



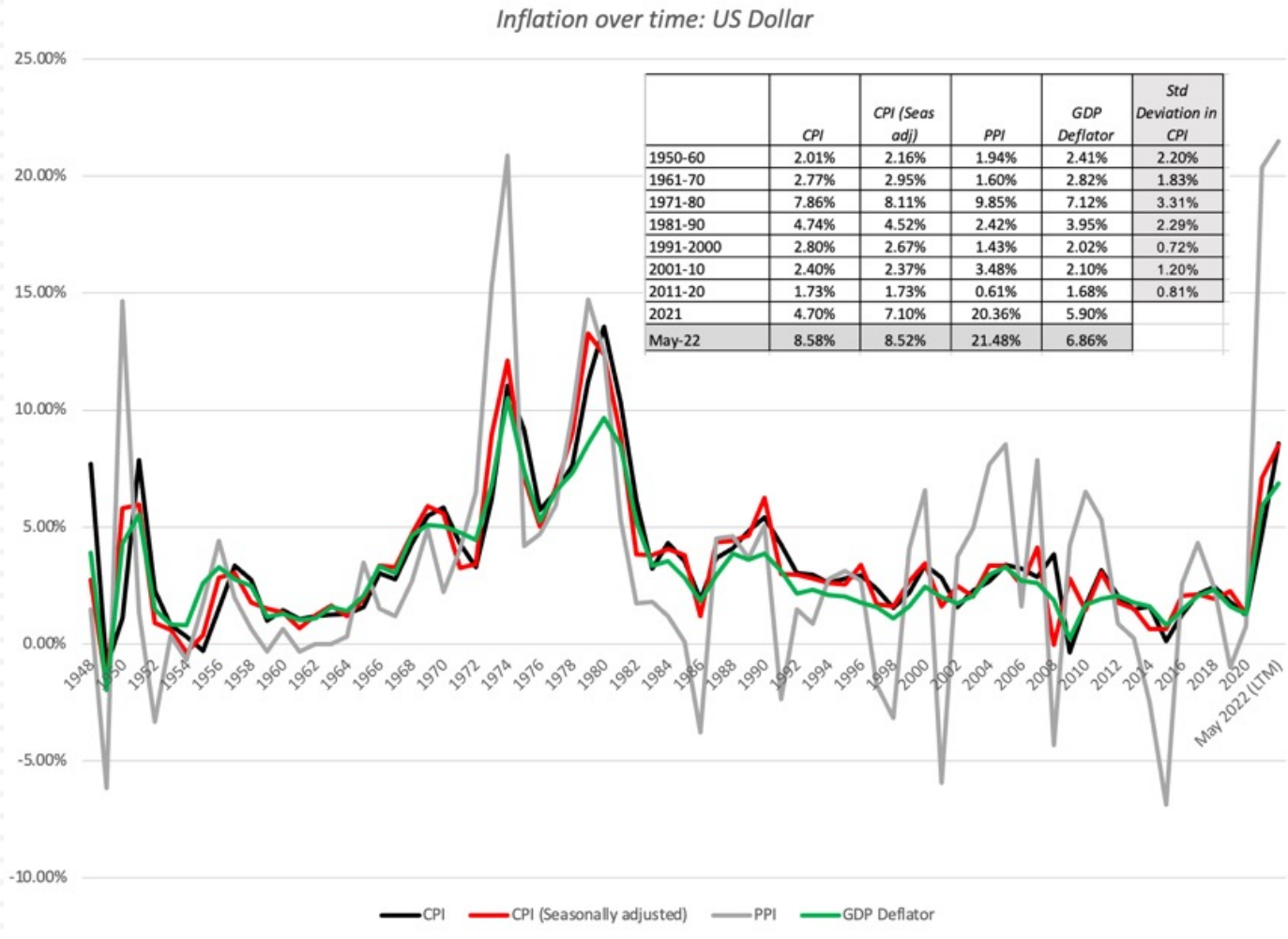
IN SEARCH OF A STEADY STATE:
INFLATION, INTEREST RATES AND
VALUE

The (inflation) genie escapes the bottle!

A Market in search of a Steady State...

- ❑ 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: History and Perspective



Expected and Unexpected Inflation..

Investors form expectations for inflation

Expected Inflation

Financial assets are priced based upon expected inflation.

With bonds, interest rates are set based upon inflation expectations.

With stocks, expected cash flows and required returns reflect inflation expectations.

Actual inflation is observed

Actual > Expected

Actual = Expected

Actual < Expected

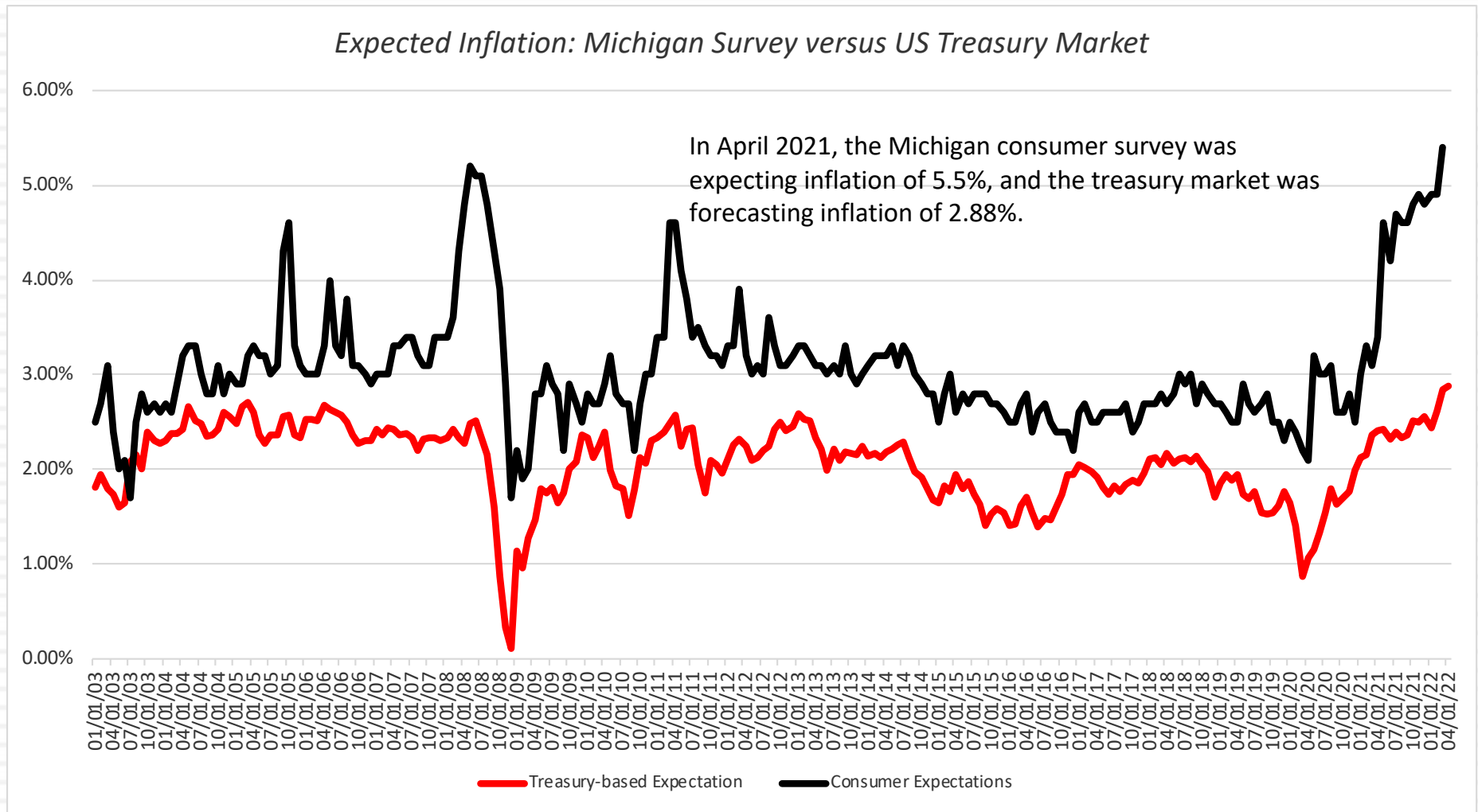
Financial assets are repriced based upon new expectations.

Financial assets are repriced downwards to reflect **higher than expected inflation**

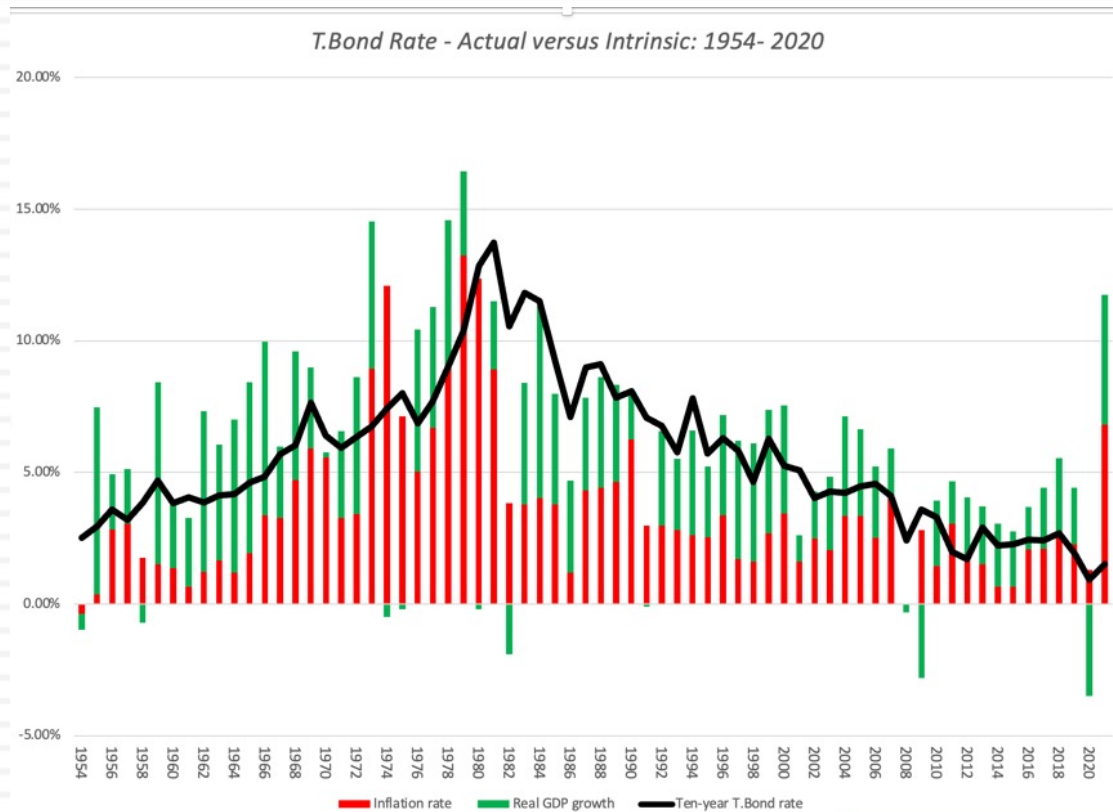
Financial assets are repriced upwards to reflect lower than expected inflation

Measures of Expected Inflation

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And interest rates...



	<i>Ten-year T.Bond rate</i>	<i>Inflation rate</i>	<i>Real GDP growth</i>	<i>Intrinsic riskfree rate</i>
1954-2021	5.59%	3.55%	2.94%	6.50%
1954-1980	5.83%	4.49%	3.50%	7.98%
1981-2008	6.88%	3.26%	3.04%	6.30%
2011-2021	2.25%	1.76%	1.70%	3.46%

Financial Asset Returns: By Decade

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Decade	Expected Inflation	Unexpected Inflation	Average Annual Nominal Return				Average Annual Real Return			
			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%

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.

Quntile	S&P 500 (Stocks)		3-month T.Bill		10-year T.Bond		Baa Corporate Bond	
	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%

Real Estate and Gold

<i>Decade</i>	<i>Expected Inflation</i>	<i>Unexpected Inflation</i>	<i>Annual Nominal Return</i>		<i>Annual Real Return</i>	
			<i>Gold</i>	<i>Real Estate</i>	<i>Gold</i>	<i>Real Estate</i>
1930-39	-1.92%	0.07%	NA	-1.05%	NA	0.87%
1940-49	5.51%	3.08%	NA	8.56%	NA	3.05%
1950-59	2.24%	-1.89%	NA	3.09%	NA	0.85%
1960-69	2.53%	0.84%	NA	2.18%	NA	-0.35%
1970-79	7.41%	2.80%	37.46%	8.80%	30.05%	1.39%
1980-89	5.14%	-2.33%	-0.96%	5.90%	-6.10%	0.76%
1990-99	2.94%	-0.90%	-2.72%	2.70%	-5.65%	-0.24%
2000-09	2.53%	-0.02%	14.95%	4.30%	12.42%	1.77%
2010-19	1.76%	-0.38%	4.43%	3.86%	2.68%	2.11%
2020	1.36%	-0.39%	24.17%	10.35%	22.81%	8.98%

Unexpected Inflation and Real Asset Returns..

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

Inflation less than expected.



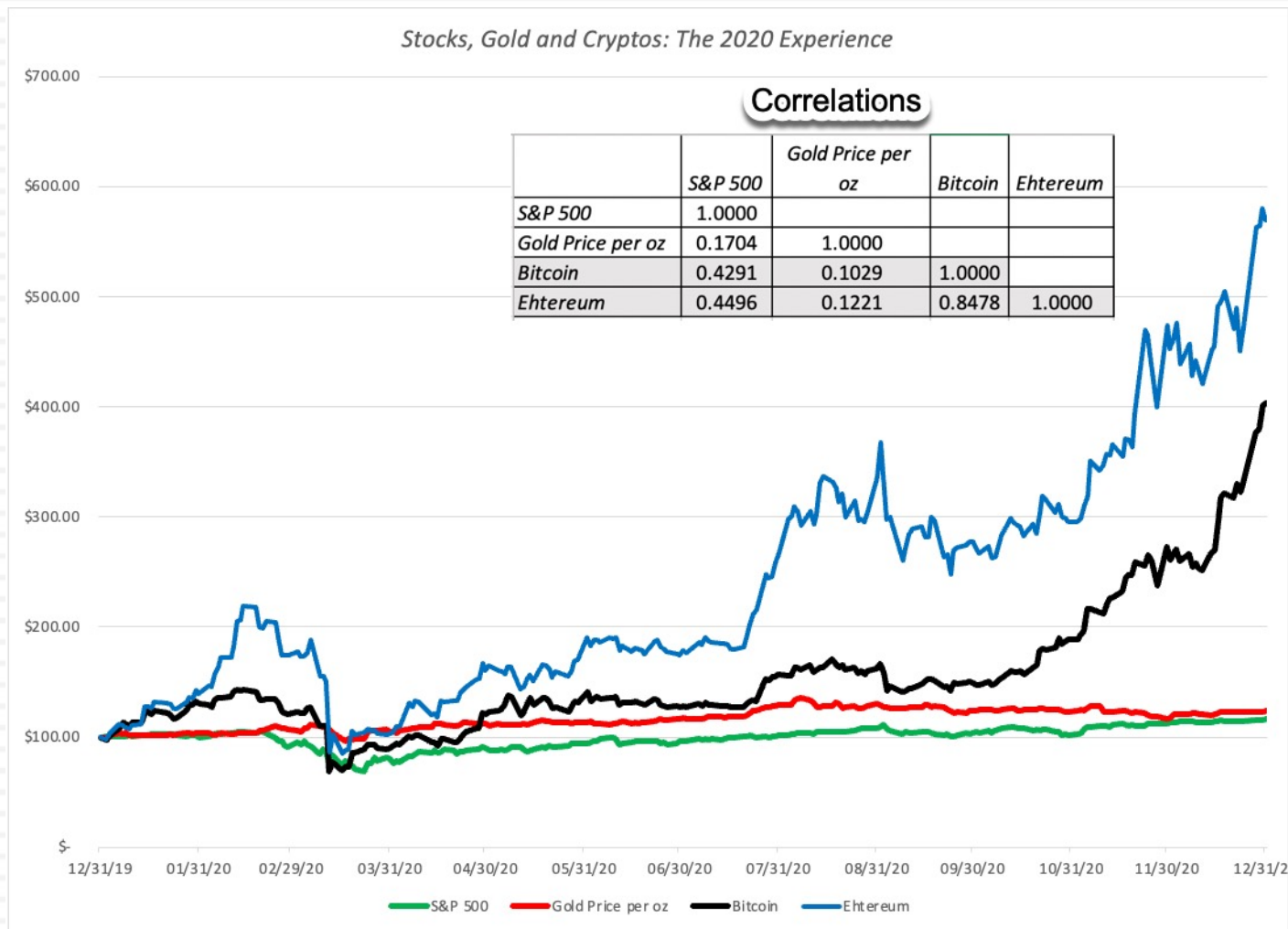
Inflation greater than expected.

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 little or no pattern.

Quintile	Gold		Real Estate	
	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%

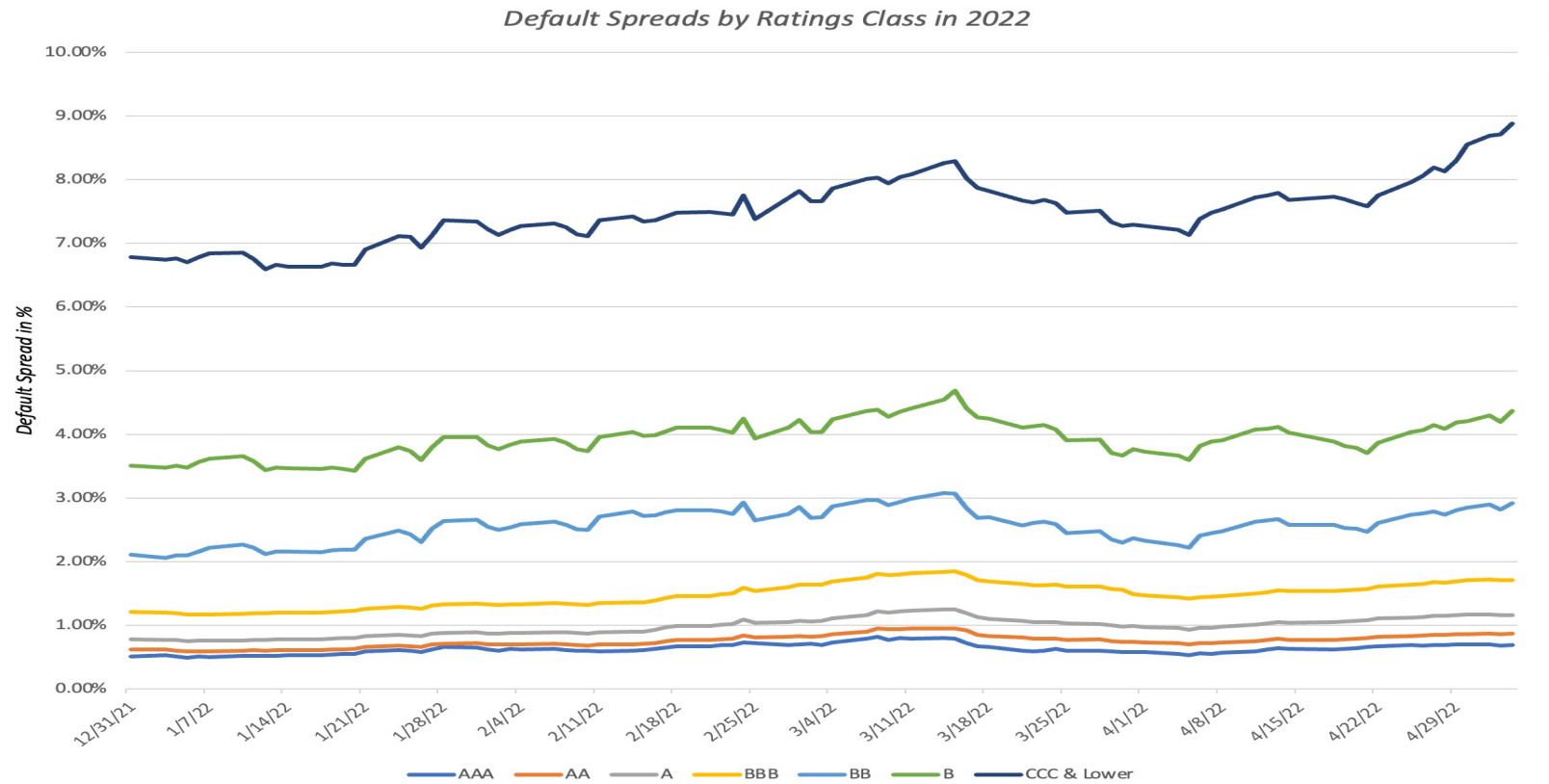
Inflation and Cryptos?



Inflation Hedges?

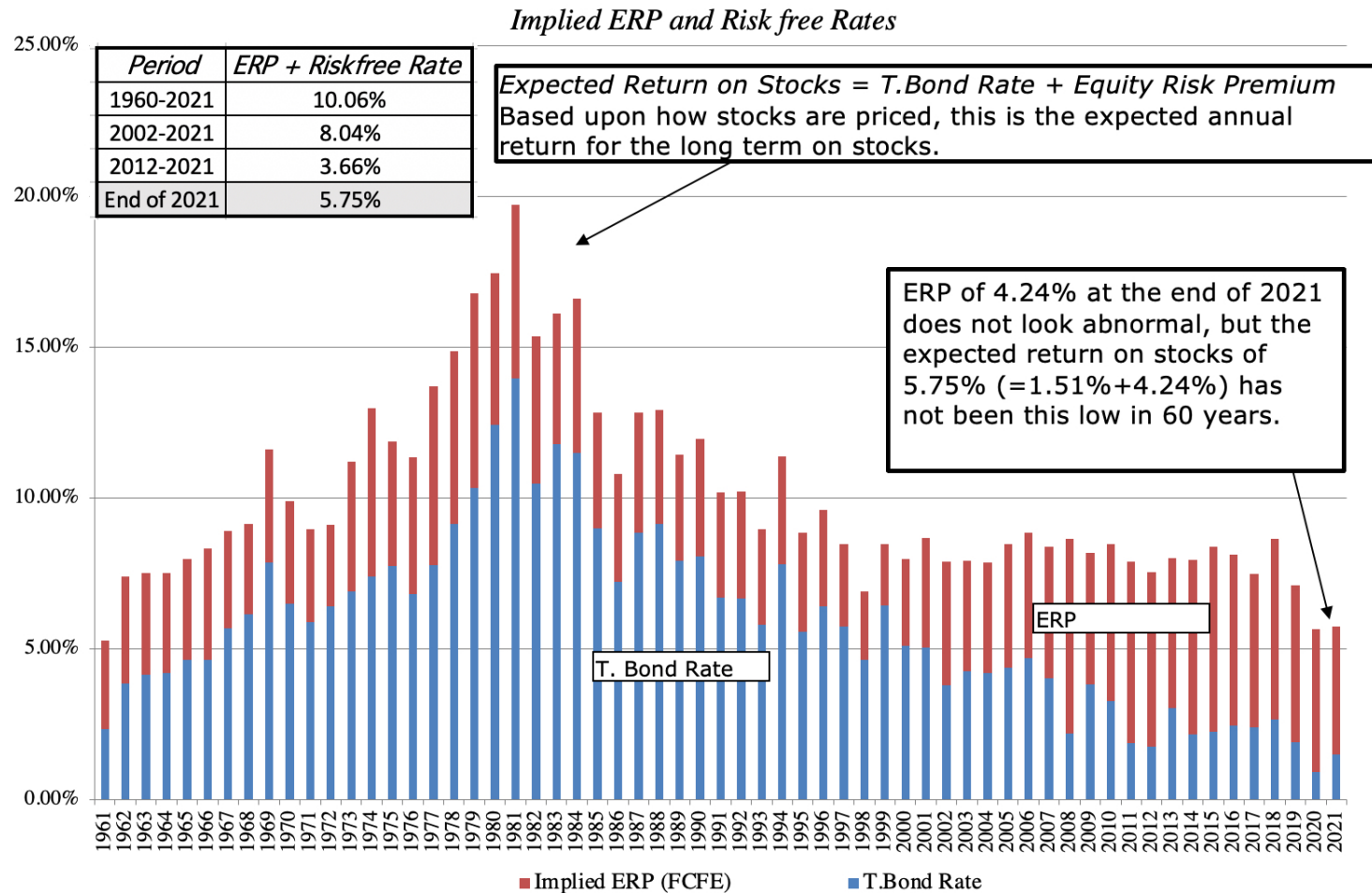
	Actual Inflation Rate	Unexpected Inflation	S&P 500 (includes dividends)	3-month T.Bill	US T. Bond	Baa Corporate Bond	Gold	Real Estate
Actual Inflation Rate	1.0000							
<i>t</i>								
Unexpected Inflation	0.7624	1.0000						
<i>t</i>	11.2383							
S&P 500 (includes dividends)	0.0131	-0.1326	1.0000					
<i>t</i>	0.1245	-1.2766						
3-month T.Bill	0.4000	-0.0362	-0.0347	1.0000				
<i>t</i>	4.1629	-0.3460	-0.3311					
US T. Bond	-0.0740	-0.2442	-0.0119	0.2625	1.0000			
<i>t</i>	-0.7078	-2.4021	-0.1134	2.5954				
Baa Corporate Bond	-0.0988	-0.2219	0.4062	0.0876	0.5921	1.0000		
<i>t</i>	-0.9471	-2.1712	4.2408	0.8388	7.0091			
Gold	0.4787	0.5861	-0.2011	0.0629	-0.1417	-0.2161	1.0000	
<i>t</i>	3.8169	5.0637	-1.4372	0.4412	-1.0020	-1.5493		
Real Estate	0.5427	0.3329	0.1382	0.1116	-0.0782	-0.0168	0.1636	1.0000
<i>t</i>	6.1633	3.3678	1.3312	1.0715	-0.7484	-0.1603	1.1609	

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%

Equity Risk Premiums



S&P Valuation: Status Quo

Valuing the S&P 500 on May 5, 2022

	2021	2022	2023	2024	2025	2026	<i>Terminal Year</i>
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%						

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)

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 expectations, inflation reverts to Fed targets and the price of risk levels off.

Valuing the S&P 500 on May 5, 2022									
	<i>Earnings = 20% below Estimates</i>			<i>Earnings = 10% below Estimates</i>			<i>Earnings = Estimates</i>		
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 inflation uncertainty.

The Disparate Effects of Inflation

- 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.

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 greivous 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

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<i>Variable</i>	<i>Why it matters</i>	<i>Factors determining variable</i>
Pricing Power	Companies that can pass inflation through to customers are more protected from inflation.	<ol style="list-style-type: none"> 1. <u>Discretionary/Non-discretionary</u>: If the product or service you offer is one that your customers need, and cannot delay purchase, you will have more pricing power. 2. <u>Competition</u>: Companies in competitive businesses will have less pricing power than otherwise similar companies with less competition. 3. <u>Regulation</u>: 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.	<ol style="list-style-type: none"> 1. <u>Cost of Goods Sold</u>: Companies that have higher direct costs of production are more negatively affected by inflation than companies with lower costs of production. 2. <u>Input composition</u>: 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.	<ol style="list-style-type: none"> 1. <u>Type of Business</u>: Infrastructure and manufacturing companies generally <u>have to</u> invest larger amounts for longer periods than service or technology companies. 2. <u>Flexibility</u>: 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	<ol style="list-style-type: none"> 1. <u>Sector Risk</u>: 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. <u>Country Risk</u>: Companies that operate in riskier countries will see bigger surges <u>in equity</u> 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.	<ol style="list-style-type: none"> 1. <u>Stability/Level of Earnings</u>: Companies with higher and more stable earnings will see costs of debt go up less than companies with lower/negative earnings. 2. <u>Debt level</u>: 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.	<ol style="list-style-type: none"> 1. <u>Stage in Life Cycle</u>: Young companies with unformed business models have a greater chance of failure than older companies with more established business models. 2. <u>Debt level</u>: Companies that have borrowed more are more likely to fail than otherwise similar companies that have borrowed less.

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

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

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

Maturity and Closure

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

Euro Cashflows

Terminal Value = $2972 / (.05 - (-0.005)) = 54,034$

	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

Unlevered beta of alcoholic beverage business = 0.80

Firm's D/E Ratio: 66.98%

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 than the cost of capital

Arcelik: My valuation (October 2019)

	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

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

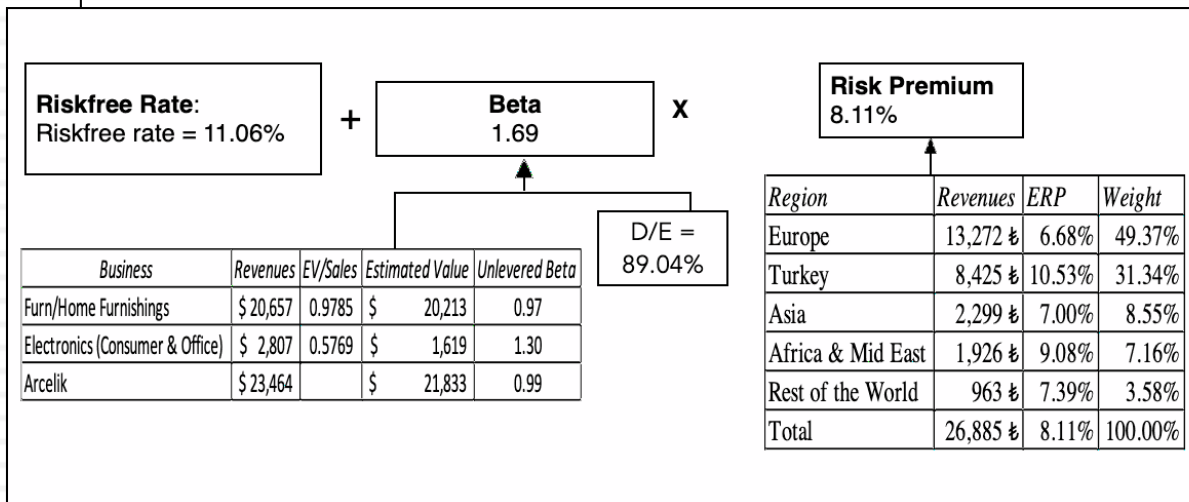
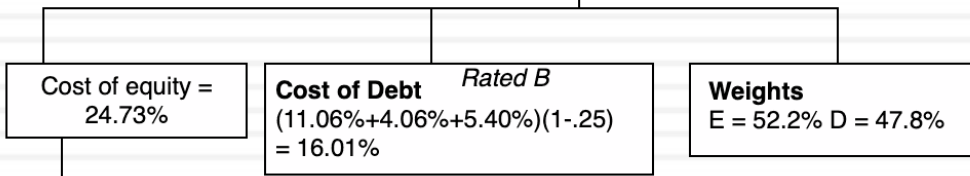
Terminal Value = $3,332 / (.15 - .10) = TL 66,633$

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 ₺	89,578 ₺	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.



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.