# Economic & Market Outlook

## **Executive Summary**

- ~ Inflation continues to wreak havoc on financial markets
- Government bond yields have moved higher, pressuring the valuations of every asset class, and the uncertainty surrounding our economy continues to build placing further pressure on valuations
- ~ Against this backdrop, equity and bond markets fell to new lows for the year
- Discount rates, the return required by investors, are materially higher for both stocks and bonds, which bodes well for long-term investors

## The Specter of Inflation

The subject of this commentary is like the last, but the market backdrop is worse. Since our last letter, global equities have fallen an additional 6.7% and US investment-grade bonds 4.8%. That puts equity and bond returns at -25.3% and -14.6% respectively (through 9/30/22). Equity losses of this scale are infrequent, but to be expected. The real issue and source of wealth destruction stems from the bond market, which at \$126.7 trillion in value is larger than the global market for stocks. Bond losses are rare. Per Jason Zweig of the Wall Street Journal, "the US bond market has had positive returns, before inflation, in all but four years since 1976. Even in 1994, when the Federal Reserve raised interest rates six times for a total of 2.5 percentage points, bonds lost only 3% in aggregate." To our knowledge, this is the worst market for US bonds (and global bonds) in recorded history. The good news is one culprit is known. A large portion of the weakness in financial markets can be attributed to stubbornly high inflation. Unfortunately, forecasting inflation is exceedingly difficult.

		Q1	Q2	Q3	YTD
Global Stocks	MSCI ACWI	-5.3%	-15.5%	-6.7%	-25.3%
US Stocks	S&P 500	-4.6%	-16.1%	-4.9%	-23.9%
US Stocks (Tech Focused)	Nasdaq	-8.9%	-22.3%	-3.9%	-32.0%
Int'l Developed Stocks	MSCI EAFE	-5.8%	-14.3%	-9.3%	-26.7%
Emerging Mkt. Stocks	MSCI EM	-7.0%	-11.4%	-11.5%	-27.0%
Investment-Grade Bonds	Barclays Agg.	-5.9%	-4.7%	-4.8%	-14.6%

Source: Annandale LLC

## **Discount Rates**

It is a rare occurrence for us to attribute the bulk of the market's fluctuations to a single factor. The market is comprised of millions of individuals focused on differing variables of differing importance. Financial markets are complex systems, and investors who try to explain day-to-day, month-to-month, or even year-to-year market movements typically lack the humility that great investing requires. That said, we cannot understate the havoc inflation is having on discount rates.

Discount rates, in academic parlance, are the rate at which you discount future cash flows to arrive at an estimate of value. In laymen's terms, they represent the rate of return demanded by investors (in aggregate). The higher your return hurdle (or discount rate), the less you are willing to pay for an investment. High discount rates equate to low valuations. The converse is also true. Low discount rates imply high valuations. Within the bond market, you can observe discount rates in real time as simply the bond's yield (typically to maturity). When it comes to equity markets, the concept of discount rates is more nebulous. There is no stated or observable discount rate that reflects the marginal investor's required rate of return, but such a rate does exist.

The discount rate itself is tied to several variables. The opportunity cost of your capital will dictate your discount rate. If you have access to a risk-free investment offering a 5.0% rate-of-return, then you are likely to demand more for investments that are not risk-free. The time value of your money plays a similar role. You will likely demand a higher rate-of-return for investments that tie up capital for longer periods of time, because a dollar in your pocket today is more valuable than a dollar received in the future. This is even more true in times of high inflation. Most importantly, uncertainty impacts discount rates. If you perceive an investment to be risky and/or less predictable, then you will demand a higher rate-of-return to compensate you for that uncertainty. The concept is simple enough.

Inflation hits discount rates from multiple angles. There are the obvious effects. If you expect high inflation will persist, then you will demand greater compensation from your investments so that you can earn a real return on your investment. Then there are the less obvious, but perhaps more harmful effects. Inflationary shocks introduce <u>a lot</u> of uncertainty into the cash flows you are discounting. Just think about this in the context of an equity investment in a retailer like Target or Walmart. When inflation strikes, will they be able to pass on prices increases to their customers? And if so, how much can they pass on before losing business? Will they have to pay employees more? Will their costs of goods increase? On top of that, you have second order effects. To combat inflation, will the Federal Reserve pursue measures that tip the economy into recession? If the Federal Reserve isn't aggressive enough, will inflation get worse?

Bear markets can happen in one of three ways. (1) The cash flows (corporate earnings and/or interest payments) investors are discounting can fall without a change in discount rates. (2) You can have cash flows stay the same, but investors demand a higher discount rate (i.e., pay less to ensure a greater rate-of-return). (3) And in the worst case, cash flows fall and discount rates climb, which is a double whammy. We believe the bulk of this bear market, so far, stems from investors increasing their required rates of return. Discount rates have been going up, which means valuations must go down, and inflation was the catalyst for that change.



## Inflation & Treasury Discount Rates

This is the first real inflation shock for most individuals actively managing money. For almost 40 years (1983-2020), inflation has been a non-event. A reading north of 5.0% for the consumer price index was an outlier. And in the decade following the financial crisis, on average, inflation came in below 2.0%. Inflation was considered an artifact of the past. In 2020, the Federal Reserve even adopted the policy of average inflation targeting, hoping it could engineer more inflation. COVID and the associated policy response did the trick. From March of 2021, inflation (measured by CPI) jumped from 2.6% to a peak of 9.06% last June, and with inflation came a material move in discount rates.



**Market Implied Inflation Expectations (5 - Years Forward)** 

Source: Annandale LLC

The chart above might surprise you. It is a market-based measure of future inflation expectations. In the US, we have nominal Treasuries, and we have Treasury Inflation Protected Securities ("TIPS"). Because TIPS offer a yield after inflation, we can subtract the nominal Treasury's yield from the TIP's yield to arrive at the market's expectation for future inflation. The graph above plots this market-based measure for 5-year maturities. The surprising aspect of this chart is inflation expectations aren't higher given recent CPI reports. The market still views inflation as somewhat transitory, which we discuss in an appendix to this letter. What we want to draw your attention to is the regime change that has occurred, even if it is not as large as one might expect. Pre-COVID, expected 5-year inflation hovered around 1.7%. Post-COVID, there has been a step-change higher in inflation expectations, averaging 2.7% since 2021. This jump in inflation expectations gets directly reflected in discount rates. Put simply, if investors believe inflation under the new regime will be roughly 1.0% higher than the old regime then they will demand an additional 1.0% from their investments on a go forward basis, resulting in lower prices.

#### **Treasury Yields Are Well Above Pre-COVID Levels**



Source: Annandale LLC

Treasury yields have increased considerably since COVID. The discount rate on a Treasury equals investors' inflation expectations plus a real yield. We know from our prior discussion that inflation expectations are up  $\sim 1.0\%$  since COVID, so we should expect Treasury yields to have increased by at least that amount. The prior chart shows the yields on Treasuries before COVID (12/31/19) and at quarter-end (9/30/22). Except for 30-year bonds, discount rates are up anywhere from 1.9% to 2.6%. Changes in inflation expectations have accounted for 38 to 50% of the move, depending upon the maturity in question, but the bulk of the change in rates is attributable to climbing real yields. Real yields, which were negative a few years ago, are now materially higher. As to why? We don't know. But the result is what matters, higher real yields plus higher inflation expectations have placed us in a market where Treasuries carry 4.0% discount rates.

## The Opportunity Cost of 4% Treasury Rates

Why do 4% Treasury rates matter? Treasury bonds are the best approximation we have for the risk-free rate of return. The market ascribes almost a 0.0% probability that the US government will default on its obligations. This can be debated, but that is beside the point. Because Treasuries are in theory "risk-free" we can use them as a baseline for pricing every other asset. They give us a starting point, the minimum discount rate or required rate-of-return we should accept from a competing investment. For example, suppose a friend asks you for a 10-year loan. What interest rate should you charge? Instead of loaning your friend the money you could park it in a 10-year Treasury and earn 3.8% risk-free. So, you know that you should charge a rate higher than 3.8% to your friend, because there is some probability, they will not pay you in full. Treasury discount rates matter, because when they move so does the discount rate as signed to every other possible investment. For any investment that carries risk, you can think of its discount rate as the risk-free rate (Treasuries) plus some risk premium. Now let's put the recent spike in Treasury yields into context with two scenarios so you can see how impactful the move in risk-free rates can be.

	Bond	Years to	Treasury	Spread Over
	Yield	Maturity	Yield*	Treasury
Scenario 1: Investment Grade Corporates	2.40%	8.5	1.50%	0.90%
Scenario 2: High-Yield Corporates	4.90%	6.5	1.40%	3.50%

\* In this example, we used Treasuries with matching maturities

Scenario 1: Imagine you decided to buy an investment-grade corporate bond at the start of 2021. The bond matures in 8.5 years and yields 2.4%. Equivalent maturity Treasuries at the time yield only 1.5%, so your investment carries a spread of 0.9%. That spread you deem is adequate compensation for the very small probability the corporation defaults on its payments. Fast forward to today (9/30/22), and equivalent maturity Treasuries are now trading at 3.9%. What should your loss expectation be? If your working assumption is the credit worthiness of that company is unchanged, i.e., the probability of default is unchanged, then the new yield on your corporate bond should be 4.8%, the yield when you purchased the bond plus the change in Treasury rates. We won't bore you with the math, but under such a scenario the value of your bond should fall roughly -13.5%.

Scenario 2: Imagine you decided to buy a high-yield (or junk) bond at the start of 2021. This bond matures in 6.5 years and yields 4.9%. Equivalent maturity Treasuries at the time yield only 1.4%, so this investment carries a spread of 3.5%. The spread in this example is even higher, because we are dealing with a company that carries a relatively high-level of debt on its balance sheet (hence the "junk" status). Fast forward to today (9/30/22), and its equivalent maturity Treasury is trading at 4.0%, a 3.6% jump in rates. What should your loss expectation be? Again, we will assume the credit worthiness of the company is unchanged in the eyes of investors, so the bond's new yield simply equals the old yield plus the change in interest rates. Under this scenario the bond should fall -8.1%.

We picked these two scenarios for a particular reason; they reflect actual market conditions entering 2022. The yields, spreads, and maturities are drawn directly from bond indices. Scenario one describes the US investment-grade corporate bond market, and scenario two describes the US high-yield corporate bond market. The purpose of these examples was to estimate the impact changes in Treasury rates <u>alone</u> have had on the market.

## There Is More To It Than The Move In Treasuries

Now here is the kicker. US corporate and high-yield bonds haven't declined -13.5% and -8.1%, respectively. Their returns have been far worse, coming in at -18.7% and -14.7%. The math in our prior example calculated returns assuming yields on corporate bonds (investment-grade and high-yield) moved in tandem with Treasury rates. We isolated the losses attributable to higher risk-free rates, the impact of a greater opportunity cost, but there is more to the return equation than that.

The missing component from our analysis has to do with risk premiums. Recall the discount rate for any risky investment equals the risk-free rate plus some risk premium. In our two prior scenarios, we highlighted the spread each investment offered above Treasuries of a similar maturity. In the world of bonds, your risk premium is that spread expressed as the additional compensation an investor demands for investing in a riskier stream of cash flows. That spreads compensates investors for the non-zero probability that a corporation will default on its debt obligations. In our prior scenarios, we assumed that spreads (risk-premiums) were constant and that investors' expectations about the probability of default were unchanged, a generous assumption during a period of inflation.

As stated earlier, inflation introduces uncertainty into our economy. What will it do to a company's cash flows? How will it affect the consumer? Will the Federal Reserve's attempts to fight inflation put us into recession??? The list of questions goes on and on. When uncertainty is high, investors tend to demand a higher spread above the risk-free rate, which is what has transpired this year. The investment-grade corporate bond market went from trading at a 0.9% spread above equivalent Treasuries to a 1.7% spread. High-yield bonds, a riskier form of credit, went from trading at a 3.5% spread over equivalent Treasuries to a 5.6% spread. The move in risk-free rates sent the investment-grade and corporate bond markets down significantly, and the move in spreads sent them down even further. We can't say for certain how much the movement in spreads had to do with inflation-induced uncertainty, but we can say it played a role.





Source: Annandale LLC

#### It's the Same Story with Equities

The same dynamics that apply to corporate bonds apply to equities, but it is harder to isolate the effects. With bonds you can simply look at the yield-to-maturity to determine the discount rate, but such a precise number does not exist for equities. Unlike bonds, equities do not carry fixed cash flows and there is no set maturity. A discount rate does exist, but it is hard to define with any degree of precision. Still the same principles apply; equity discount rates equal the risk-free rate plus some risk premium.

Since 1928, US equities have outperformed Treasury bonds (10-year maturities) by 5.1% per annum. This number is a crude estimate of the historical equity risk premium, the excess return investors expect to earn above the risk-free rate of return. As we did with our prior examples, we will treat this number as a constant (it is not), to estimate the impact rising Treasury yields have had on equity returns. If we add the 10-year rate of 3.8% (at 9/30/22) to the historical risk premium of 5.1% we get 8.9%, which is an estimate for the rate-of-return equity investors expect from their holdings. We have estimated a discount rate for US equities, which we can compare to discount rates in past periods. At year-end 2021, the 10-year Treasury rate sat at 1.5% implying a discount rate of 6.6% for US stocks. So, discount rates have gone up, from 6.6% to 8.9% using our loose estimates, and simultaneously valuations have fallen, which you can see in the chart below. Discount rates moving from 6.6% to 8.9% hits stock prices by -25.9%.



Source: Annandale LLC

The purpose of our prior example was to illustrate how higher Treasury yields impact equity discount rates by increasing the opportunity cost of capital. That said, our analysis was very crude. We assumed a static equity risk premium, and we didn't consider the impact of future cash flow growth. NYU Professor Aswath Damodaran, an expert on the subject, recently offered a far more detailed valuation of the S&P 500 that allows the user to vary their discount rate and future cash flow assumptions. His methodology was simple. He used consensus cash flow estimates for the next five years. You can decide whether to use current estimates or haircut those estimates by up to 30%. He then allows you to choose the building blocks of the equity discount rate, which is the risk-free rate and the equity risk premium.

< see table on following page >

	Valuing the S&P 500 on Sept 23, 2022								
	Earnings = 30% below Estimates			Earnings = 15% below Estimates			Earnings = Estimates		
<b>Riskfree Rate</b>	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									

Professor Damodaran's Sensitivity Table for Valuing the S&P 500

Source: Aswath Damodaran, PhD., NYU Stern School of Business

Let's tie his numbers back to ours. We know the risk-free-rate at quarter end was ~4.0%. The long-term equity risk premium has been ~5.0%. Assuming consensus cash flow estimate are correct, then the S&P 500 should be valued around 3,910, which is ~9.0% higher than actual levels (3,586 on 9/30/22). His math is approximately right. It also tells us that investors, on average, investors think future earnings estimates are too high, and/or are demanding a higher risk premium to invest in equities than they have had historically.

## **A Concluding Thought**

The great news is, over the long-run, higher discount rates equal higher rates-of-return. In fact, if your future cash flow assumptions are accurate, then the discount rate equals the return your investment will generate. Now look at the change in discount rates for each asset class we have discussed.

- US Treasury Bonds (10-years) moved from 1.5% on 12/31/21 to 3.9% today
- US Investment-Grade Corporates moved from 2.4% to 5.7%
- US High-Yield Corporates moved from 4.9% to 9.7%

The rates-of-return demanded by investors are materially higher. The other good news is that investments become safer as discount rates grow. The path to higher discount rates isn't fun, but once you have arrived at a sufficient level, investing becomes a lower risk proposition. Mathematically, the percentage losses you incur fall with each percentage move in discount rates. Said differently, going from 4 to 5% discount rates hurts a lot more than the move from 9 to 10%. The very term, "discount rate," tells you everything you need to know. The higher the rate the more risks, known and unknown, investors are "discounting" or factoring into the price. It is the whole "buy greed, sell fear" mantra. The final chart we will leave you with plots valuations and the forward return for the US small-cap stocks. Stock prices can certainly fall, but we are far closer to a "buyers-market" than a "sellers-market" if you are a long-term investor. And that holds true for almost every asset class, stocks and bonds, overseas and domestic, large and small.





Source: Bank of American Equity & Quant Strategy

As always, we appreciate the trust you have given us. It is in markets like this were we strive to prove our merit. Also, we have included a brief appendix on the topic of inflation. Please reach out if you have any questions.

#### **APPENDIX: Inflation Update**

Inflation is easy to define, but difficult to forecast. We haven't experienced inflation, in a meaningful way, for the past four decades, and as a result, the public is not well versed on the topic. The purpose of this appendix is to serve as a primer and a brief update on the topic.

Let's start with the basics. Inflation is the increase in prices for goods and services in our economy. Inflation should not be conflated with the price level, a mistake we witness frequently. If gasoline prices are high but static, no inflation will result. It takes higher gas prices from their previous level to contribute to inflation. Furthermore, for the rate of inflation to continuously grow, prices must increase at an ever-growing pace.

Inflation data is usually backward looking or contemporaneous at best. When it comes to investing, what matters is expected vs. unexpected inflation. As discussed in our commentary, we can measure market-based expectations for inflation by comparing nominal Treasury bonds to Treasury Inflation Protected Securities. We can also look at survey-based measures of inflation expectations. Right now, market-based measures call for 2.9% inflation over the next year and survey-based measures (like the University of Michigan Inflation Expectations Survey) sit at 5.1%. We acknowledge there is a wide gulf between the two data points. We tend to watch and care about market-based measures of future inflation more, given there is real money behind those forecasts. If incoming inflation data indicates these expectations are too low, the markets will likely reprice assets further. If future inflation data suggests these expectations are realistic or even too high, then discount rates may fall, which is good for asset prices. The broader point we wish to convey is future inflation data relative to what the market has already priced in is what matters, not last quarter's inflation print. To that end, just look at equity returns from 1978 to 1980 when inflation was growing and averaged 10.7%. The S&P 500 returned 83.1% cumulatively or 23.0% annualized, because equity discount rates had already accounted for higher future inflation.

The reason inflation has been such a problem for markets is because it keeps surprising investors. On balance, the inflation data we have received has indicated market participants were too complacent regarding future inflation expectations. Inflation data keeps surprising investors to the upside. There will come a time when the opposite holds true.

When inflation first materialized, the Federal Reserve and financial markets, assumed it was transitory. COVID had altered the consumption and production patterns in our economy. Consumables were in much higher demand than in times past, and much of the productive capacity within our global economy was offline due to lockdowns (think Chinese manufacturing). The result was excess demand for goods and limited supply, which led to higher prices. Investors and policymakers anticipated inflationary pressures would ease as the impact of COVID receded. This view was both correct and incorrect.

Most of the initial sources of inflation did prove transitory. You can see it in the data right now. All the "supply-chain bottlenecks" are disappearing, and many of the "hot items" have stopped going up in price.

- US trucking rates are back to pre-pandemic levels.
- The cost of shipping via container peaked in mid-2021 and is almost back to pre-pandemic levels.
- Retail gasoline prices peaked in June and have been in a steady downtrend since
- Used car prices are now falling year-over-year

The problem is inflation transitioned to new sets of goods and services. On the next page, are two graphs from the Atlanta branch of the Federal Reserve, one long-term and another covering the past 5-years. The white line measures inflation for goods and services that change in price frequently - think fuel costs, luxury goods, and food. The blue line measures inflation for goods and services that change infrequently in price, i.e. they are sticky prices. Examples of "sticky prices" include the cost of insurance, clothing, rent, public transit, recreational activities, and public transportation. Once sticky prices adjust upward, they are unlikely to fall. As you can see in the two graphs, the initial inflation shock was centered around goods and services whose price were quite volatile. Those inflation shocks are dissipating, but what is not dissipating is the upward pressure in "sticky prices."



Sticky Prices (Blue, RHS) vs. Flexible Prices (White, LHS) - All Data

Source: Annandale Capital





Source: Annandale Capital

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