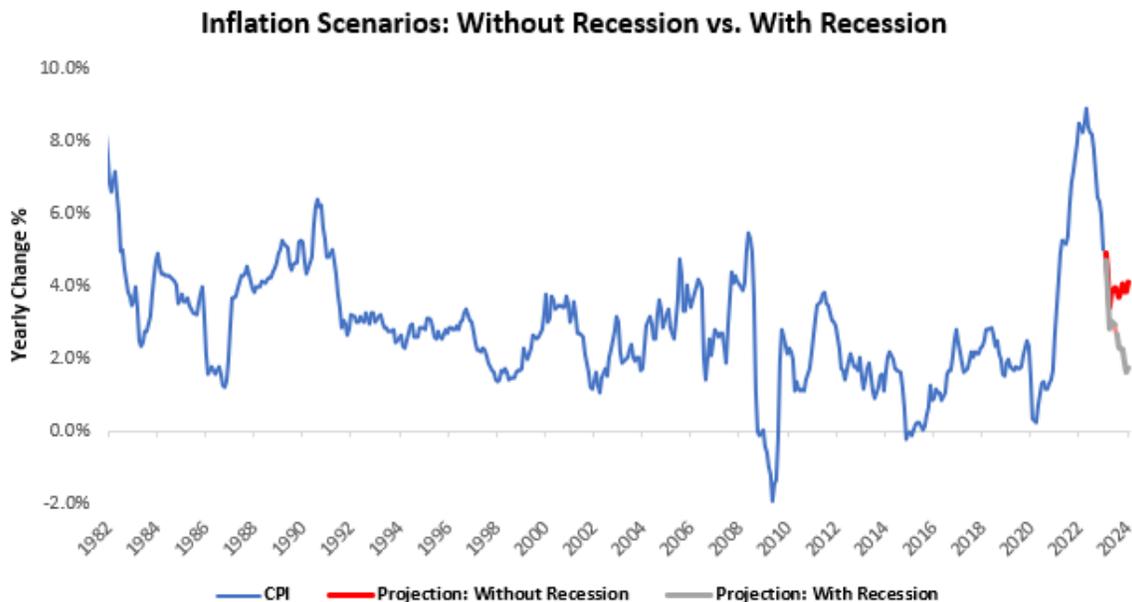


## Month In Macro

*This report is part of our ongoing effort to provide economic and market guidance to our subscribers during a period of historic levels of uncertainty. This note aims to share our research team's internal checkpoint process in evaluating the current state of the economy as it pertains to markets. The pages that follow will have familiar content for those who follow our work, but with the added benefit of our connecting the dots across all the economic and financial data our systems use to make portfolio decisions. Our primary takeaways are as follows:*

- **Nominal GDP has slowed modestly in Q1 of 2022. Our latest estimates place nominal GDP at 6.35% versus one year prior.**
- **While growth continues to slow and we head towards a real GDP contraction, the current level of nominal spending far exceeds the economy's output capacity, producing inflationary pressures. To contain inflation, policymakers must significantly deteriorate real economic activity, bringing down nominal spending.**
- **Our systems tell us that we remain extremely far from the conditions required to bring inflation to a target of 2%, forcing policymakers to continue on their tightening path. These dynamics create an opportunity set for our systems to exploit as markets move to re-price further tightness.**

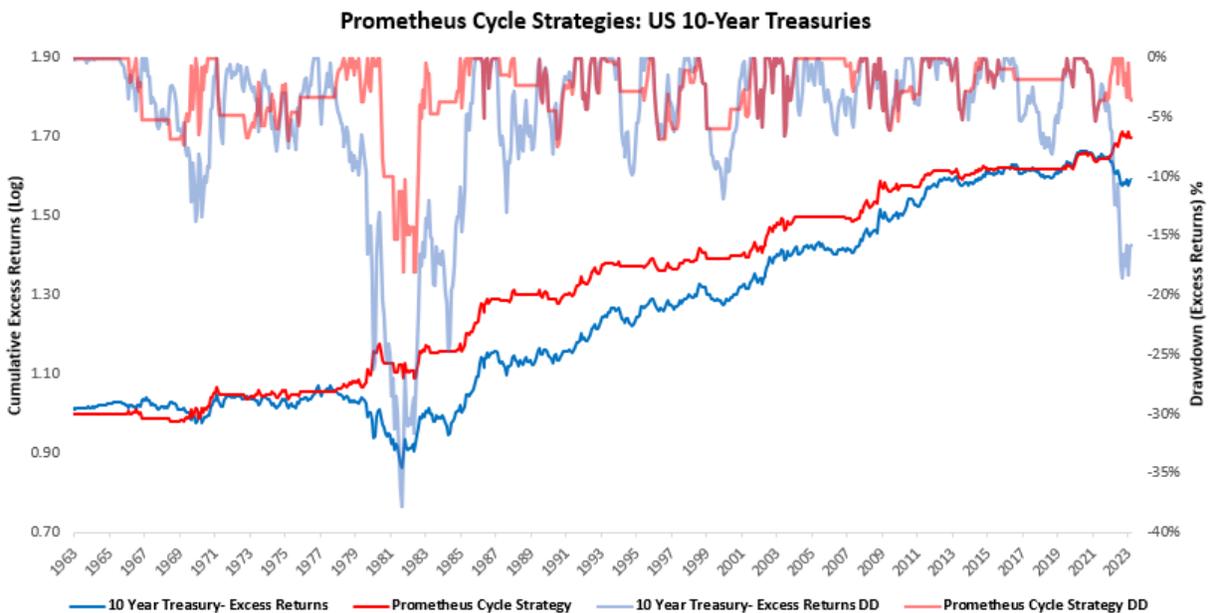
In this issue, we will continue to weave in our systematic expectations for markets as part of our Month In Macro offering. In this edition, we will be mainly focused on the inflation outlook. Additionally, this edition will be relatively concise relative to our typical publications to focus on the topic at hand. Now, let's dive in. Below, we show the two big-picture paths for CPI inflation- one with a recession and one without:



**Based on our estimates, inflation will likely stay well above the Fed's 2% objective without a recession over the next year, creating an opportunity for our Prometheus Cycle Strategies in US Treasuries.**

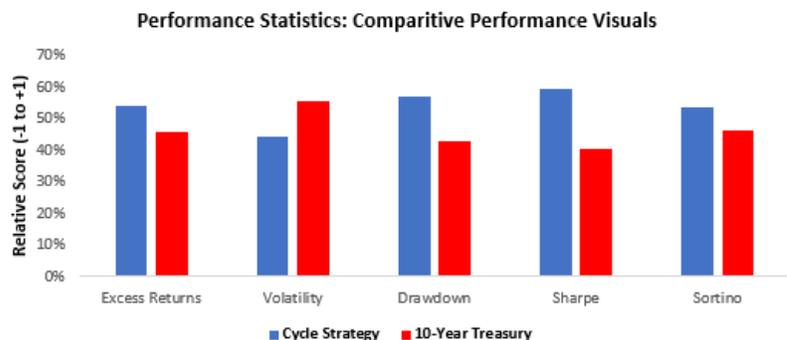
## Prometheus Cycle Strategies: Inflation

Our Month In Macro report aims to offer a granular and comprehensive understanding of current economic conditions and how they will likely evolve- to help investors navigate markets through the economic cycle. To augment the research and analysis, we have developed Prometheus Cycle Strategies- which use our cyclical expectations to trade markets. These Cycle Strategies reflect the understanding that particular points in the economic cycle offer an asymmetrically positive return on risk, either long or short assets. Using our systematic process, we attempt to forecast these points to harvest these attractive return-to-risk characteristics. Below, we show the first of the Prometheus Cycle Strategies- which trades the 10 Year Treasury based on inflation regimes:

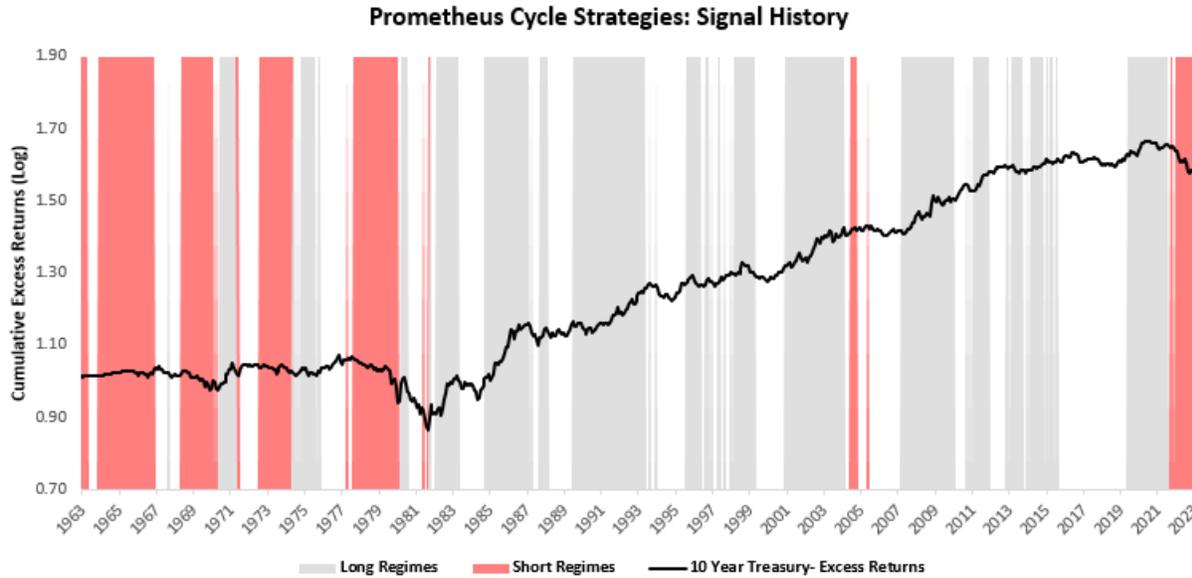


The strategy above seeks to short Treasury bonds during periods where inflationary pressures lead to policy tightening expectations, goes long during easing cycles, and otherwise remains in cash. As shown above, the system performs well, outpacing 10-Year Treasury returns with smaller drawdowns. Importantly, it does so with minimal market exposure- with a beta of 0.24 and remains active in the market only 54% of the time. This performance reflects our understanding that there are particular points in the economic cycle where an asset offers a significantly higher return on risk than during other periods. Harvesting these returns can lead to significant outperformance. Below, we show some summary statistics:

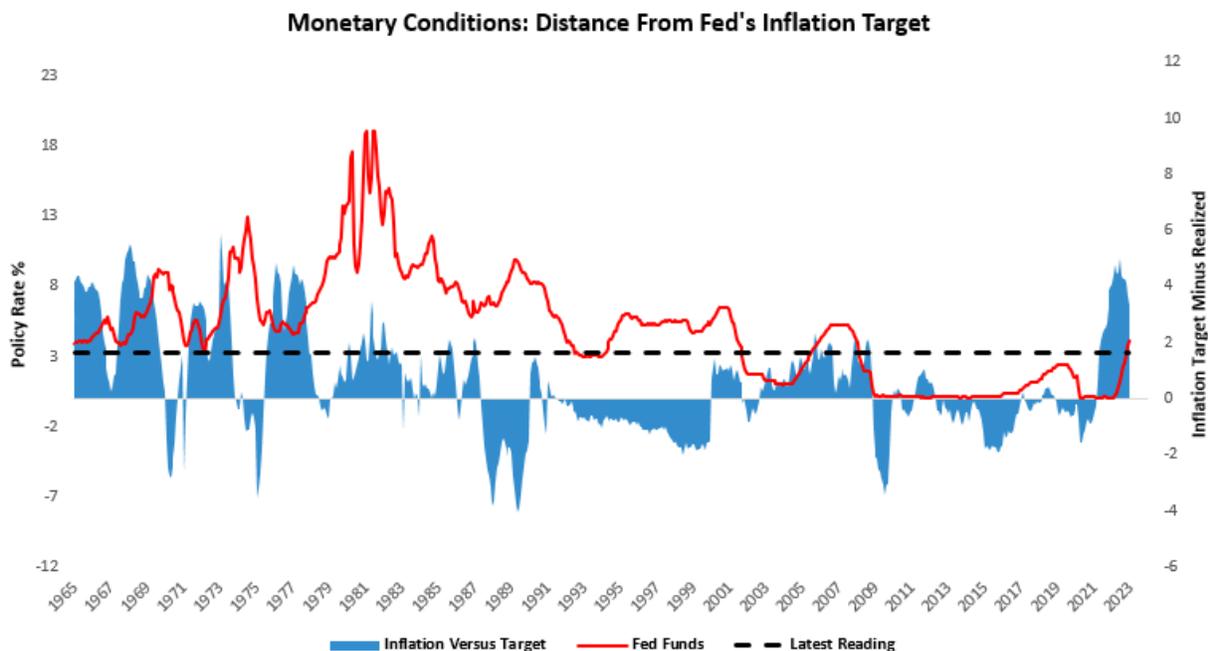
Summary Statistics		
	Cycle Strategy	10-Year Treasury
Excess Returns	2.7%	2.2%
Volatility	5.4%	6.7%
Drawdown	-18.1%	-37.9%
Sharpe	0.49	0.33
Sortino	0.56	0.48



In the case of Treasuries, this pay-off profile can be obtained by shorting bonds as we move into an inflationary hiking cycle and buying them as we enter a recessionary cutting cycle. These turning points in the economic cycle offer some of the most substantial return-on-risk opportunities, both long and short. Below, we show the signal history of the strategy:

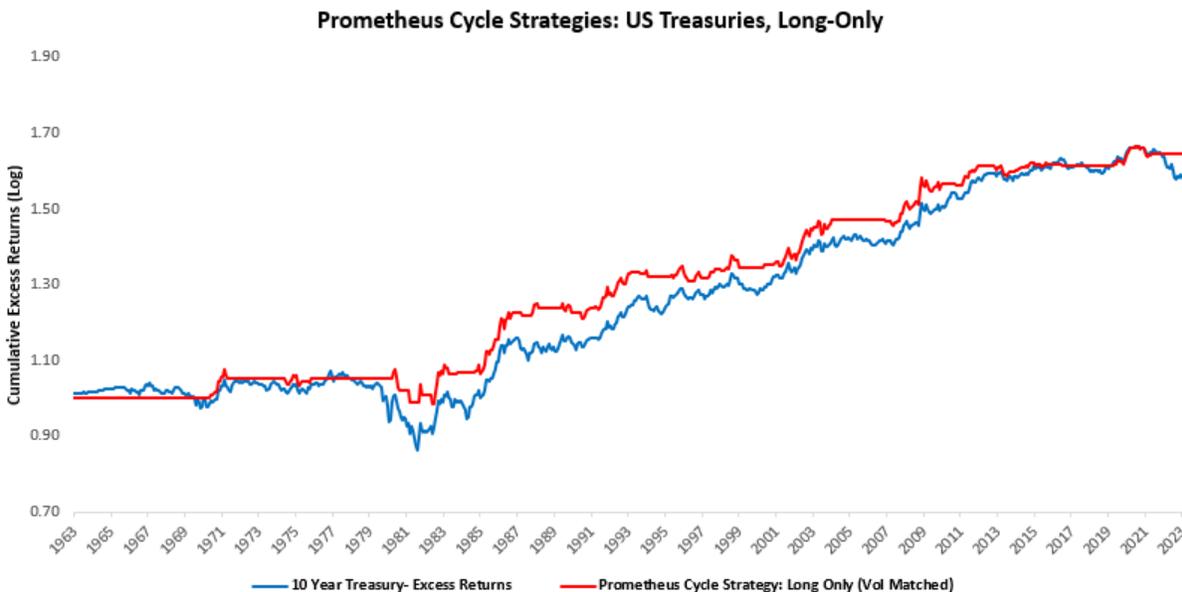


We think it is important to address that there is a significant amount of regime clustering in the signals, i.e., the short signals are clustered to the pre-1983 period. In contrast, the long signals are clustered in the periods after 1983 until 2021. This clustering is not due to a mechanical bias in signal construction but rather a function of the path of history. Below, we show the post-1983 period simply did not offer a significant opportunity set on the short side:



Above, we show our estimates, an implicit estimate of monetary conditions, showing how far realized inflation is from the Fed's objectives. To construct this estimate, we examined decades of Fed transcripts back to the 1960s to understand the Fed's contemporaneous inflation objectives. We then look at the difference between the Fed's inflation target and realized inflation, which tells us how loose or tight monetary policy is at a given time. Our inflation strategy attempts to exploit inflationary hiking cycles, which require inflation to be significantly beyond the Fed's objectives. As we can see, there was a shortage of these inflationary overshoots until 2021. Therefore, we think the modest long bias in the strategy is a function of the path of history rather than signal construction.

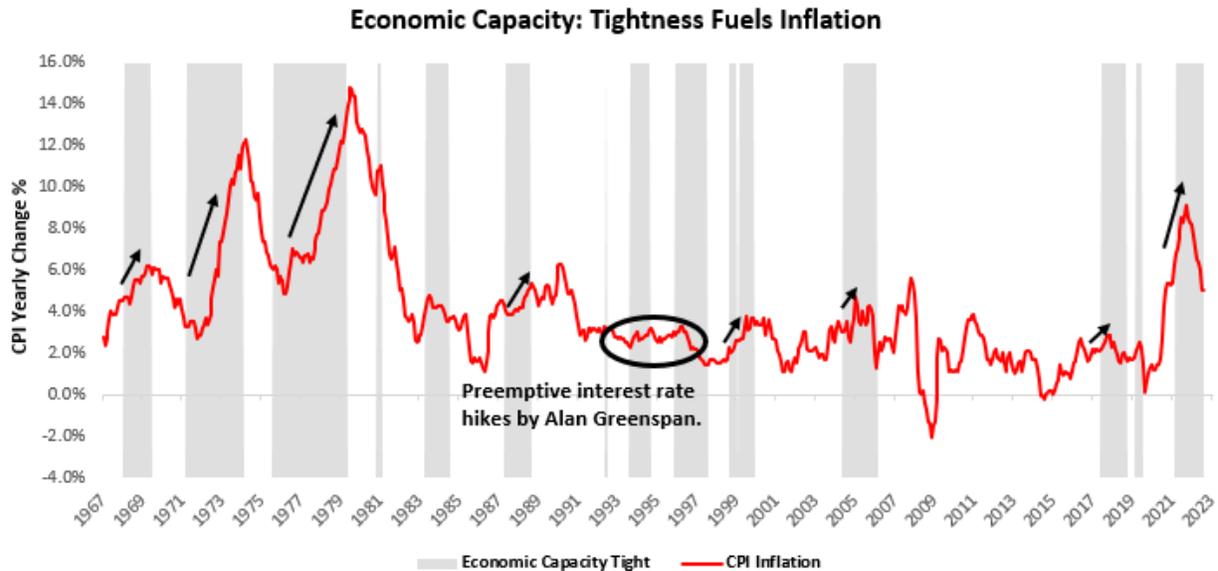
This evaluation is critical today, as inflationary pressures remain at historical extremes. Being well prepared for a sustained battle by the Fed against inflation will be vital in determining portfolio performance. As always, we believe this matters whether you are long-only or long-short. Long-only investors can also gain a modest edge by avoiding the impacts of sustained inflationary hiking cycles by remaining invested only during cutting cycles. Below, we show how our cycle strategies remain value additive to even those that manage long-only portfolios:



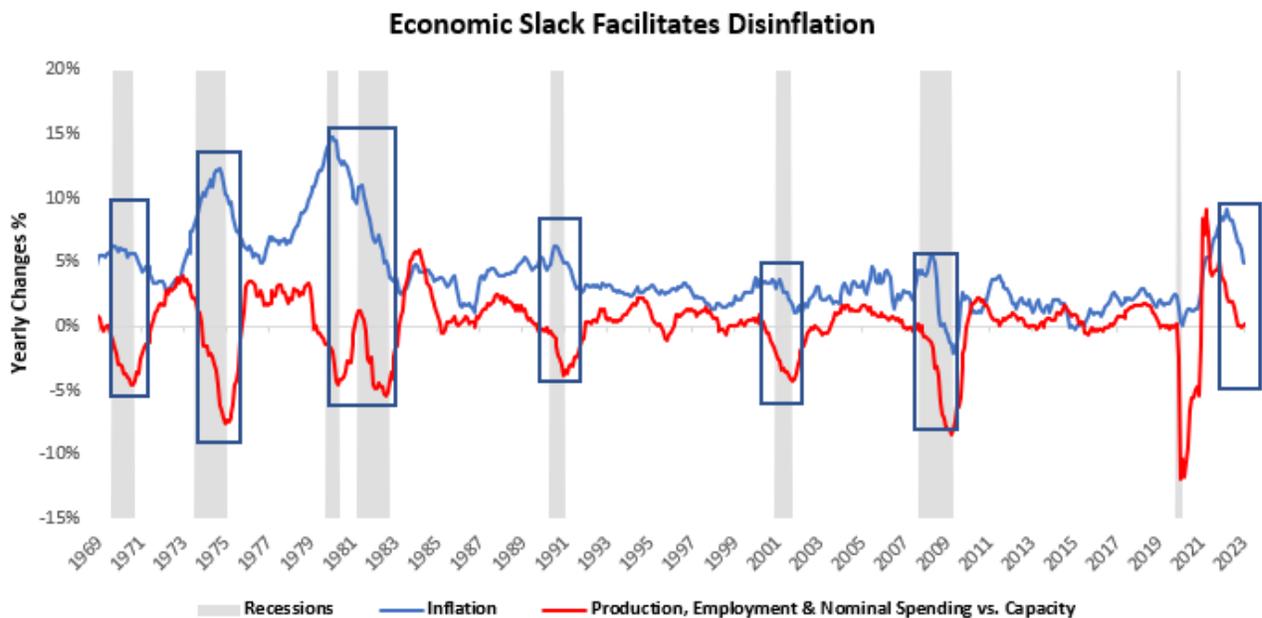
The strategy is in a bearish regime and positioned short. Therefore, even if you are a long-only investor, the bearish outlook of our systems implies that the forward-looking returns on treasuries will be weak at best and significantly negative at worst. To protect our edge in markets, we do not share our signal construction; however, we share the logic driving our systems' expectations over the pages that follow.

## Disinflation Requires A Recession, But We Aren't There Yet

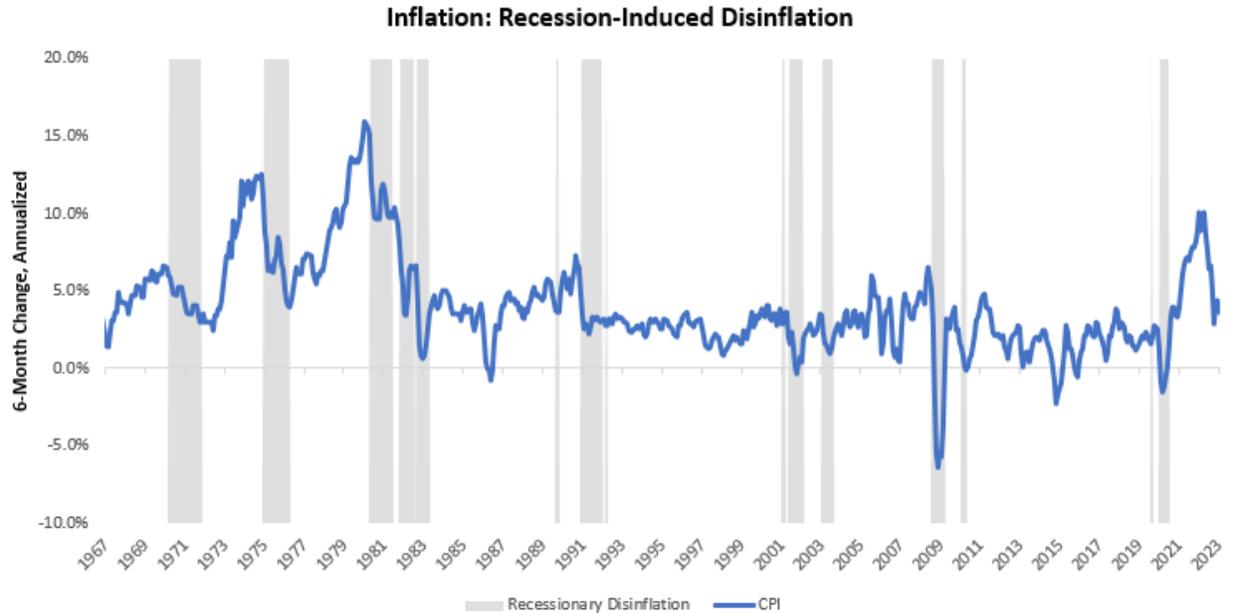
Economic cycles generally follow cause-and-effect templates, and this cycle has followed the archetype, albeit with its unique twists. As an economic expansion ages, the ability for output to accelerate begins to stall as the economy runs up on capacity constraints in the form of production and labor limitations. However, if nominal growth remains strong relative to debt service burdens, credit and income can support employment and production to remain faster than population growth and production capacity. The confluence of these factors creates tightness in economic capacity, which fuels inflation. Below, we show periods when these forces have come together to fuel inflation:



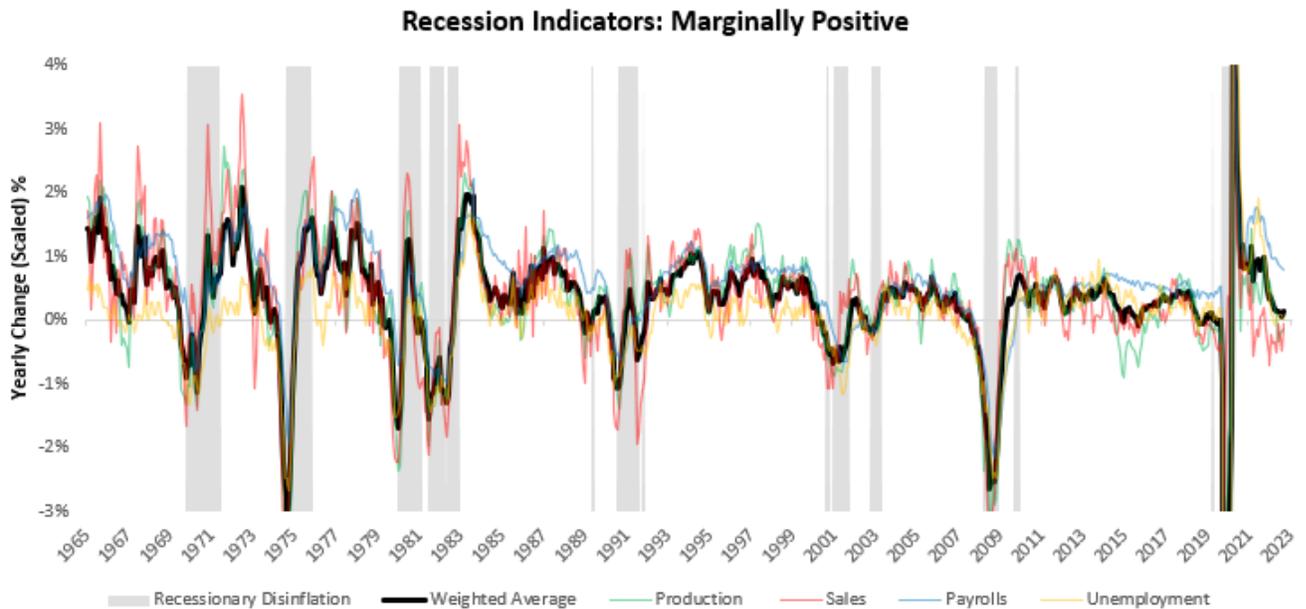
This tight economic capacity can usually only be loosened through a recession by reducing production, employment, and nominal spending. Below, we show how sustained declines in a combined measure of employment, production, and nominal spending facilitate disinflation:



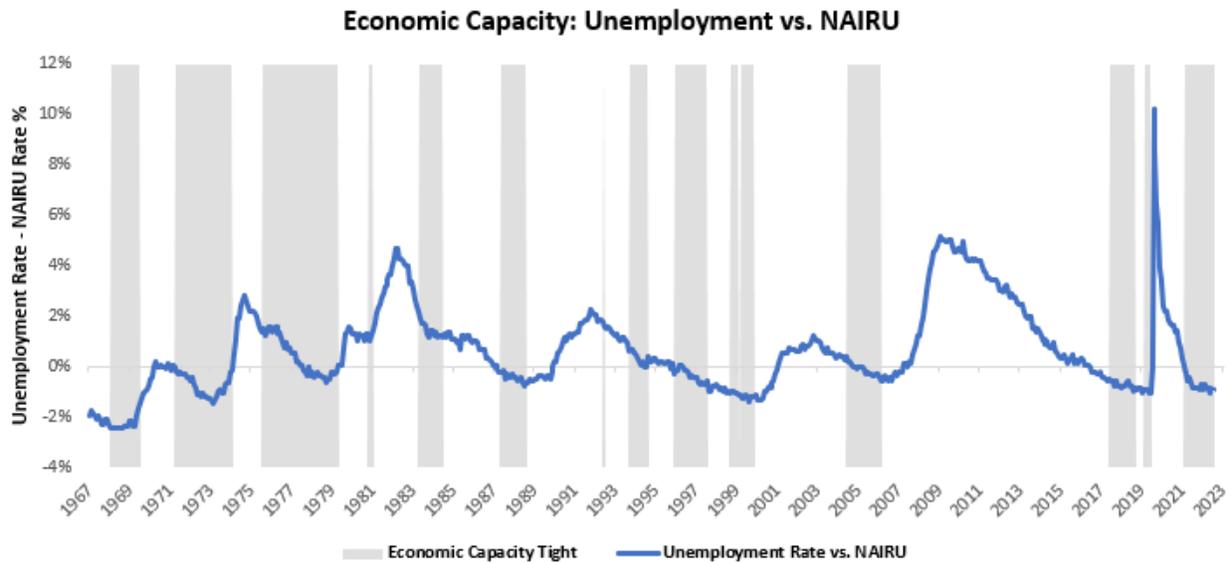
While there are periods when inflation has slowed outside of a recession, the largest decelerations in inflation occur during recessions, i.e., when real economic activity across the economy contracts. This contraction in output brings down spending, which brings nominal spending more in line with the economy's output capacity. Below, we highlight periods where recessionary conditions have facilitated disinflation.



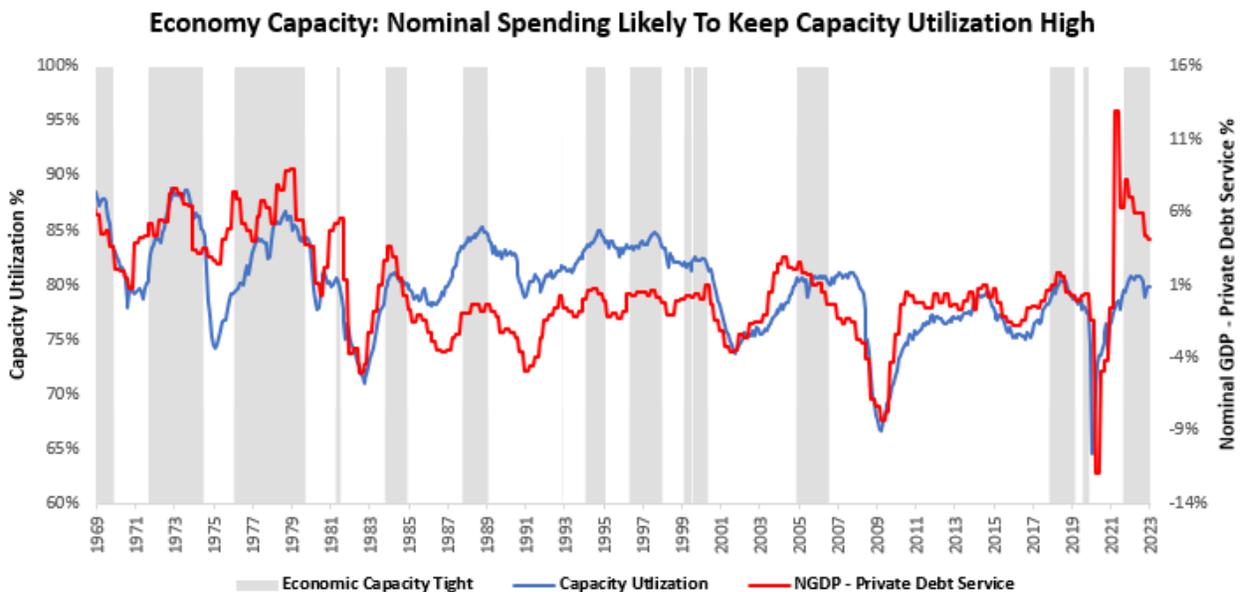
Above, we use our estimates of recessionary pressures, which consider changes in real business sales, production, employment, and unemployment, to categorize periods of disinflation. This approach is identical to using NBER recession dates but offers the advantage of being available in real-time and avoids the discretion involved in the NBER's recession dating committee. Below, we show the weighted average of these recession indicators:



Recessions are a broad-based decline in activity, which include persistent declines in production, real spending, and employment. Therefore, it is not just the magnitude of the decline in the weighted average of these indicators that matters but also the breadth. Today, production and business sales have begun to soften, but labor market data remains robust. Below, we show how the labor market remains extremely tight relative to measures of sustainable unemployment (NAIRU). Additionally, complement this picture by highlighting periods when our systems gauge that economic conditions were tight:



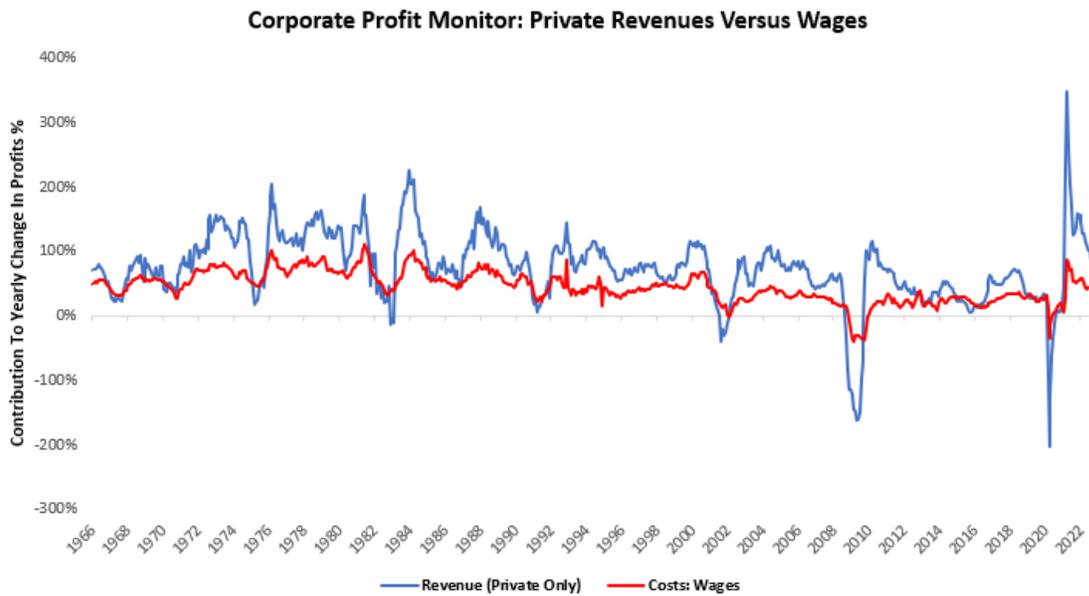
As we can see above, unemployment continues to be extremely low. Additionally, capacity utilization and nominal GDP relative to debt service burdens both remain elevated. We show this below:



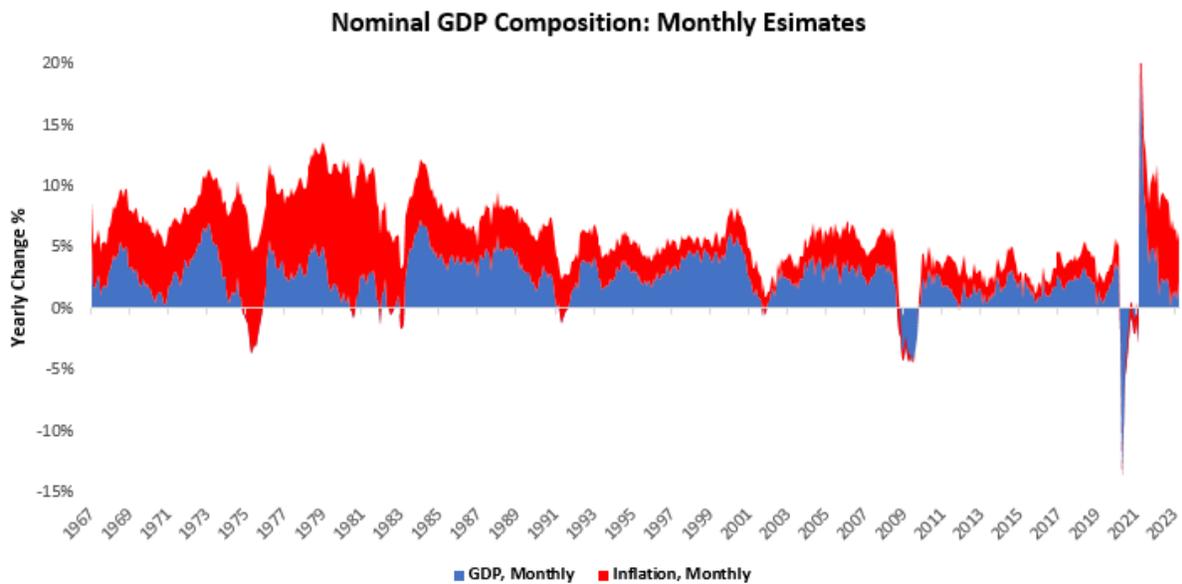
As shown above, capacity utilization has slowed modestly; however, they remain supported by extremely high levels of nominal spending. The picture remains inflationary.

## Profits: Topline Has Declined, Wages Are Higher, But Interest Expense Remains Too Low

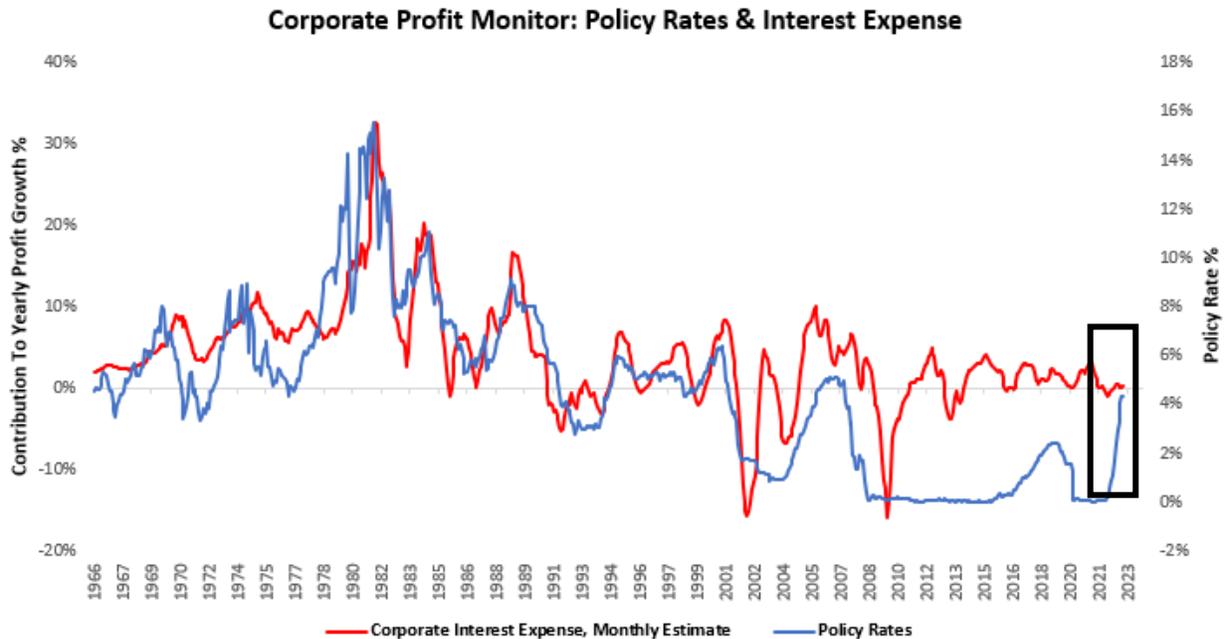
The current macroeconomic picture remains where heightened nominal demand continues to press against the economy's capacity constraints, creating heightened inflation. We think these dynamics will likely be resolved through the Fed's tightening cycle by raising interest burdens in the economy relative to incomes, creating pressure on profitability for companies, and leading to an eventual lay-off of workers. Therefore, the key to understanding whether the Fed's hiking cycle has been adequate is whether profits will contract. This profit contraction will likely come from declining topline, sticky wages, and increasing debt service costs. Currently, the first two conditions have come to fruition somewhat, i.e., revenues have decelerated while wages have held steady:



This declining revenue environment is essentially a function of the moderating nominal GDP environment primarily driven by inflation. We show this below:



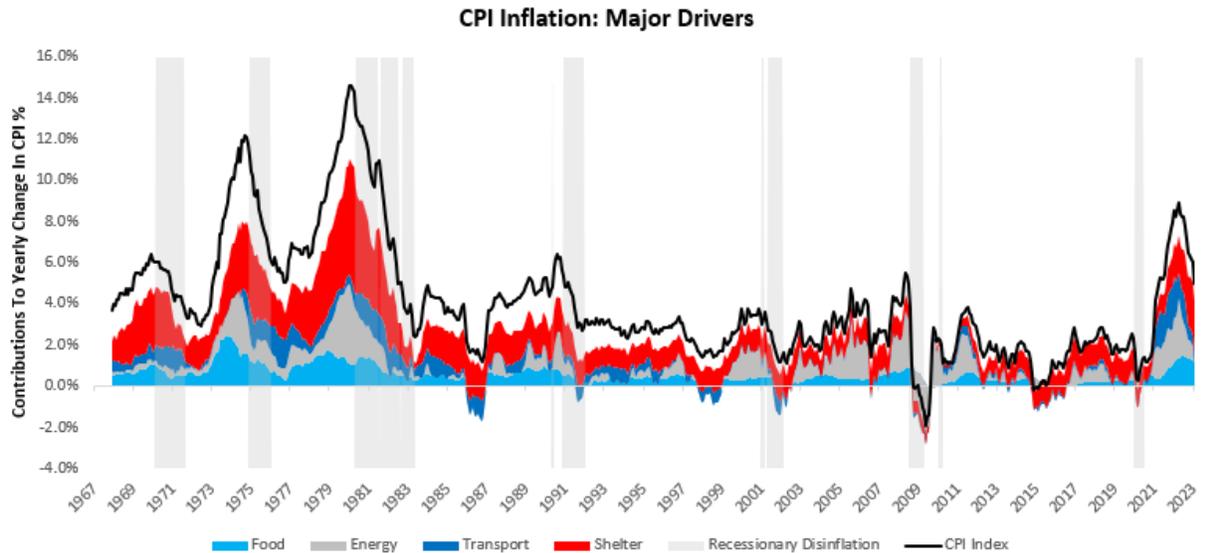
Thus while revenue growth and wages have begun to move in a manner more consistent with a profit squeeze, we have yet to see any meaningful change in corporate interest payments. We show this below:



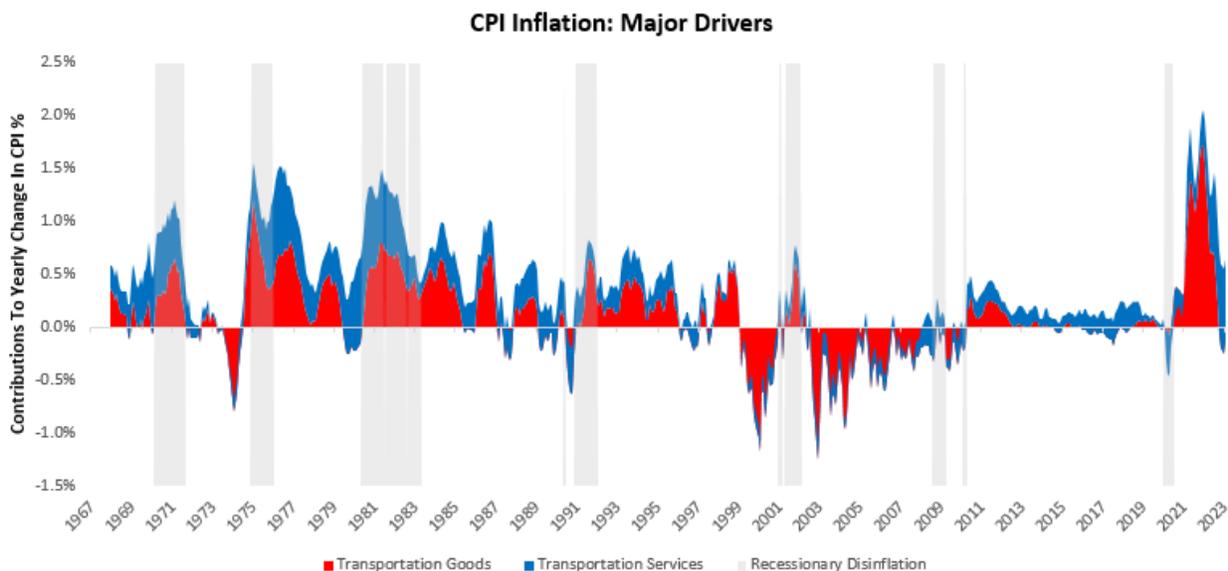
Therefore, while we have seen some of the slowdown in the economy from the tightening cycle, we think this is largely a function of a slowdown in new debt creation rather than from strain created by existing interest expense. As we move forward in the cycle, we expect a rise in corporate debt service burdens more consistent with history. However, until this tightening is achieved, inflationary pressures will likely persist. The Fed will have to lean on the duration of their tightening or increase the magnitude of their tightening. Either of these environments will likely be unsupportive of Treasuries notes and bonds. Now that we have addressed the big-picture drivers of the macroeconomic environment, we will now turn to the specific drivers of inflation today.

## CPI Inflation: Transportation Will Likely Be The Swing Factor

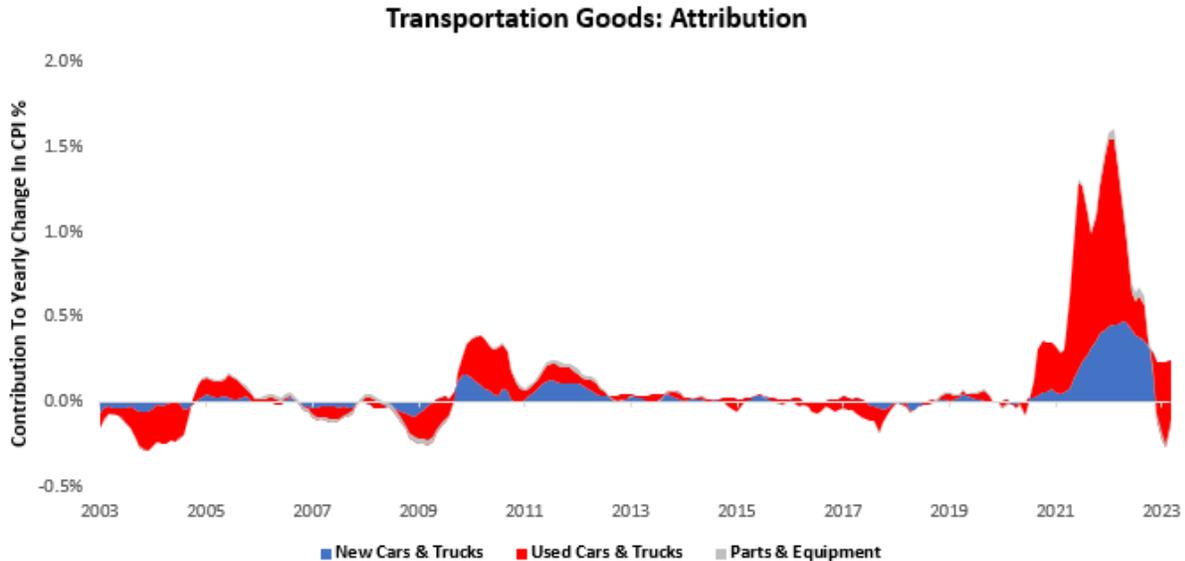
While we spend significant time studying inflation in the broader economy, CPI inflation is timely and market-moving; therefore, we devote considerable attention to understanding CPI dynamics. While over 300 line items drive CPI that we have visibility into, we can condense these measures into four broad categories that account for the bulk of the variations: food, energy, transportation, and shelter. We show this below, including our historical estimates and highlight periods of recessionary disinflation:



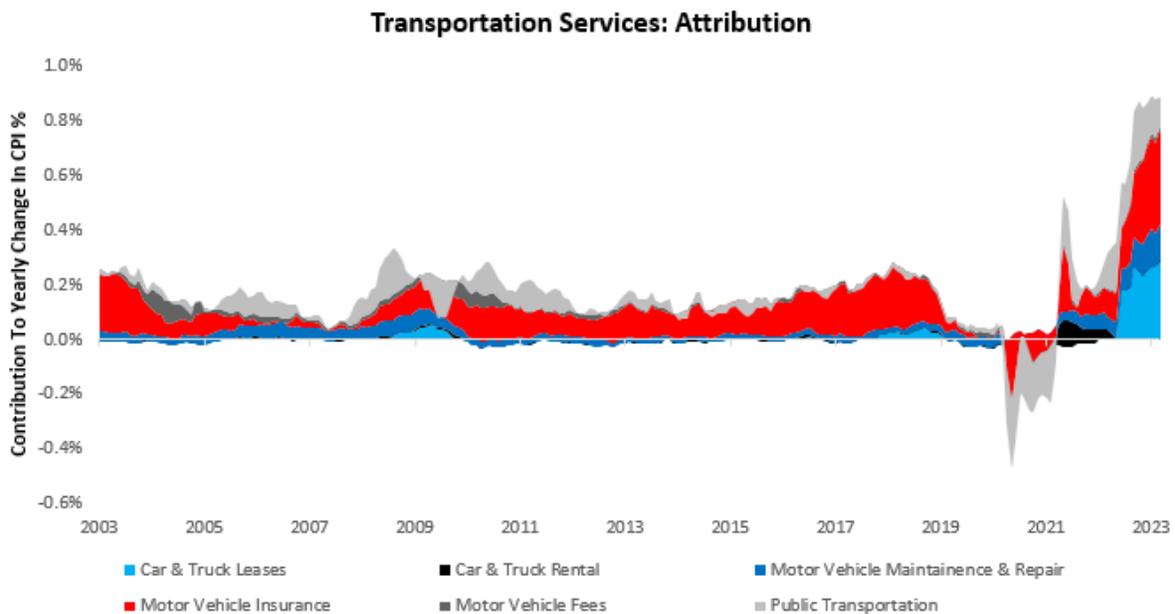
Both economically and statistically, these categories explain about 85% of the monthly variation in CPI. Therefore, we think it makes sense to approach our dissection of CPI by evaluating these areas. **We believe that food & energy prices can continue to contribute to a softening in CPI, but the swing factor will likely be transportation inflation.** So far this cycle, transportation has been a net support to the disinflation we expected over the year. Below, we show how transportation inflation has slowed significantly by showing both good & services components:



As we can see in the previous visual, transportation has accounted for approximately 1.5% of headline disinflation in CPI from the peak. Drilling down further, most of these declines have come from transportation goods, i.e., primarily car & truck prices. We zoom into the current picture for transportation goods:



As shown above, transportation goods have been a deflationary force in CPI over the last year. This disinflation was driven primarily by a decline in used car prices, which are 0.40% drag on yearly CPI growth of 5%, while new car prices continue to be modestly additive. This decline in used car prices is likely behind us, as used car demand was primarily a function of auto shortages and stimulus demand. Before we look ahead, drill down into the other side of transportation inflation, i.e., services:



As we can see above, transportation services are seeing broad-based inflationary pressures.

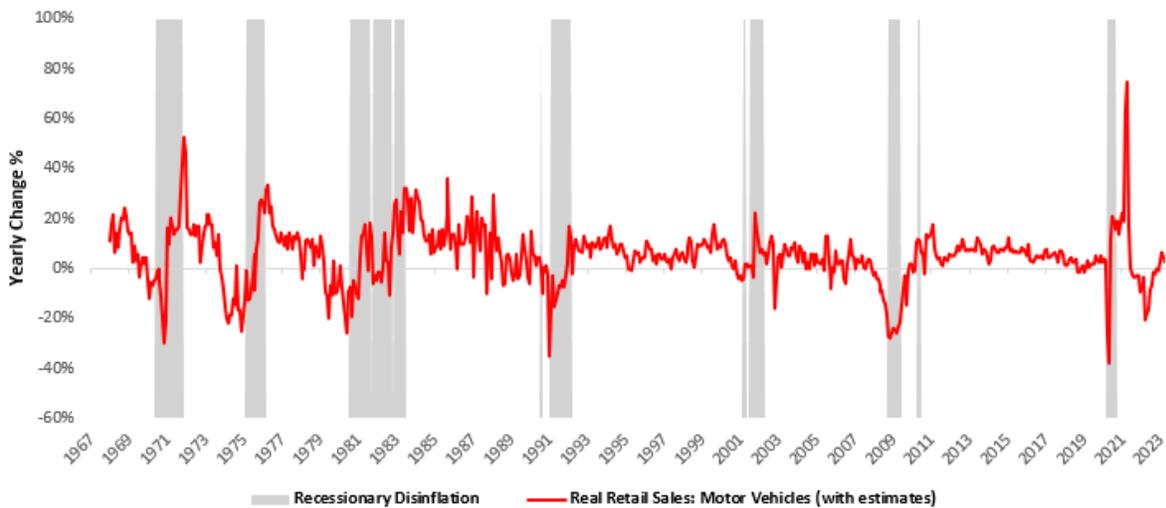
These inflationary pressures are driven primarily by motor vehicle leases and insurance, which are linked to higher new car prices and interest rates. Due to their contractual nature, transportation services tend to show more trend persistence in their monthly changes than transportation goods. Furthermore, deflationary prints are far more uncommon in transportation services, with 75% of months over the last ten years showing positive prints. Weighing these factors, if we are to see further disinflationary pressure on CPI from transportation, it will likely need to come from further declines in new and used vehicle prices, which will eventually bring down lease, rental, and insurance prices. Whether this can be achieved remains in question, as COVID-19 distortion to automobile supply chains still remain in place. These dynamics have created a dearth of automobile inventories for businesses, which has resulted in businesses, particularly retailers, significantly bidding up automobiles to increase their inventories. We show this below:

**Automobile Inventories: Retailers Continue To Scale Inventories**

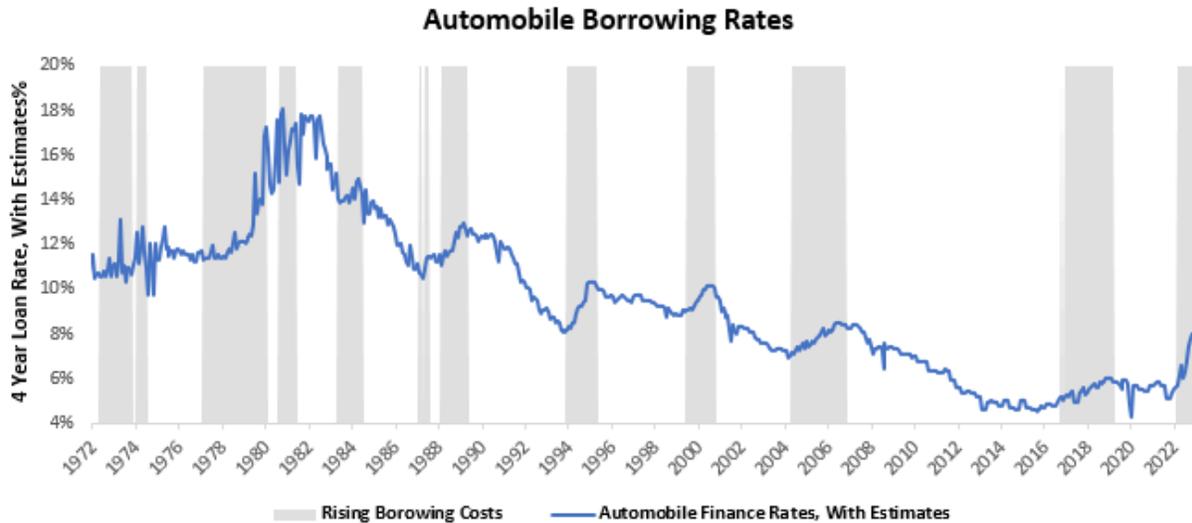


This persistent inventory demand comes alongside moderating consumer demand for automobiles, albeit from contractionary levels:

**Real Retail Sales: Motor Vehicles**

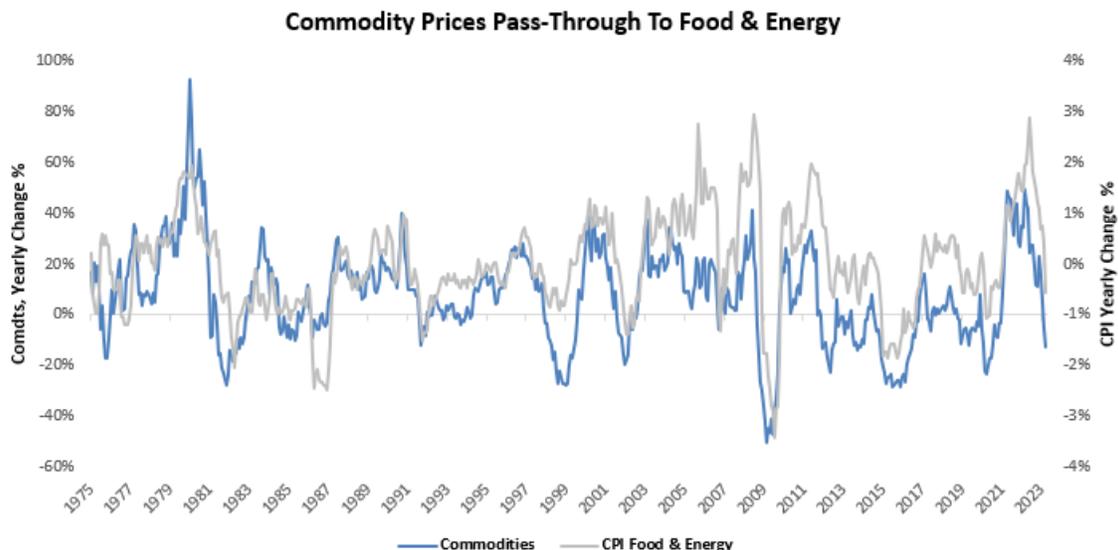


As we can see above, periods of contracting automobile sales have coincided with and, to some degree, facilitated recessionary disinflation. Looking ahead, it will likely be the balance between a weakening of automobile credit to consumers as rates increase flow through to automobile loans and how much retail dealers continue to demand automobiles, even at increased supply. Below, we show how automobile borrowing rates have accelerated, which will be positive for lease payments but negative for auto prices.



Considering these unique dynamics, the direction of the automotive sector remains unclear relative to typical cycles. While cyclical dynamics favor a further deterioration in automobile prices, depleted business inventories can keep automobile prices elevated as fleet demand remains strong. On balance, there will likely be some degree of stabilization in the used vehicle deflation, potentially moderating new car inflation and persistent transportation service inflation. Cumulatively, these forces will likely be modestly supportive of inflation well over the Federal Reserve's objectives.

On the other side of these inflationary pressures from transportation will be food and energy, which will likely follow the tone set by raw commodity prices, which we show below:



As we can see above, food and energy prices tend to move in lockstep with the trend in raw commodity prices, with a modest lag. Thus, declines in energy and agricultural prices will likely flow through to their respective components in CPI over the next one to three months. Finally, we turn to shelter, which remains the largest contributor to CPI inflation. As we have detailed many times over the last year, CPI lags behind real-time measures of home prices due to a computational smoothing process applied by the BLS. This feature creates a somewhat predictable path for the shelter component of CPI. Below, we show how our forecasts imply a softening in the shelter component of inflation:

**CPI: Housing Inflation & Forecast**

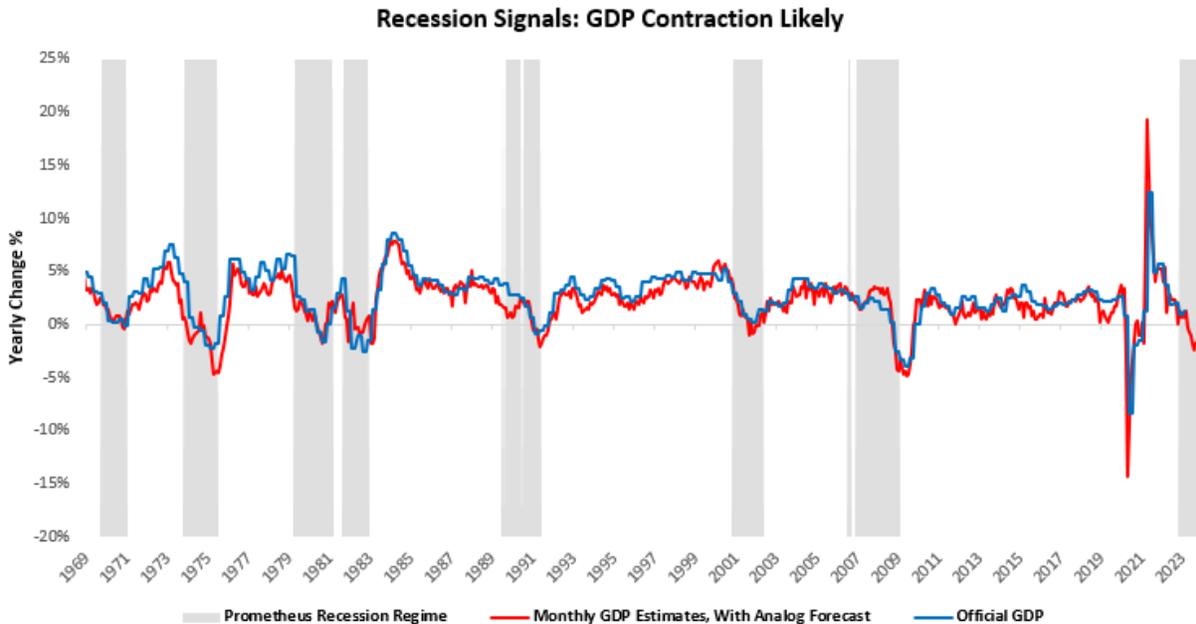


While our forecasts imply housing disinflation is likely ahead of us, the magnitude of the disinflation will likely pick up only as we enter 2024, which will likely keep shelter's contribution to inflation alone at more than 2%. While the Fed does not target CPI, this is still a significant inflation boost across measures.

Considering persistent automobile inflation, food and energy deflation, and slow disinflation in the shelter component, inflation will likely **remain well above the Fed's 2% objective, barring a recession**. We touch on our recession expectations in the closing section.

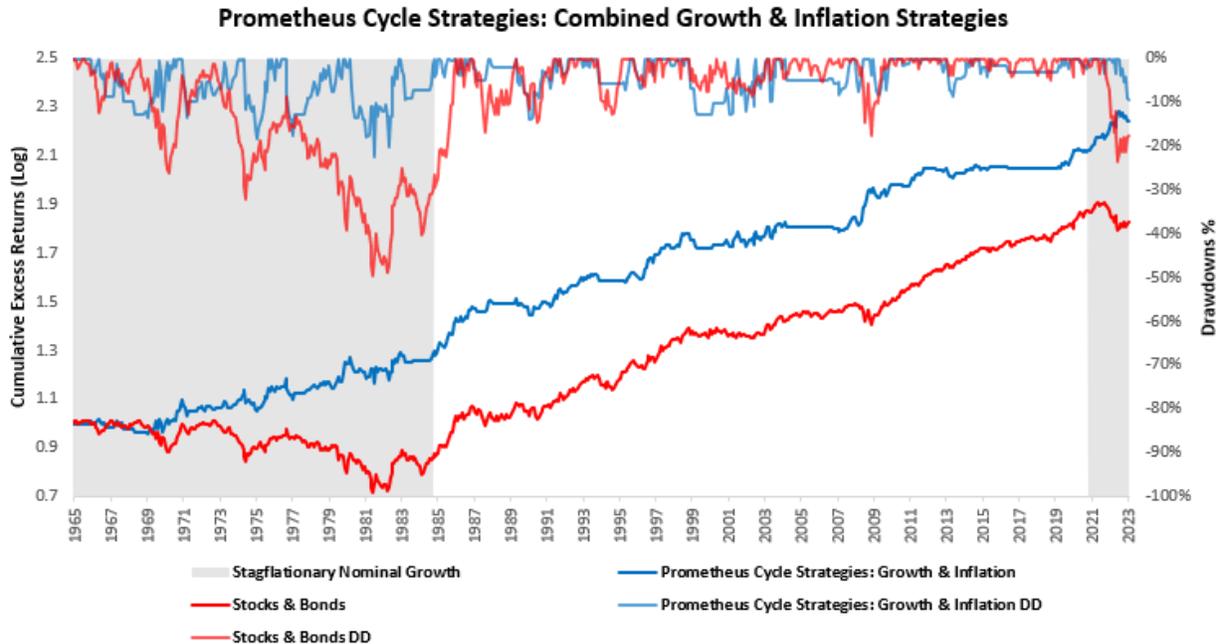
## Conclusions And Thoughts On Recession vs. Inflation

In our last note, we discussed how our systems have now triggered to expect a recession. In this note, we focused on the inflation picture as we think that after a period of disinflationary market pricing, there is significant potential for markets and policymakers to have now have to wrestle with an elevated inflationary trend well above 2%. This trend will likely only be resolved through a recession. We re-illustrate this projection from last month's report below:



However, it is imperative to note that there is a difference between an incoming recession and an ongoing one. Our systematic process flags when we are in a recessionary regime and tries to capture the transition into recession to short equities. Conversely, our systematic process tries to capture disinflationary cutting cycles to go long bonds. It is essential to recognize that the expectation of a recession does not equal the realization of one, and therefore, it does not make sense to double down on a recession bet. This distinction is crucial not just conceptually but for adequate diversification in signal construction. Macro alphas tend to be small, with Sharpe ratios between 0.2 and 0.4 on average, and therefore overlying on anyone is likely to cause significant pain in allocation. Therefore, while our Prometheus Cycle Strategy for growth has turned short stocks this month, we think it is important to recognize that this doesn't mean that we should also buy bonds, given inflation dynamics. In fact, our Prometheus Cycle Strategy for inflation remains short bonds this month.

To offer insight into the value-add of a mechanically diversified approach to take macro bets, we show a combined portfolio of our two released Prometheus Cycle Strategies, which go long or short stocks and bonds based on growth and inflation cycles, respectively.



Above, we combine our growth and inflation strategies and compare them to a volatility-matched portfolio of their respective betas, i.e., stocks and bonds. Additionally, we highlight periods of stagflationary nominal growth to show when our active approach truly yields value, i.e., periods when a traditional stock and bond portfolio suffers.

***Overall, we think we are headed toward a recession. However, nominal growth dynamics show persistently strong spending, which may prolong the economic cycle. One of these outcomes will be achieved. By being tactical and diversified, we think it is possible to navigate this dynamic unscathed, regardless of the outcome.*** Until next month.

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