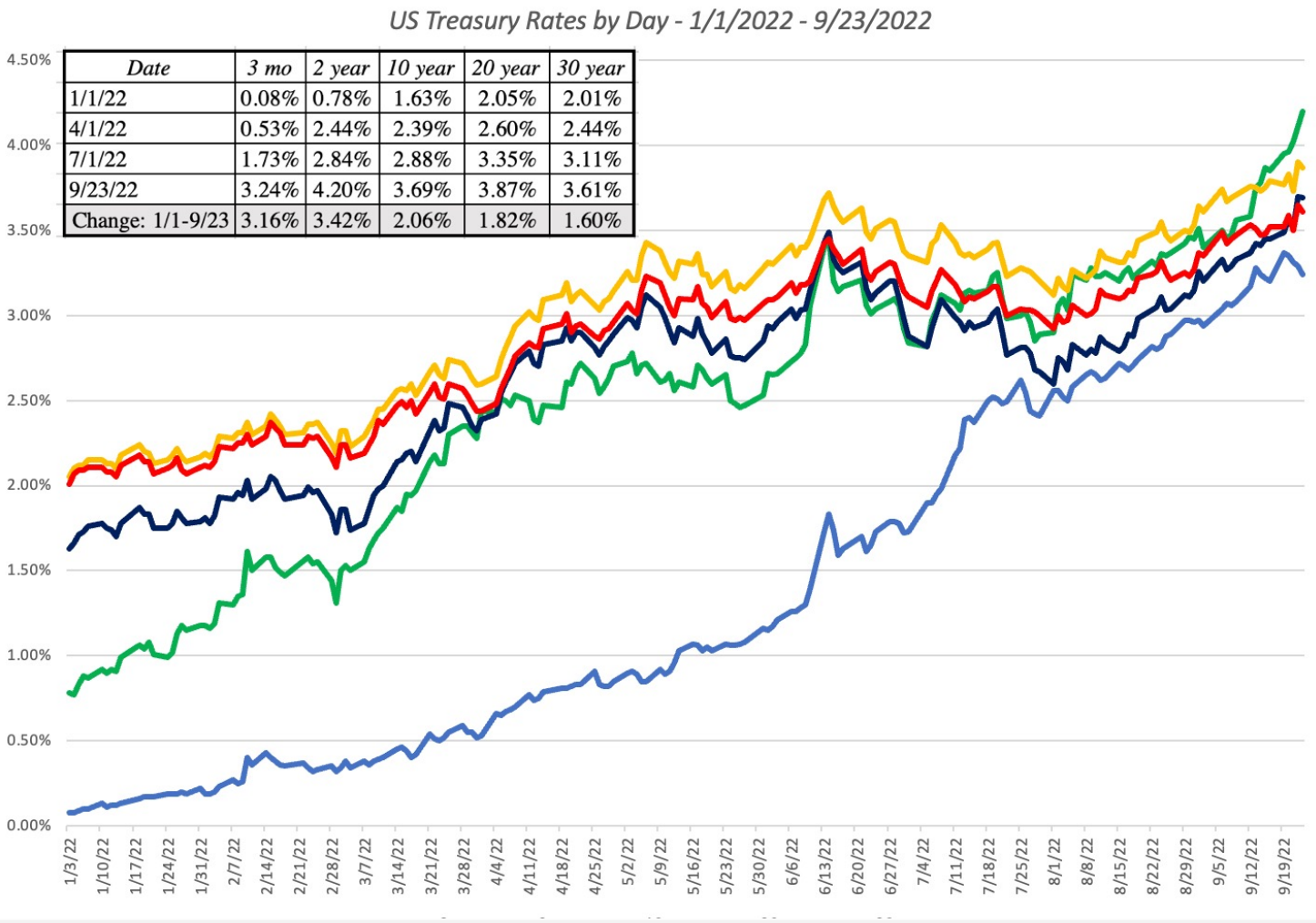
Interest and Exchange Rates

First Order Effects: Interest Rates



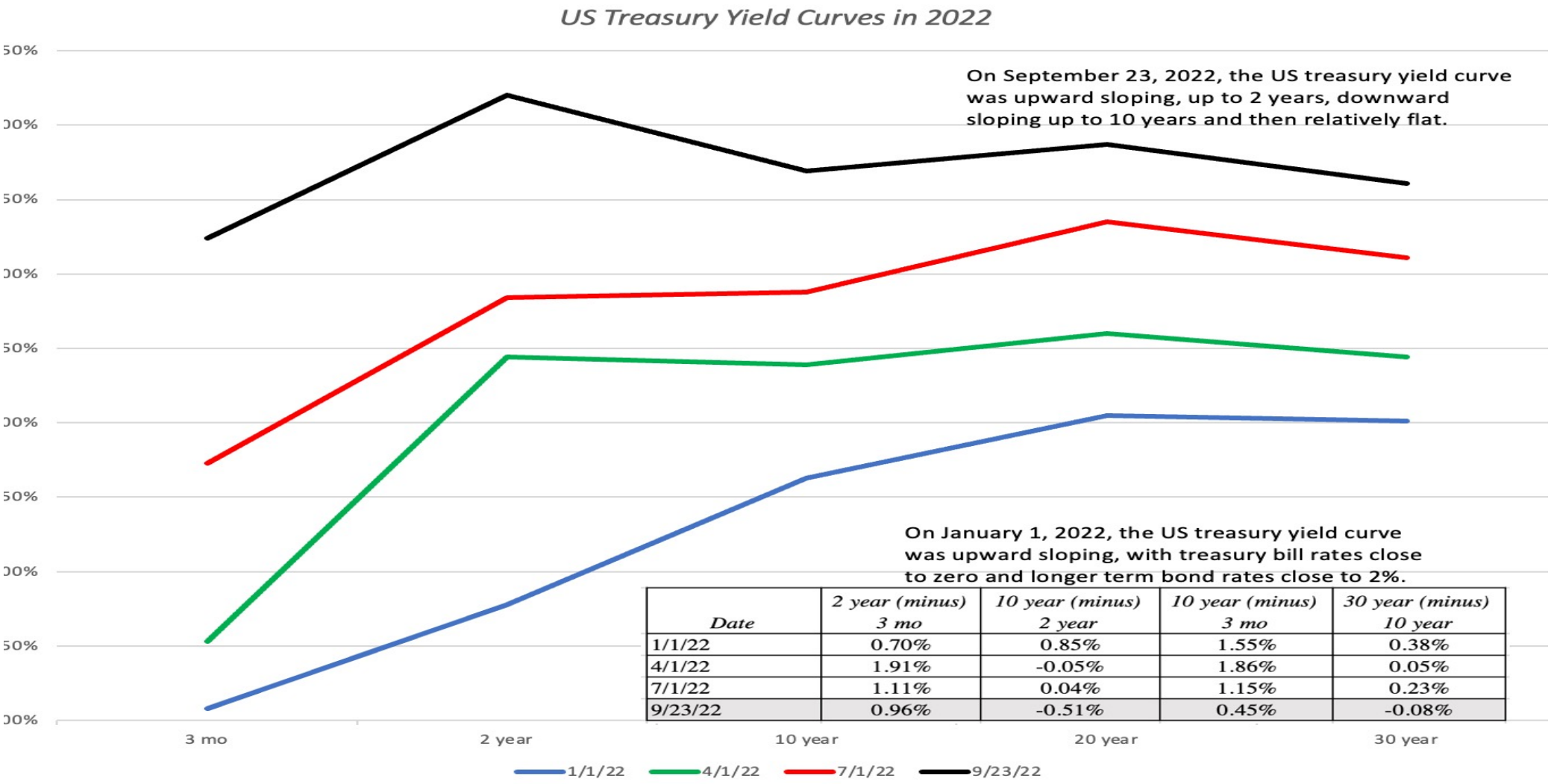
Year end	Ten-year T.Bond rate	Inflation rate	Real GDP growth	Intrinsic riskfree rate	The Fed Effect
1954-2022	5.56%	3.60%	2.93%	6.53%	-0.97%
1954-1980	5.83%	4.49%	3.50%	7.98%	-2.15%
1981-2008	6.88%	3.26%	3.04%	6.30%	0.58%
2009-2020	2.36%	1.85%	1.32%	3.17%	-0.81%
2021-2022	2.70%	6.96%	3.45%	10.41%	-7.71%

Interest Rates in 2022



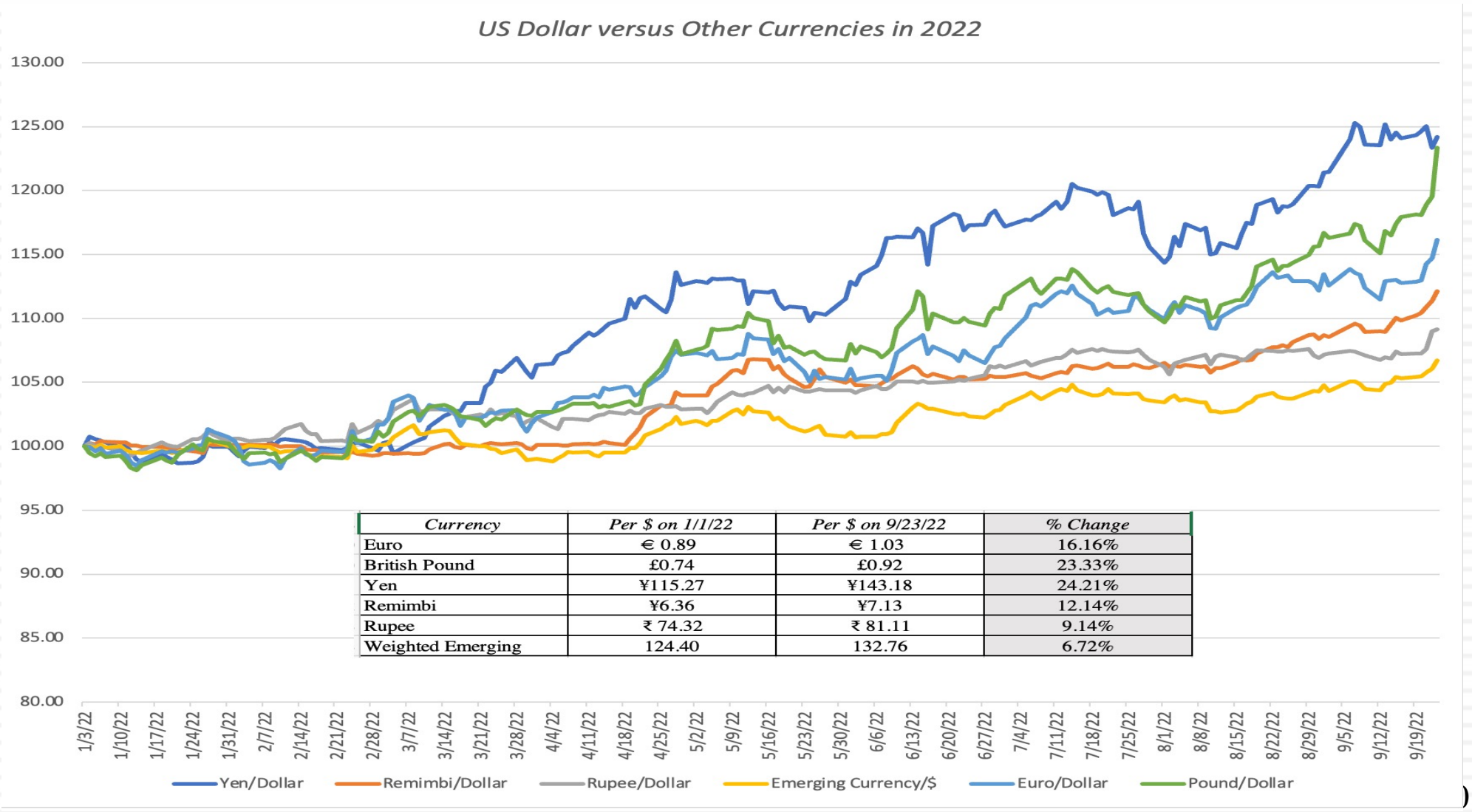
Date	*3 mo*	*2 year*	*10 year*	*20 year*	*30 year*
1/1/22	0.08%	0.78%	1.63%	2.05%	2.01%
4/1/22	0.53%	2.44%	2.39%	2.60%	2.44%
7/1/22	1.73%	2.84%	2.88%	3.35%	3.11%
9/23/22	3.24%	4.20%	3.69%	3.87%	3.61%
Change: 1/1-9/23	3.16%	3.42%	2.06%	1.82%	1.60%

With Yield Curves



Date	2 year (minus) 3 mo	10 year (minus) 2 year	10 year (minus) 3 mo	30 year (minus) 10 year
1/1/22	0.70%	0.85%	1.55%	0.38%
4/1/22	1.91%	-0.05%	1.86%	0.05%
7/1/22	1.11%	0.04%	1.15%	0.23%
9/23/22	0.96%	-0.51%	0.45%	-0.08%

And Exchange Rates

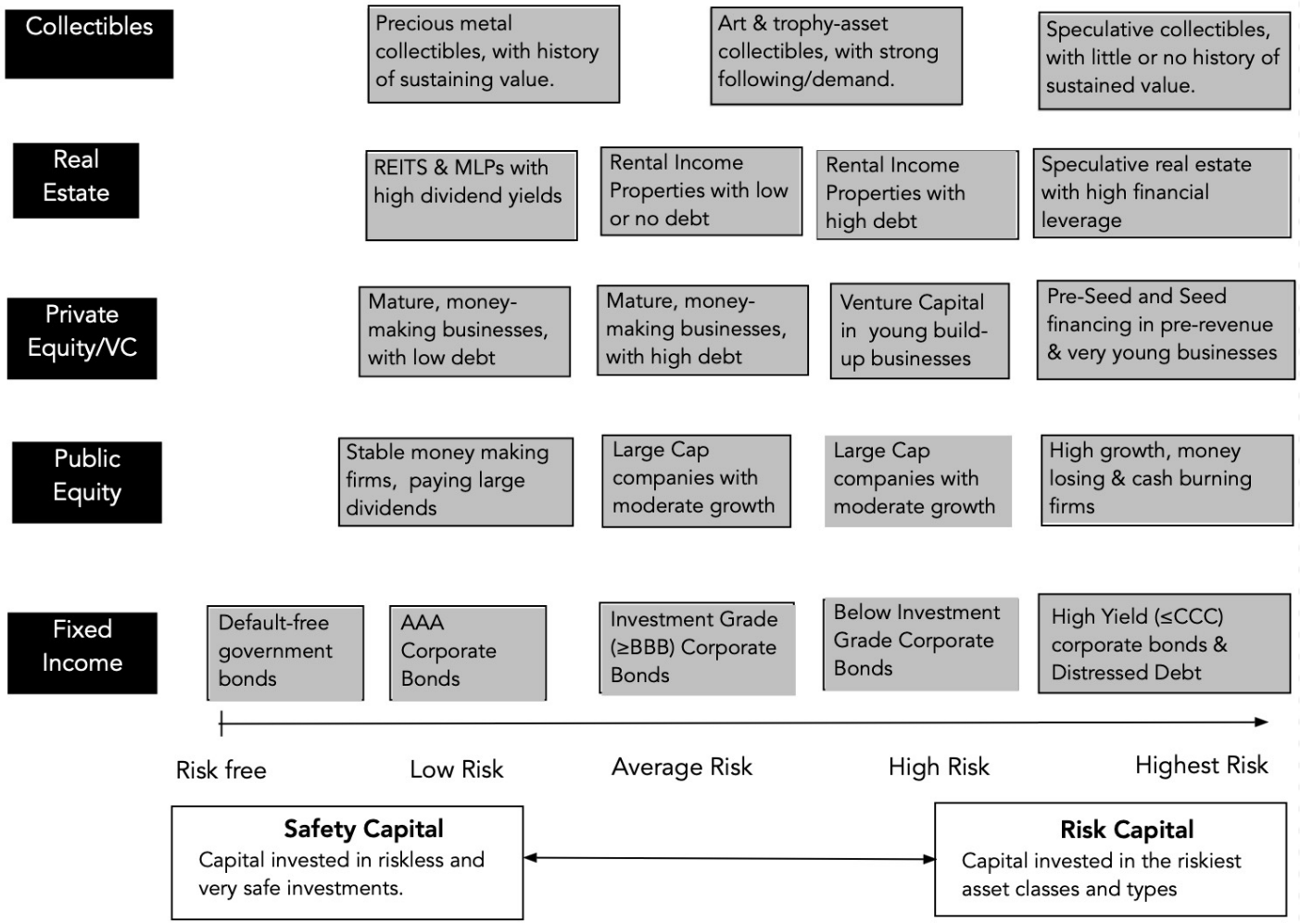


Currency	*Per $ on 1/1/22*	*Per $ on 9/23/22*	*% Change*
Euro	€ 0.89	€ 1.03	16.16%
British Pound	£0.74	£0.92	23.33%
Yen	¥115.27	¥143.18	24.21%
Remimbi	¥6.36	¥7.13	12.14%
Rupee	₹ 74.32	₹ 81.11	9.14%
Weighted Emerging	124.40	132.76	6.72%

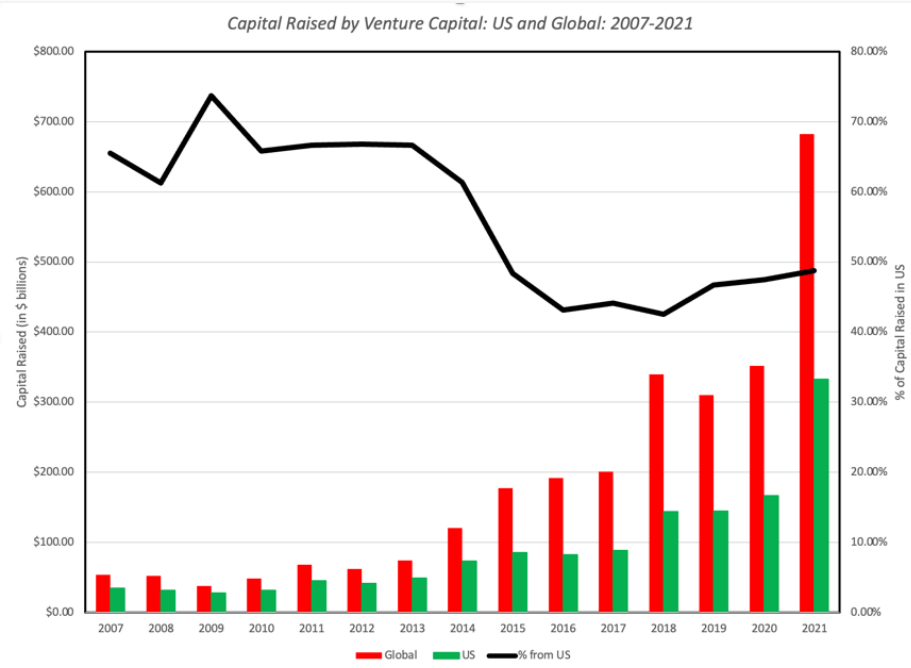
Inflation: Second Order Effects

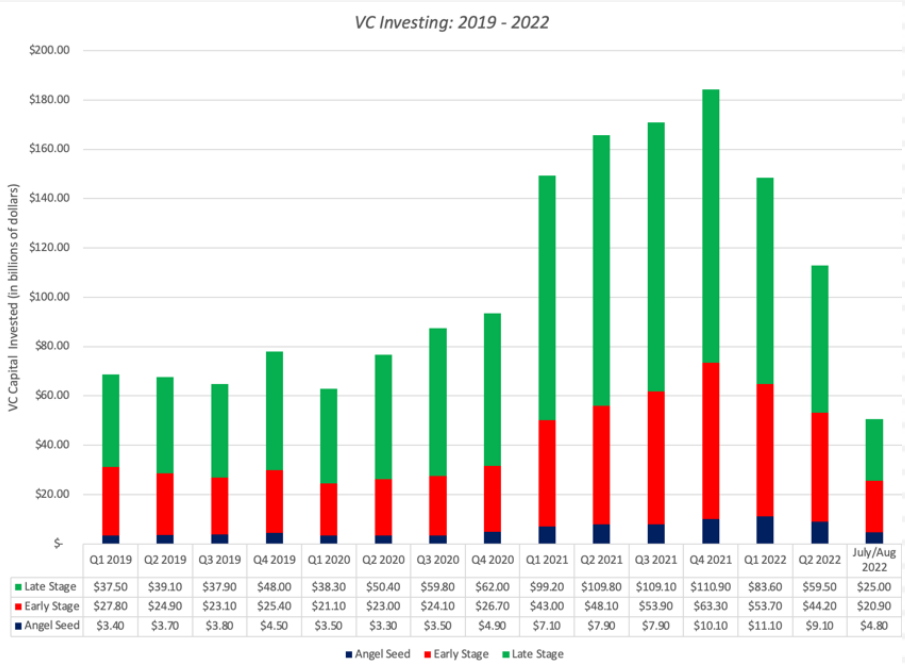
Risk Capital and Premia

Second Order Effects: Risk Capital



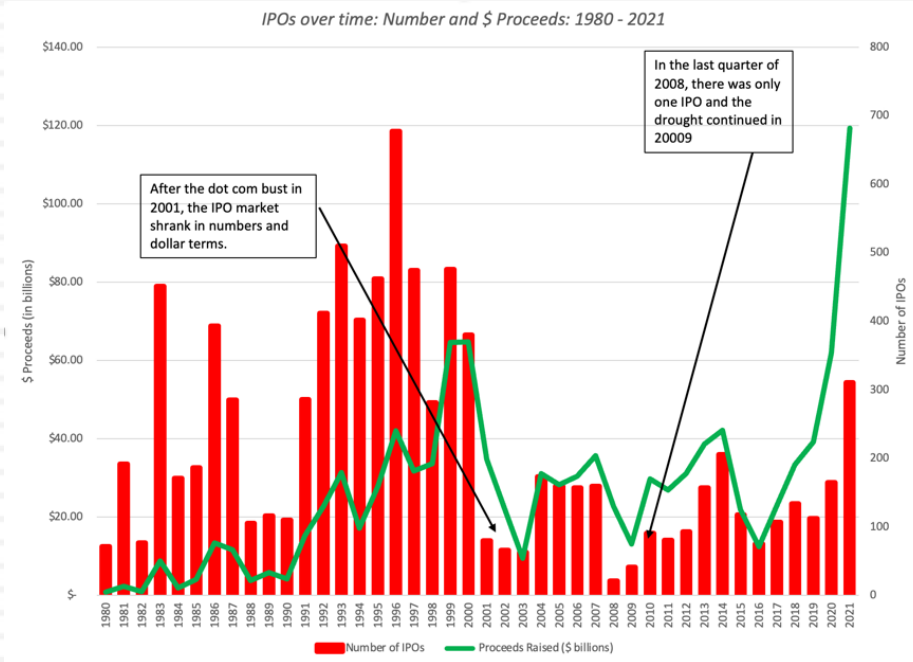
Ebbs and Flows: VC

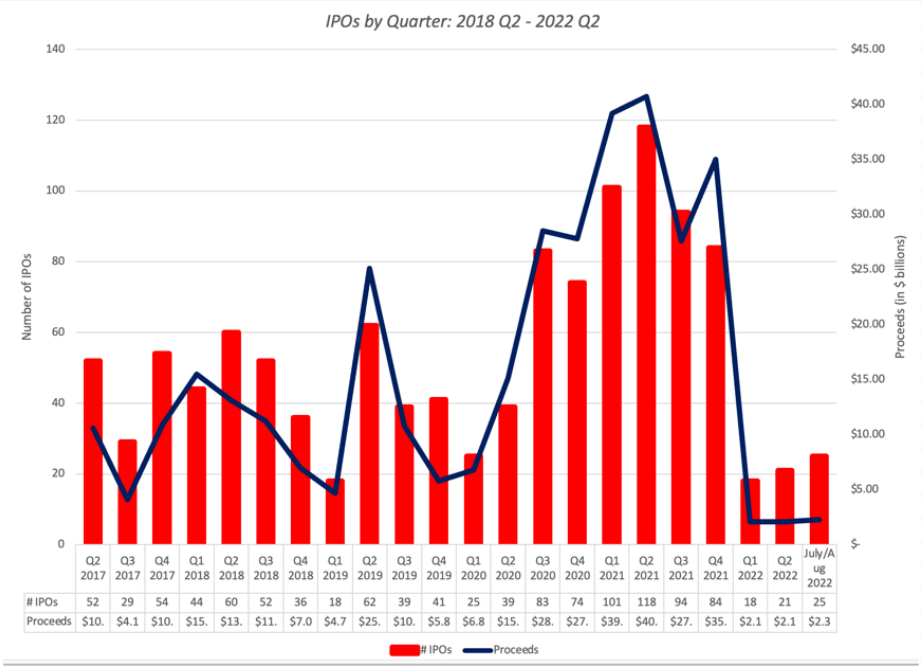




	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	July/Aug 2022
Late Stage	$37.50	$39.10	$37.90	$48.00	$38.30	$50.40	$59.80	$62.00	$99.20	$109.80	$109.10	$110.90	$83.60	$59.50	$25.00
Early Stage	$27.80	$24.90	$23.10	$25.40	$21.10	$23.00	$24.10	$26.70	$43.00	$48.10	$53.90	$63.30	$53.70	$44.20	$20.90
Angel Seed	$3.40	$3.70	$3.80	$4.50	$3.50	$3.30	$3.50	$4.90	$7.10	$7.90	$7.90	$10.10	$11.10	$9.10	$4.80

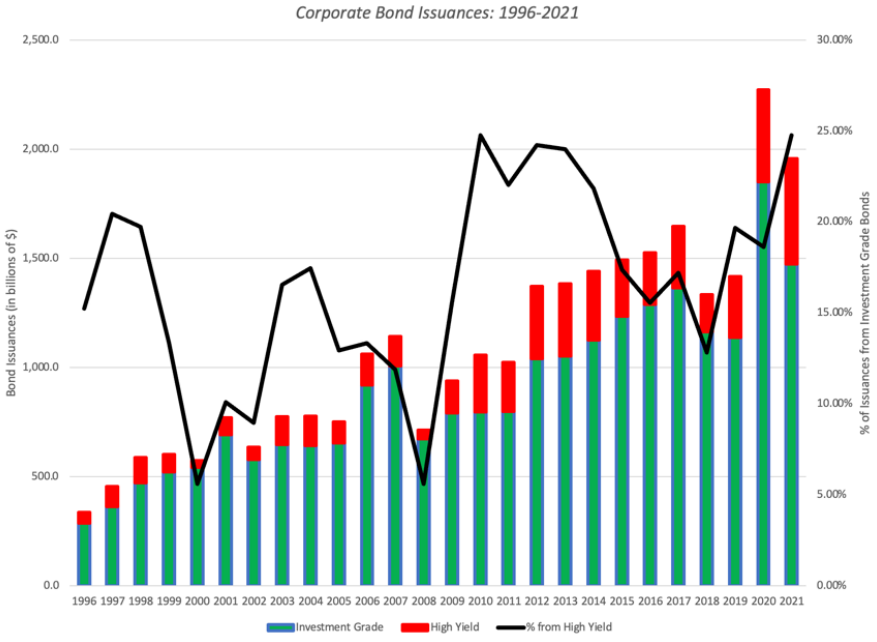
Ebbs and Flows: IPOs

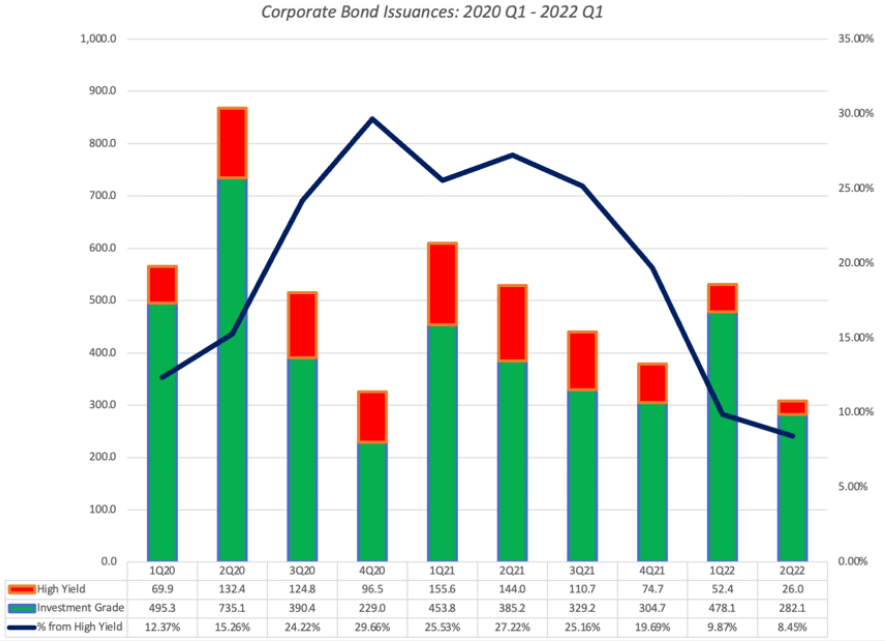




	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	July/Aug 2022
# IPOs	52	29	54	44	60	52	36	18	62	39	41	25	39	83	74	101	118	94	84	18	21	25
Proceeds	$10.	$4.1	$10.	$15.	$13.	$11.	$7.0	$4.7	$25.	$10.	$5.8	$6.8	$15.	$28.	$27.	$39.	$40.	$27.	$35.	$2.1	$2.1	$2.3

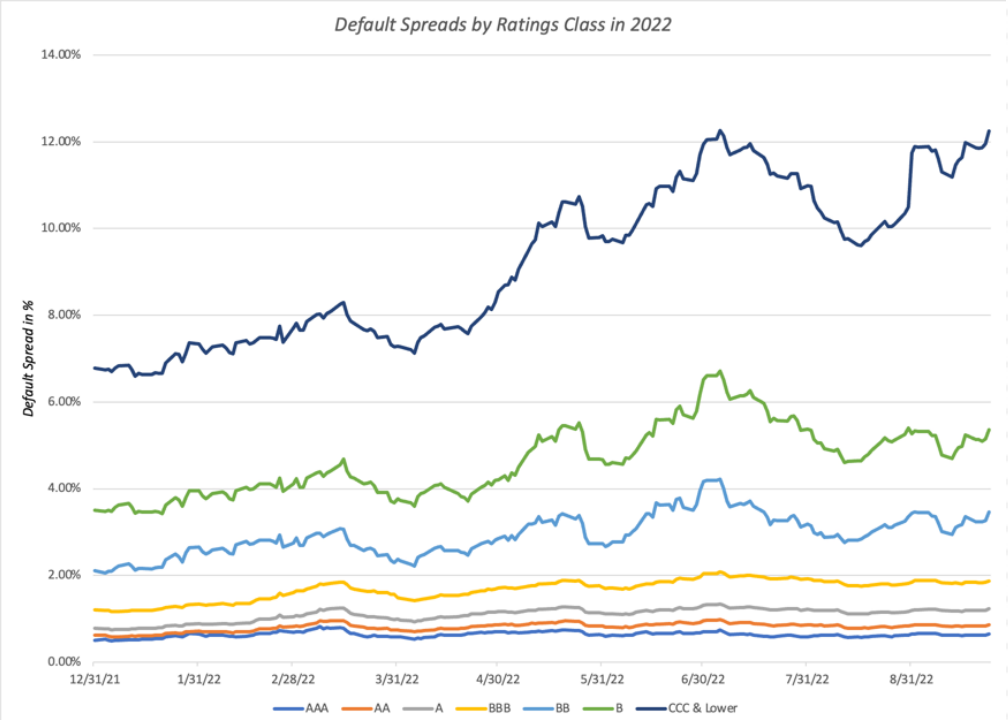
Ebbs and Flows: High Yield Debt issuances





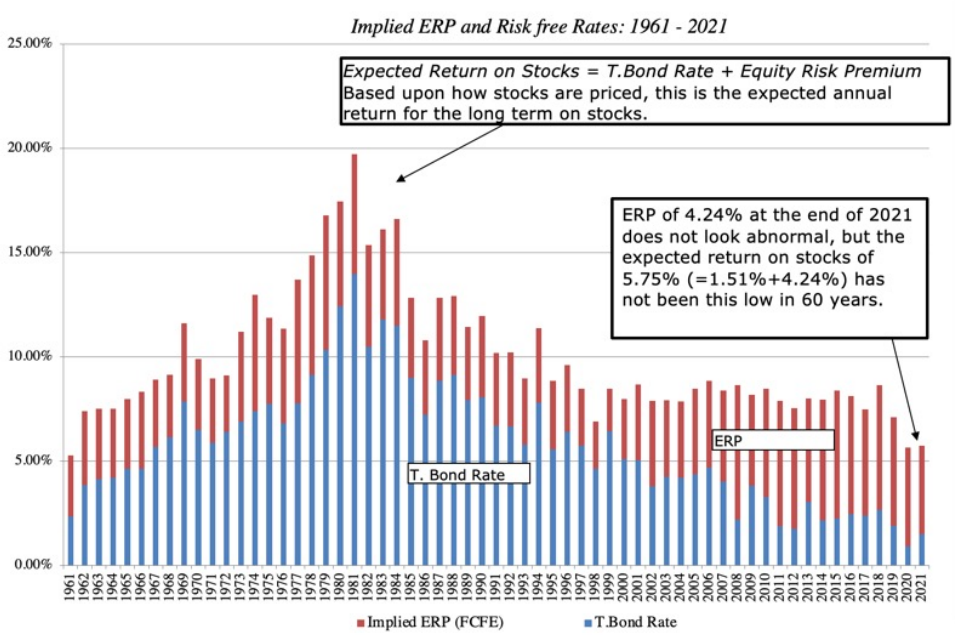
	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22
High Yield	69.9	132.4	124.8	96.5	155.6	144.0	110.7	74.7	52.4	26.0
Investment Grade	495.3	735.1	390.4	229.0	453.8	385.2	329.2	304.7	478.1	282.1
% from High Yield	12.37%	15.26%	24.22%	29.66%	25.53%	27.22%	25.16%	19.69%	9.87%	8.45%

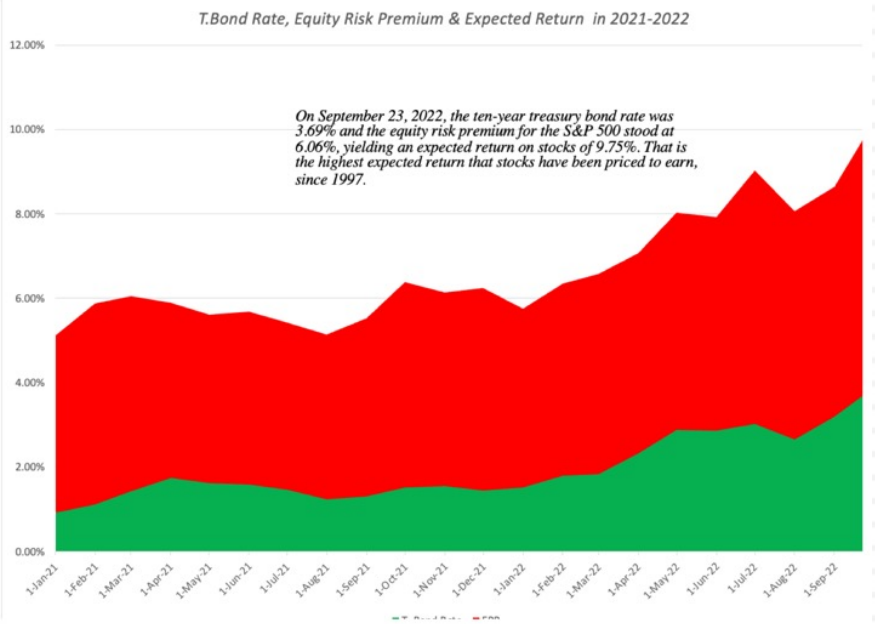
Risk Premiums: Default Spreads



Date	AAA	AA	A	BBB	BB	B	0
1/1/22	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%
5/1/22	0.70%	0.87%	1.17%	1.72%	2.90%	4.30%	8.69%
6/1/22	0.60%	0.81%	1.11%	1.70%	2.67%	4.56%	9.70%
7/1/22	0.71%	0.97%	1.33%	2.05%	4.19%	6.61%	12.05%
8/1/22	0.60%	0.86%	1.21%	1.91%	3.15%	5.35%	10.97%
9/1/22	0.65%	0.86%	1.21%	1.88%	3.47%	5.34%	11.89%
9/23/22	0.65%	0.86%	1.23%	1.87%	3.46%	5.36%	12.25%
Change in 2022	**0.14%**	**0.24%**	**0.45%**	**0.66%**	**1.35%**	**1.85%**	**5.47%**

Equity Risk Premiums





A Double Whammy?

- There are two things that stand out about equity markets in 2022.
  - The first is the surge in the equity risk premium from from 4.24% on January 1, 2022, to 6.05%, on September 23, 2022, an increase on par with what we have seen during market crises (2001, 2008 and 2020) in the past.
  - The second is that as equity risk premiums have jumped, the treasury bond rate has more than doubled, from 1.51% on January 1, 2022, to 3.69% on September 23, 2022.
- In contrast to the afore-mentioned crises, where the treasury bond rate dropped, offsetting some of the impact of the rise in equity risk premiums, this inflation-induced market reaction has caused the expected return on stocks to rise from 5.75% on January 1, 2022, to 9.75%, on September 23, 2022; that increase of 4% dwarfs the increases in expected returns that we witnessed in the last quarter of 2008 or the first quarter of 2020.

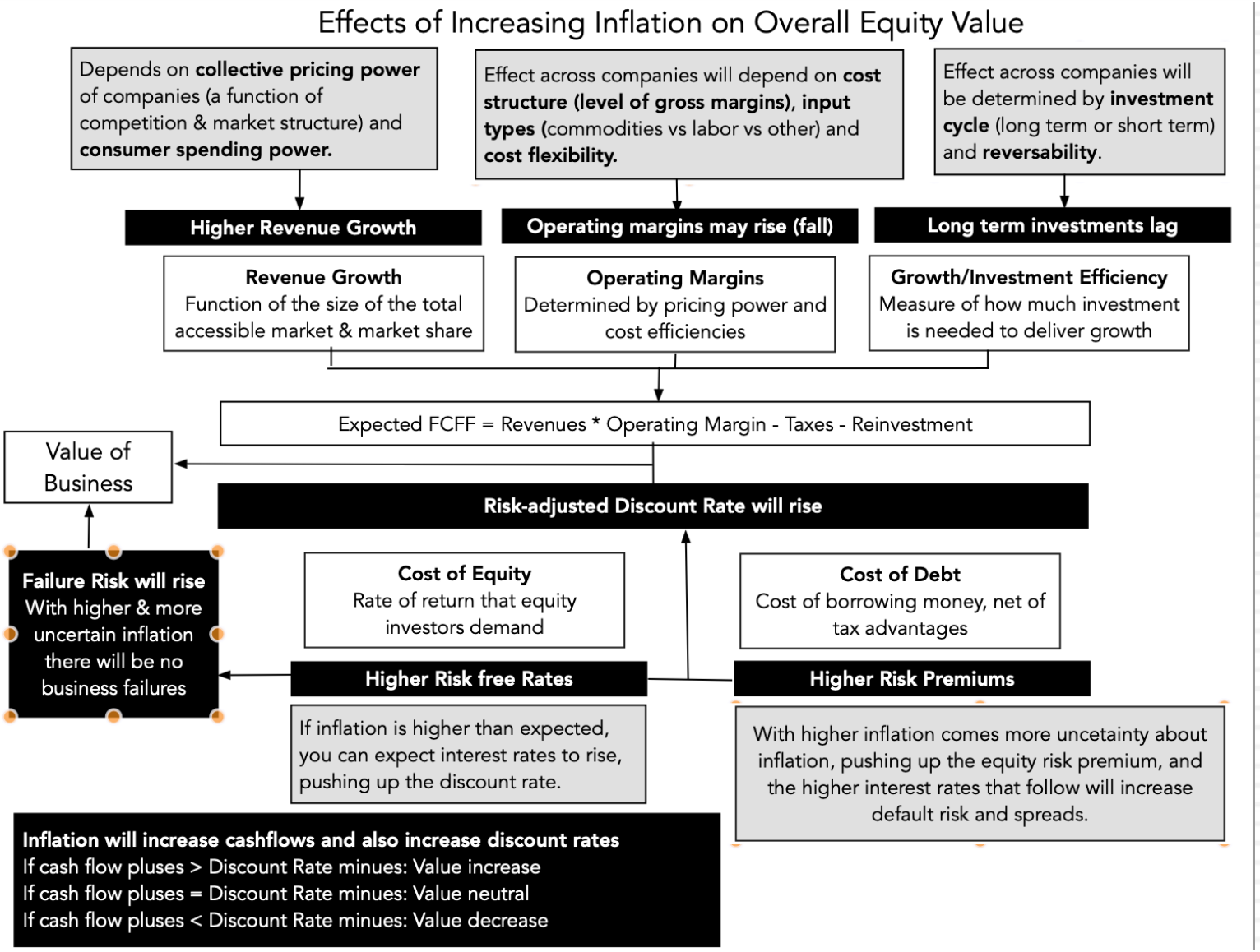
Inflation: Third Order Effects

Fiscal, Monetary and Economic Shocks

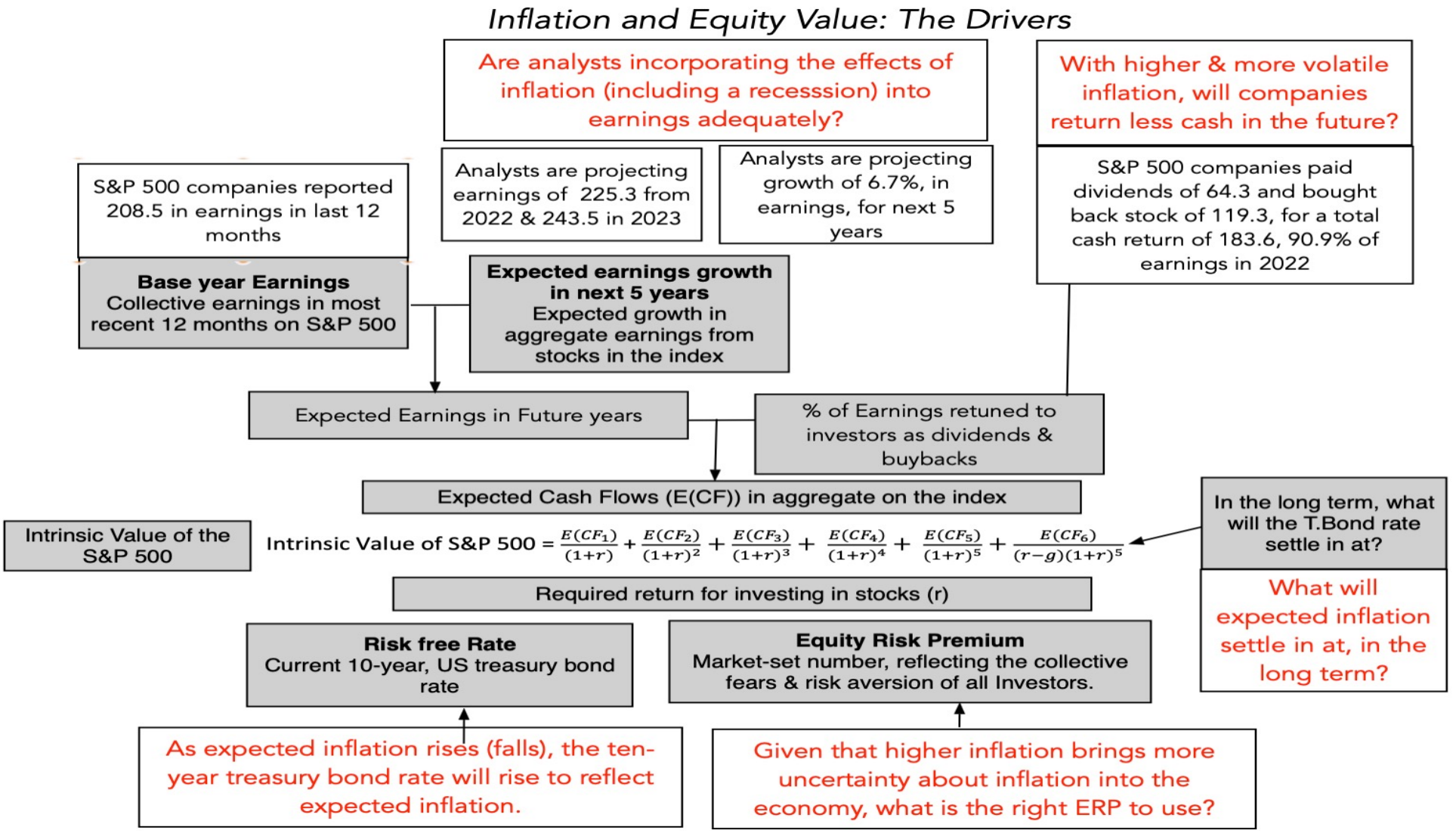
Third Order Effects: The Economy and Psyches!

- As you have probably noticed, perceptions of where the economy is headed have worsened, as we have gone through 2022, even in the face of relatively good news on unemployment.
- Much of the blame for the darkening forecasts has been directed toward Jerome Powell and the Federal Reserve, and while there is much that you can critique about how the Fed has played its cards during this crisis, it is inflation that is in the driver's seat, not the Fed. Interest rates have risen this year because of inflation expectations rising, and it is these higher rates (and expected inflation) that are leading the Fed to act.
- In short, the Fed has two choices, neither of which is appealing.
  - It can do nothing, which is the path that some of its critics would rather have it take, and interest rates will continue to rise, perhaps at an even faster rate, as inflation expectations surge.
  - Alternatively, it can try to reclaim the narrative, by acting to slow the economy down, perhaps even putting it into a recession, with length and severity still to be determined.

Inflation and Overall Equity Value



Determinants of Value



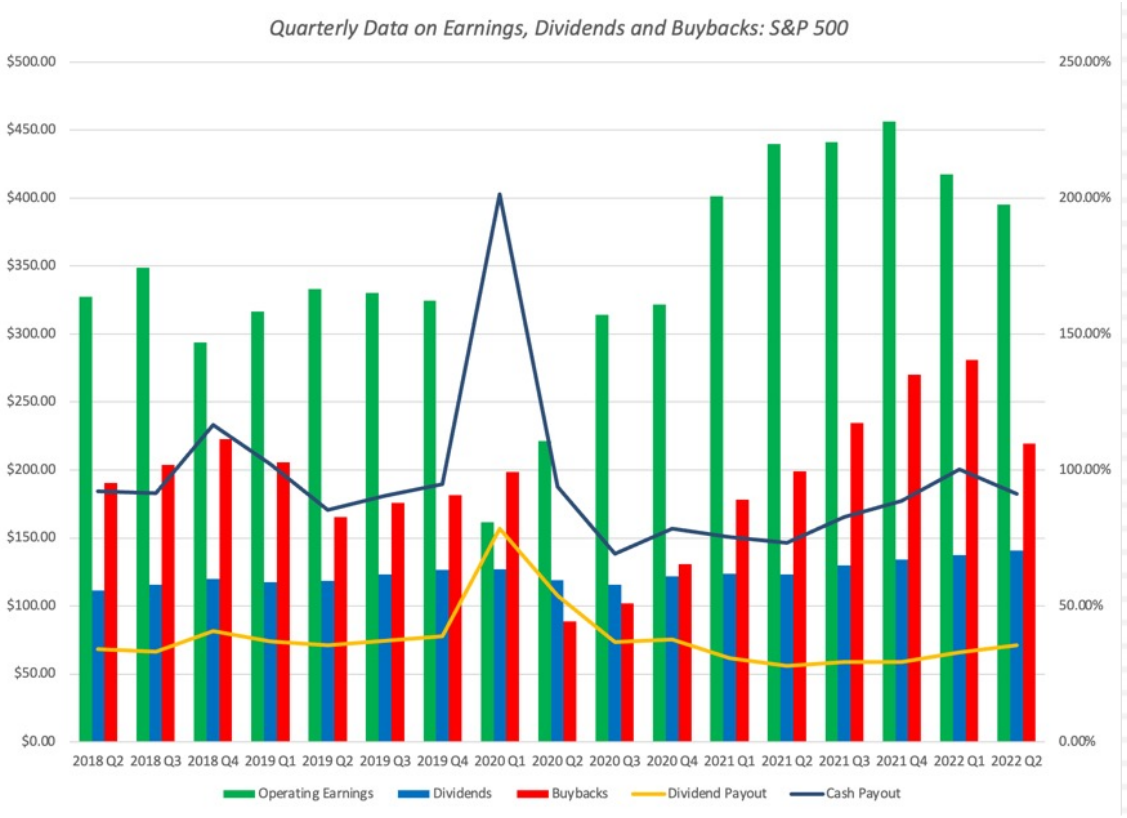
1. Earnings

Start of Month	*Expected Earnings in 2022*	*% Change over prior month*	*% Change over start of year*	*Expected Earnings in 2023*	*% Change over prior month*	*% Change over start of year*
01/01/22	223.34			244.94		
02/01/22	223.78	0.20%	0.20%	245.93	0.40%	0.40%
03/01/22	225.43	0.74%	0.94%	247.94	0.82%	1.22%
04/01/22	227.3	0.83%	1.77%	249.52	0.64%	1.87%
05/01/22	227.29	0.00%	1.77%	250.11	0.24%	2.11%
06/01/22	228.03	0.33%	2.10%	248.96	-0.46%	1.64%
07/01/22	229.57	0.68%	2.79%	251.99	1.22%	2.88%
08/01/22	228.27	-0.57%	2.21%	248.35	-1.44%	1.39%
09/01/22	225.36	-1.27%	0.90%	243.64	-1.90%	-0.53%
09/20/22	225.34	-0.01%	0.90%	243.46	-0.07%	-0.60%

2. Cash Return

S&P 500 Aggregate Earnings, Dividends and Buybacks: 2001-2021

Year	Earnings	Dividends	Buybacks	Dividend Payout	Cash Payout
2001	38.85	15.74	14.34	40.51%	77.43%
2002	46.04	15.96	13.87	34.67%	64.78%
2003	54.69	17.88	13.70	32.69%	57.74%
2004	67.68	19.01	21.59	28.09%	59.99%
2005	76.45	22.34	38.82	29.23%	80.01%
2006	87.72	25.04	48.12	28.55%	83.40%
2007	82.54	28.14	67.22	34.09%	115.53%
2008	49.51	28.45	39.07	57.46%	136.37%
2009	56.86	21.97	15.46	38.64%	65.82%
2010	83.77	22.65	32.88	27.04%	66.28%
2011	96.44	26.53	44.75	27.51%	73.91%
2012	96.82	31.25	44.65	32.28%	78.39%
2013	104.92	34.90	53.23	33.26%	84.00%
2014	116.16	39.55	62.44	34.04%	87.79%
2015	100.48	43.41	64.94	43.20%	107.83%
2016	106.26	45.70	62.32	43.01%	101.66%
2017	124.51	48.93	60.85	39.30%	88.17%
2018	152.78	54.39	96.11	35.60%	98.51%
2019	157.18	58.50	87.81	37.22%	93.08%
2020	139.76	57.00	61.66	40.78%	84.90%
2021	205.35	60.65	104.61	29.53%	80.48%
Average				35.56%	85.05%
1st Quartile				29.53%	73.91%
Median				34.09%	83.40%
3rd Quartile				39.30%	93.08%



My S&P 500 Story

An Intrinsic (and Personal) Valuation of the S&P 500 on September 23, 2022

My Earnings Estimates

Analysts are underestimating the effect of a recession on future earnings, and I am reducing their 2023 estimates by 15%, with ripple effects on earnings beyond. (I am leaving 2022 estimates untouched, because the bulk of the year is behind us.

Cash Return

While companies have collectively returned 90.5% of earnings as dividends and buybacks in the most recent 12 months, recession fears and uncertainty will lead them to reduce this cash returns to 80% of earnings (consistent with growth in long term), over time.

Intrinsic Value Estimate (based on your choice of ERP)							
	2021	2022	2023	2024	2025	2026	*Terminal Year*
Analyst Estimate of Earnings	208.53	225.34	243.46	259.79	273.70	284.65	296.03
My Estimate of Earnings	$208.53	225.34	206.94	225.03	243.13	252.85	262.97
Expected Earnings Growth Rate		8.06%	-8.16%	6.71%	5.35%	4.00%	4.00%
Expected cash payout as % of earnings	90.50%	90.50%	87.88%	85.25%	82.63%	80.00%	80.00%
Expected Dividends + Buybacks =	$188.72	$203.93	$181.85	$191.84	$200.89	$202.28	210.37
Expected Terminal Value =						$4,207.49	
Riskfree Rate	3.69%	3.75%	3.81%	3.88%	3.94%	4.00%	4.00%
Required Return on Stocks	8.69%	8.75%	8.81%	8.88%	8.94%	9.00%	9.00%
Present Value =		$187.52	$153.67	$148.90	$143.12	$2,882.41	
Intrinsic Value of Index =	**3515.63**						
Actual Index level =	**3693.23**						
% Under or Over Valuation =	**-4.81%**						

Ten-year Treasury Bond Rate

I will assume that the bulk of the rise in rates has already occurred, and that the T.Bond rate will converge to 4%, over the next five years.

Equity Risk Premium

The equity risk premium is 5%, close to both the historical average risk premium earned on stocks from 1928 - 2022 and the average implied equity risk premium over the last decade. Adding it to the ten-year bond rate yields the required return on stocks.

In my overarching story for equities, I am building in the assumption that there will be a recession that creates both short term & long term damage to corporate earnings, but helps in restraining inflation, bringing it down from 2022 levels to about 3% in the long term (above the 2011-2021 average of 1.73%).

What if?

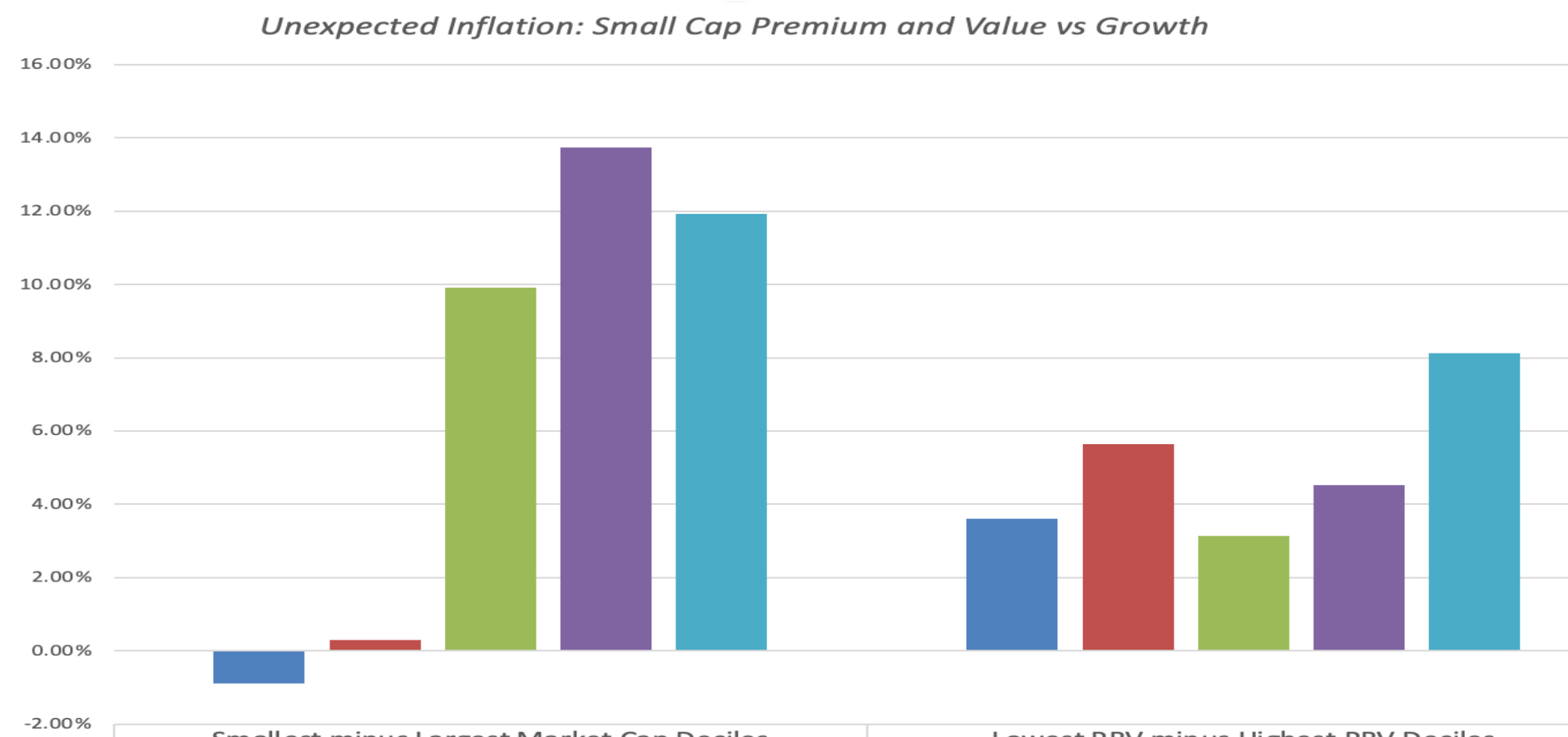
	Valuing the S&P 500 on Sept 23, 2022								
	Earnings = 30% below Estimates			*Earnings = 15% below Estimates*			*Earnings = Estimates*		
Riskfree Rate	*ERP =4%*	*ERP =5%*	*ERP =6%*	*ERP =4%*	*ERP =5%*	*ERP =6%*	*ERP =4%*	*ERP =5%*	*ERP =6%*
2%	4276	3416	2842	4677	3737	3110	5449	4348	3615
3%	4132	3303	2750	4519	3613	3009	5169	4129	3436
4%	3979	3183	2653	4352	3482	2903	4889	3910	3257
5%	3819	3058	2551	4176	3345	2790	4609	3690	3078
6%	3650	2926	2443	3991	3200	2672	4328	3471	2899
Index was trading at 3693 on 9/23/22. Shaded cells are higher than 3693									

Inflation: Company-level Consequences

Spillover Effects: The Disparate Effects on Companies

- While higher than expected inflation, in general, is bad for stocks, not all companies are equally hurt by it.
  - There are a few companies that may benefit from the unexpectedly high inflation.
  - There are some companies that may find their value close to unaffected by inflation
  - There are other companies that are negatively affected by inflation, to varying degrees
- When investors get worried about inflation, the search for companies that are less affected by inflation, or unaffected by it, picks up. To find these companies, investors often look at history to see which classes of stock or sectors have performed best during inflationary periods.

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.

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.

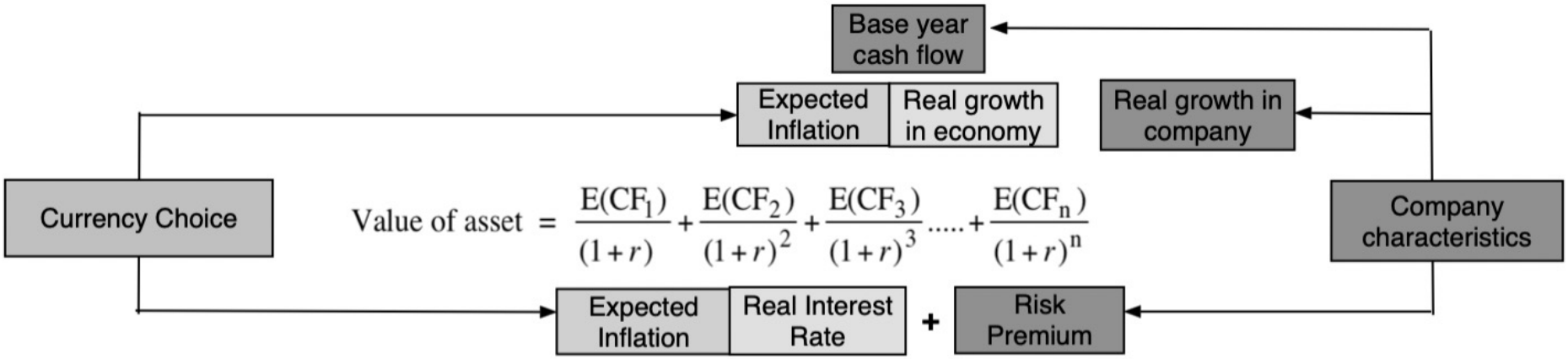
The Factors that determine Inflation Sensitivity

Variable	*Why it matters*	*Factors determining variable*
Pricing Power	Companies that can pass inflation through to customers are more protected from inflation.	1. Discretionary/Non-discretionary: If the product or service you offer is one that your customers need, and cannot delay purchase, you will have more pricing power. 2. Competition: Companies in competitive businesses will have less pricing power than otherwise similar companies with less competition. 3. Regulation: Companies that face price regulation, from governments or regulatory authorities, will be at the mercy of regulatory pricing decisions.
Cost Structure	Companies that have costs that are substantial and inflation-sensitive will be more negatively exposed to inflation.	1. Cost of Goods Sold: Companies that have higher direct costs of production are more negatively affected by inflation than companies with lower costs of production. 2. Input composition: Companies with inputs that are more exposed to inflation (commodities, skilled labor) will be more negatively affected by inflation.
Investment Efficiency	Companies with longer term & less flexible investment choices will be more negatively affected by inflation.	1. Type of Business: Infrastructure and manufacturing companies generally have to invest larger amounts for longer periods than service or technology companies. 2. Flexibility: Companies that have more flexibility (to withdraw or stagger spending) on their investments are better positioned to weather inflation than companies that don't have that flexibility.
Cost of equity	Riskier companies will be more negatively affected by inflation	1. Sector Risk: Companies in riskier sectors, i.e., sectors more exposed to market/economic up and down turns will see costs of equity go up more than companies in safer sectors. 2. Country Risk: Companies that operate in riskier countries will see bigger surges in equity risk premiums than companies that operate in stable markets.
Cost of debt	Companies that have more default risk (lower bond ratings) will be hurt more by higher inflation.	1. Stability/Level of Earnings: Companies with higher and more stable earnings will see costs of debt go up less than companies with lower/negative earnings. 2. Debt level: Companies that have borrowed more will see a bigger increase in their costs of debt than otherwise similar companies that have borrowed less.
Failure risk	Companies with a higher risk of failure will be hurt more by inflation.	1. Stage in Life Cycle: Young companies with unformed business models have a greater chance of failure than older companies with more established business models. 2. Debt level: Companies that have borrowed more are more likely to fail than otherwise similar companies that have borrowed less.

Inflation in Intrinsic Valuation

Inflation Consistency in Valuation

- In a scenario where inflation is volatile and you are trying to estimate its level and effects on the value of a company, trying to get it right is an impossible task. You should however always maintain internal consistency in your valuation.
- Put simply, if you expect inflation to be low (high), your discount rate and expected growth rate should both incorporate that low (high) inflation.



Heineken: September 2019 (in Euros)

Cash flows from existing assets

	LTM	2013-2018
Revenues	€ 23,119	Growth rate = 3.22%
Operating Margin	14.86%	14.44%
Sales/Invested Capital	0.71	0.79
ROIC	7.46%	8.32%
Effective Tax Rate	29.70%	27.00%

The Payoff from growth

Revenues will grow 3.22% a year for next 5 years, tapering down to -0.5% growth in year 10

Operatng margin (per-tax) will drop to 14.00%

Sales/Invested Capital will stay at five-year average of 0.79.

Maturty and Closure

Stable Growth
g = -0.5%;
Cost of capital = 5%
ROC= 5%;
Reinvestment Rate=-.5%/5% = -10%

Terminal Value = 2972/(.05-..-(.005)) = 54,034

Euro Cashflows

	1	2	3	4	5	6	7	8	9	10	Terminal year
Revenue growth rate	3.22%	3.22%	3.22%	3.22%	3.22%	2.48%	1.73%	0.99%	0.24%	-0.50%	-0.50%
Revenues	€ 23,863	€ 24,632	€ 25,425	€ 26,244	€ 27,089	€ 27,759	€ 28,240	€ 28,519	€ 28,589	€ 28,446	€ 28,304
EBIT (Operating) margin	14.38%	14.34%	14.30%	14.26%	14.21%	14.17%	14.13%	14.09%	14.04%	14.00%	14.00%
EBIT (Operating income)	€ 3,432	€ 3,532	€ 3,635	€ 3,741	€ 3,850	€ 3,934	€ 3,990	€ 4,017	€ 4,015	€ 3,982	$ 3,963
Tax rate	29.70%	29.70%	29.70%	29.70%	29.70%	28.76%	27.82%	26.88%	25.94%	25.00%	$ 0
EBIT(1-t)	€ 2,413	€ 2,483	€ 2,556	€ 2,630	€ 2,707	€ 2,802	€ 2,880	€ 2,937	€ 2,973	€ 2,987	$ 2,972
- Reinvestment	€ 942	€ 973	€ 1,004	€ 1,036	€ 1,070	€ 849	€ 609	€ 353	€ 88	€ (181)	$ (297)
FCFF	€ 1,471	€ 1,511	€ 1,552	€ 1,594	€ 1,637	€ 1,953	€ 2,271	€ 2,584	€ 2,885	€ 3,168	$ 3,269

PV(Terminal value)	€ 36,390.85
PV (CF over next 10 years)	€ 15,300.34
Value of operating assets =	€ 51,691.19
- Debt	€ 19,709.52
- Minority interests	€ 1,069.00
+ Cash	€ 1,751.60
+ Non-operating assets	€ 1,401.00
Value of equity	€ 34,065.26
Number of shares	571.10
Estimated value /share	€ 59.65
Price	€ 93.25
Price as % of value	56.33%

Discount at Euro Cost of Capital (WACC) = 7.66% (.599) + 1.13% (0.401) = 5.04%

The Risk in the Cash flows

On September 1, 2019, Heineken was trading at 93.25 Euros/share

Cost of Equity 7.66%

Cost of Debt (-0.5%+2%)(1-.25) = 1.13%

Weights E = 59.9% D = 40.1%

Riskfree Rate: Euro Risk free rate = -0.50%

\+

Beta = 1.20

X

Firm's D/E Ratio: 66.98%

Unlevered beta of alcoholic beverage business = 0.80

ERP = 6.83%			
Region	*Revenues*	*Weight*	*ERP*
Europe	10348	50.24%	6.90%
North America	5920	28.74%	5.75%
Asia	2919	14.17%	7.22%
Latin America & Caribbean	781	3.79%	10.53%
Africa & Mid East	631	3.06%	9.30%
Total	**20599**	**100.00%**	**6.83%**

Arcelik's revenue growth has been solid and its margins have been high, but return on capital has been less that the cost of capital

	LTM	2014-2019	Industry Average
Revenue Growth	37.03%	20.14%	7.83%
Pre-tax Operating Margin	7.82%	7.70%	7.93%
ROIC	11.70%	12.74%	18.68%
Sales/Capital	1.70	1.77	2.73

Arcelik: My valuation (October 2019)

Between 2014 and 2019, Arcelik reported a growth rate of 20.14% in revenues, an average operating margin of 7.70% and an average sales to capital ratio of 1.77.

Stable Growth
g = 10%
Cost of capital = 15%
ROC= 15%;
Reinvestment Rate= 10%/15% = 66.67%

Revenue growth of 20% a year for 5 years, tapering down to 10% in year 10

Pre-tax operating margin increases to 8.00% over time.

Sales to capital ratio of 2.73, matching global average

Terminal Value= 3,332/(.15-.10) = TL 66,633

PV(Terminal value)	$11,766.68
PV (CF over next 10 years)	$ 3,603.22
Value of operating assets =	$15,369.90
- Debt	$14,305.92
- Minority interests	$ 114.60
+ Cash	$ 6,026.00
+ Non-operating assets	$ 481.10
Value of equity	$ 7,456.48
Number of shares	675.70
Estimated value /share	$ 11.04

	Base year	1	2	3	4	5	6	7	8	9	10	Terminal year
Revenue growth rate		20.00%	20.00%	20.00%	20.00%	20.00%	18.00%	16.00%	14.00%	12.00%	10.00%	10.00%
Revenues	30,440 ₺	36,528 ₺	43,834 ₺	52,600 ₺	63,120 ₺	75,744 ₺	89,378 ₺	103,679 ₺	118,194 ₺	132,377 ₺	145,615 ₺	160,177 ₺
EBIT (Operating) margin	7.82%	7.84%	7.86%	7.88%	7.89%	7.91%	7.93%	7.95%	7.96%	7.98%	8.00%	8.00%
EBIT (Operating income)	2,381 ₺	2,864 ₺	3,444 ₺	4,143 ₺	4,982 ₺	5,992 ₺	7,087 ₺	8,239 ₺	9,413 ₺	10,567 ₺	11,649 ₺	12,814 ₺
Tax rate	14.80%	14.80%	14.80%	14.80%	14.80%	14.80%	16.24%	17.68%	19.12%	20.56%	22.00%	22.00%
EBIT(1-t)	2,029 ₺	2,440 ₺	2,935 ₺	3,529 ₺	4,245 ₺	5,105 ₺	5,936 ₺	6,782 ₺	7,614 ₺	8,394 ₺	9,086 ₺	9,995 ₺
- Reinvestment		2,226 ₺	2,672 ₺	3,206 ₺	3,847 ₺	4,616 ₺	4,986 ₺	5,230 ₺	5,308 ₺	5,187 ₺	4,841 ₺	6,663 ₺
FCFF		214 ₺	263 ₺	324 ₺	398 ₺	489 ₺	950 ₺	1,553 ₺	2,306 ₺	3,208 ₺	4,246 ₺	3,332 ₺

Cost of capital = 24.73% (.522) + 16.01% (.478) = 20.64%

Cost of capital decreases to 15% from years 6-10

On October 14, 2019, the shares were trading at 18 TL/share.

Cost of equity = 24.73%

Cost of Debt *Rated B*
(11.06%+4.06%+5.40%)(1-.25) = 16.01%

Weights
E = 52.2% D = 47.8%

Riskfree Rate:
Riskfree rate = 11.06%

+

Beta
1.69

x

Risk Premium
8.11%

D/E = 89.04%

Business	Revenues	EV/Sales	Estimated Value	Unlevered Beta
Furn/Home Furnishings	$ 20,657	0.9785	$ 20,213	0.97
Electronics (Consumer & Office)	$ 2,807	0.5769	$ 1,619	1.30
Arcelik	$ 23,464		$ 21,833	0.99

Region	Revenues	ERP	Weight
Europe	13,272 ₺	6.68%	49.37%
Turkey	8,425 ₺	10.53%	31.34%
Asia	2,299 ₺	7.00%	8.55%
Africa & Mid East	1,926 ₺	9.08%	7.16%
Rest of the World	963 ₺	7.39%	3.58%
Total	26,885 ₺	8.11%	100.00%

What now?

- **The Inflation Bull**: If you are bullish, the assumption that makes the biggest difference is where you see equity risk premiums converging, with premiums closer to 4% yielding undervaluation on the index, even with significant earnings shocks built in.
- **The Inflation Bear**: At the other end of the spectrum, if the equity risk premium stays at 6% or higher, the only scenario where you arrive at a value close to the index is if the 10-year T.Bond rate drops to 2% and earnings estimates come in as expected, with significant corrections to come, in scenarios where rates stay higher and/or earnings come in below estimates.
- **The Policy Choices**: Given a choice between allowing inflation to play itself out and initiating polices that create a recession, there are some who are pushing for the former, arguing that trading off the certain pain that comes with a recession for the uncertain benefits of lower inflation is not good policy. I sympathize, but the dangers of letting inflation play out is that if it does so in unpleasant ways, where it stays high and volatile, its effects are going to be far more long term and more damaging. High and volatile inflation corrodes economies and markets from the inside out, destroying faith in currencies and making investors and businesses behave in dysfunctional ways.