

1st December 2021

INFLATIONARY REGIMES AND ASSET CLASS PERFORMANCE

Executive Summary

Inflation has stayed mostly in check over the past three decades, and often ran below most developed markets' central bank mandates. The Covid-19 crisis and the policy direction that the Federal Reserve and US government have since taken, has, again, led to a lively debate about the likely path of inflation. Many think this debate is a non-starter. However, some - and select market data suggest the same - believe the Fed has 'out-doved' itself, suggesting inflation may not remain 'transitory'. Any growing risk of uncontrolled inflation, which might push the Fed's hand in changing tack on its monetary policy path sooner than signalled, will, most likely, rattle markets and test the US government's determination to continue stimulating. Investors are, as a result, keeping a close eye on inflation.

In the first of a series of notes we propose a systematic technique of identifying inflationary regimes and measure the performance of key asset class benchmarks and alternatives in those regimes. We show that systematic macro and trend following strategies perform well during inflationary regimes, outperforming both during periods of higher levels of inflation, and, especially during periods featuring a higher rate of change in the level of inflation. Throughout, we opine on what inflation could mean for asset allocation, how markets typically react to inflationary news, how well they forecast future inflation, and discuss some of the implications for a rising inflation regime. We focus on the US case.

Contact details

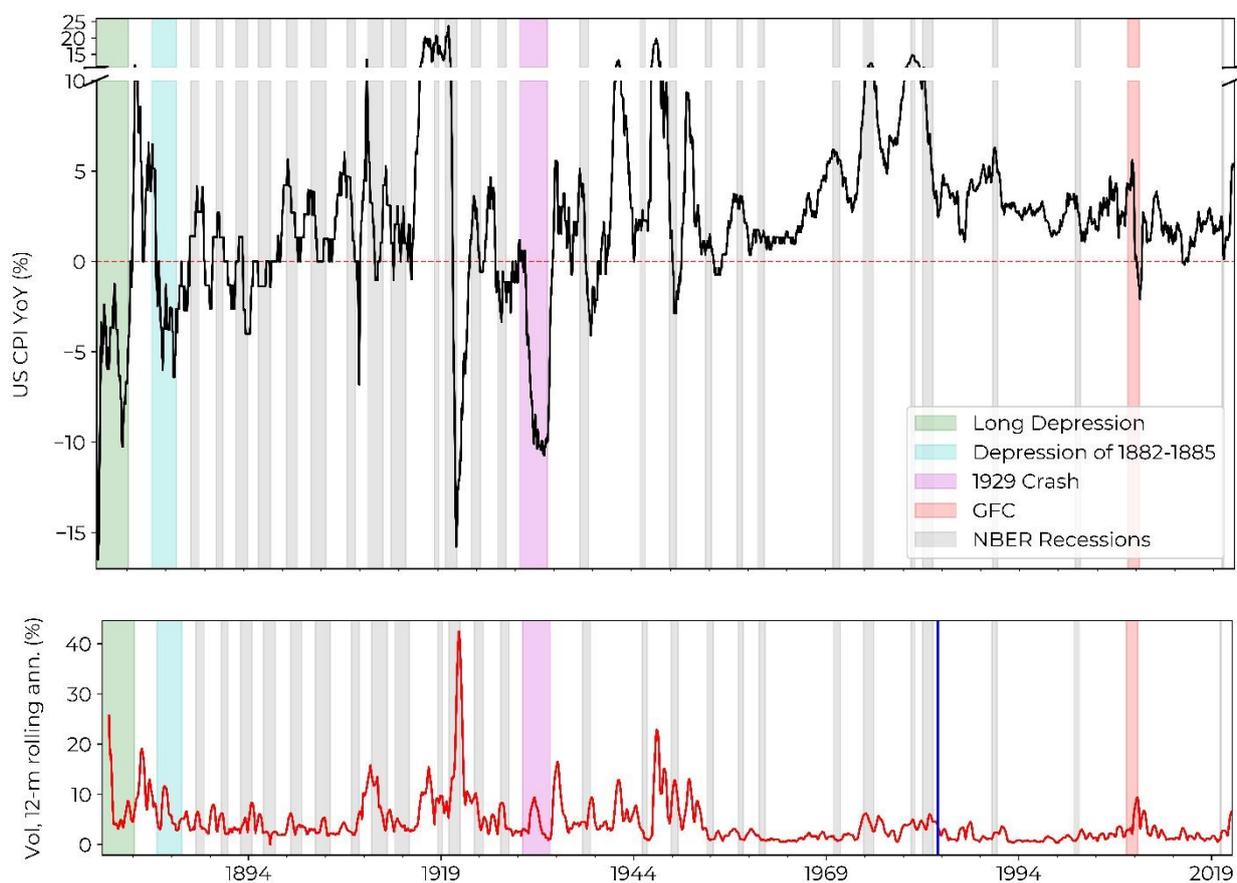


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Introduction

Inflation has been tracking below most central bank mandates for the past three decades. US inflation, since the late 1980s, has been languishing below both the Fed's target and its long-term mean – see figure 1. The same pattern is observed in all G7 developed market economies (see exhibit 1 in the Appendix).



Source: Bloomberg, CFM

Fig.1 US inflation (CPI NSA) since 1875 showing high volatility in inflation readings until the early 1960s, along with frequent recessions (overlaid are the official NBER recessionary periods from peak to trough). This was followed by a two decade long rise in inflation (and inflation volatility) before the ‘Great Moderation’ period that started in the early 1980s (the blue line in the lower plot) and which featured much lower levels of macroeconomic volatility. Prior to the 1990s, inflation tended to be very volatile (especially driven by large movements in commodity and oil prices – recall the 1970s Oil Crisis). However, following the Volcker-years, and save for the Global Financial Crisis (GFC), inflation changes have been mild due to the Fed having very successfully ‘tamed’ realised inflation, and, along with it, expected inflation as markets assigned much higher levels of credibility to monetary policy management by the central bank.

However, owing to the recent jump in inflation, market participants are all jostling to make sense of a complex, unprecedented macro environment in assessing the likely path of future inflation.

Recall briefly:

The common argument in favour of inflationary pressures goes as follows: interest rates are at record lows and the US Federal Reserve (Fed) has repeatedly reiterated its dovish commitment with loose(r) monetary policy (likely) to remain in place for the foreseeable future. Meanwhile, the US government has embarked on a near-unparalleled fiscal expansion at the same time as a US economic recovery that seemed to be gathering pace. All that, combined with stubborn supply-side constraints, signs of a tightening labour market and a pick-up in demand are, together, a textbook recipe for higher inflation.

How (and if) inflation might continue to creep up, however, has several shades between two extremes: 1. A return to high(er) secular inflation (à la Larry Summers) and 2. High(er), but “transitory” inflation.

The latter is the baseline scenario of the Fed. While they expect¹ headline Personal Consumer Expenditure (PCE) to hit 3.4% in 2021, and core PCE – the measure most closely scrutinised by policy makers – to come in at 3.0%, it (core PCE), nonetheless, is projected to slip to 2.1% for both 2022 and 2023. Their rationale goes that recent prints are largely explained by the ‘base effect’, and that upward price pressure will fade as supply chains adjust to surging demand – i.e. a ‘transitory’ effect. (Nevertheless, following the September 2021 FOMC meeting, half of the members expected an increase in interest rates by the end of 2022 – see exhibit 2 in the Appendix).

Why is all of this important?

It is broadly accepted that asset classes exhibit different degrees of sensitivity to inflation. Given the uncertainty of the inflation trajectory, investors find themselves having to consider an asset allocation based on, for the most part, both historical markers and forward-looking guesswork.

Secondly, expectations of inflation picking up (beyond a certain level) raises the spectre of tighter monetary policy. And, if investors question the credibility of the Fed to contain inflation, and fear that bonds will no longer ‘protect’ in a crisis, the perceived ‘haven-status’ of bonds gets eroded. We argued in a previous paper², that the correlation between bond and equity prices, while having been historically mostly positive, flipped at the end of the 1990s on account of behavioural deviations, i.e. investors buying into the Fed’s ability to contain inflation and thereby making bonds a credible store of longer term value. Our empirical results also showed a suggestive relationship with inflation that runs hand-in-hand with changes in bond-equity correlations, namely, that rising inflation expectations is associated with a positive relationship between bond and equity returns.

If inflation remains persistent, and therefore less transitory than the Fed purports, this, as is widely understood, will lead to increased inflation expectations that feed into higher inflation. If then the credibility of the Fed comes under fire, and market participants question the ability of the Fed to properly manage monetary policy to contain inflation, the one obvious impact will be in the fixed income market where income streams get unambiguously eroded by inflation.

Thus, given the current environment, investors might likely shy away from bonds as haven assets, and prefer those assets that are perceived to offer ‘protection’ in higher inflationary periods. The bond-equity correlation having already ventured into positive territory of late – see figure 2 – is both suggestive and based on our previous research, expected.

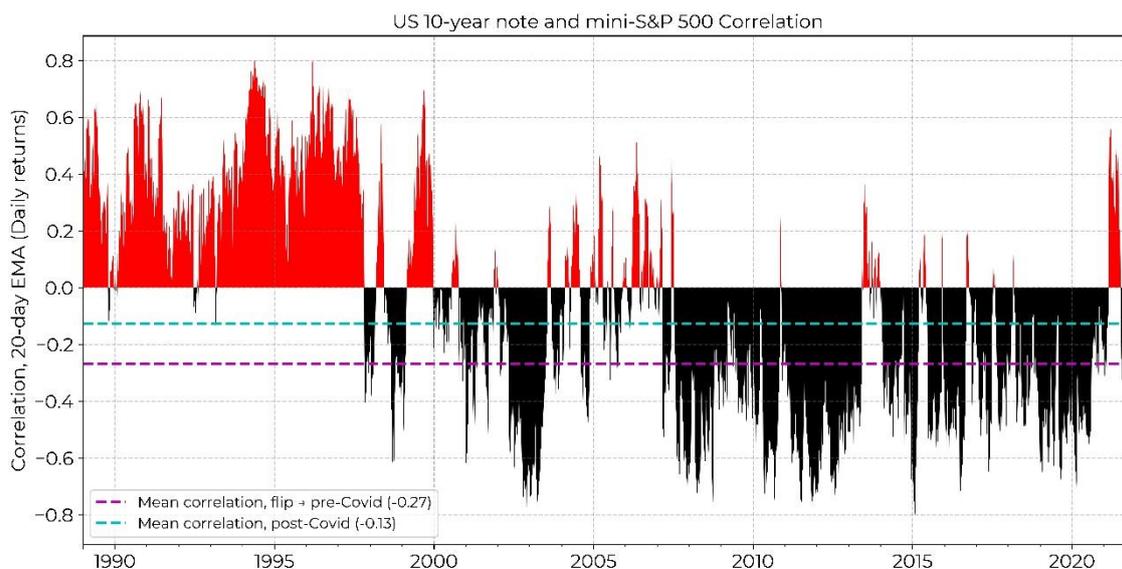
Investors now considering what might constitute an appropriate asset allocation in a higher inflationary period are likely to be informed by historical performance of different asset classes during periods of higher inflation.

This begs the question of how to identify inflationary ‘regimes’, so as to monitor relative levels of inflation as well as inform investors of the likely performance of different asset classes in such a regime (if one can reasonably claim to be in such an environment).

However, identifying an inflationary regime and subsequently assessing the performance of different asset classes in such a setting is tricky, as the identification of those periods is not that clear cut.

¹ As per the latest ‘Summary of Economic Projections’ released following the September 21-22, 2021 FOMC meeting.

² Bond-Equity Correlations: Are the times a changin’?, CFM, October 2020 – Available on our [website](#)



Source: Bloomberg, CFM

Fig 2. The correlation between bonds (US 10-year note) and equities (mini-S&P) has picked up recently reaching levels last seen during the GFC. Source: Bloomberg, CFM

Identifying ‘Inflationary Regimes’

Of course, there are competing ways to identify (classify) inflationary regimes and subsequently assess the sensitivity of different asset classes to inflation.

One approach is an ex-post discretionary identification of periods of inflation, consecrated in literature and underpinned by macroeconomic narrative. This eye-balling of inflation and setting arbitrary thresholds of what might have been considered ‘high’ or ‘low’ inflation is time-dependant – especially pre-forward guidance era – and subject to prevailing market conditions and monetary policy mandates and conviction.

Another approach, slightly mitigating of the first, is to simply pinpoint inflationary periods on a ‘peak-to-trough’ basis, i.e. identifying the highest peaks and lowest troughs of inflation and classifying the period between those points as either an ‘increasing’ or ‘decreasing’ periods of inflation. This binary approach does not take into consideration ‘stable’ periods (or regimes) between any peaks or troughs, nor does this (or the first) approach take into account fluctuations across those particular periods. It moreover does not consider any rate of change of inflation (or inflationary ‘shocks’). This approach opens itself to criticism as inflation is not stationary in any (even arguably well-defined) period of either increasing or decreasing inflation – simply, does inflation increase (decrease) ‘substantially’ to claim a new ‘regime’? While this approach has its limitations, we plot in exhibit 3A in the appendix the evolution of inflation and the identified ‘increasing’ and ‘decreasing’ periods. In exhibit 3B we tabulate a summary of the performance (measured by annualised returns) of key asset classes across those various increasing and decreasing inflation periods since the early 1900s.

In order to side-step any ‘discretionary’ approach to identifying regimes, which could be subject to interpretation and lead to potentially arbitrary considerations, we propose two alternative and complimentary approaches of identifying inflationary ‘regimes’ and look at the returns of various core asset classes in those regimes.

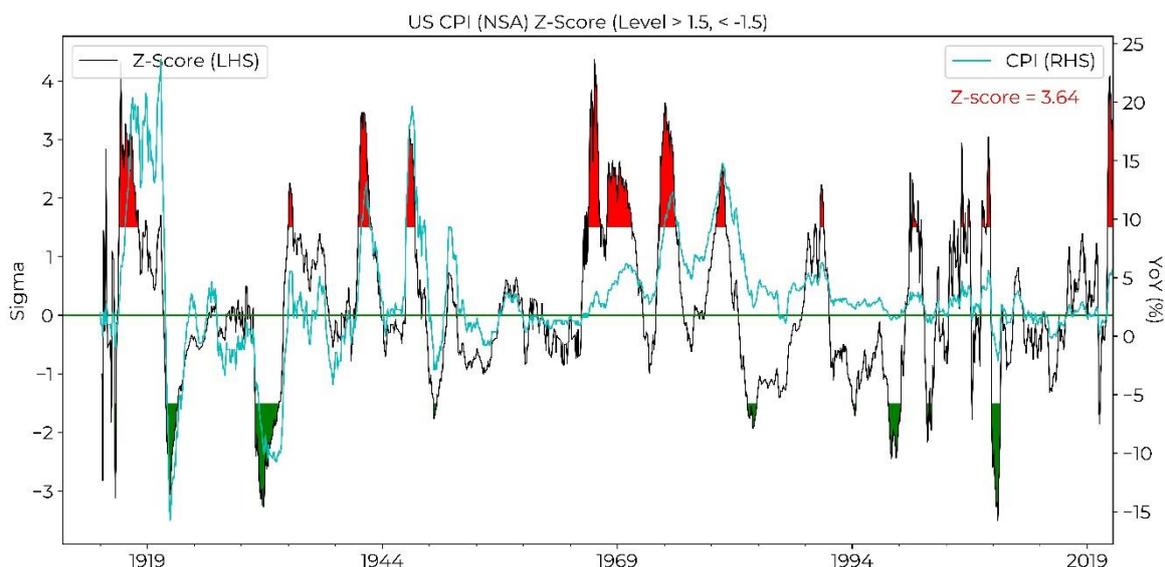
Inflation Z-score

The first is the calculation of a rolling 7-year Z-score³ of YoY changes in inflation (monthly headline CPI NSA). This is a systematic technique to assess whether inflation over a specific window is above/below its longer term mean, and, thus, removes the need for any arbitrary inputs beyond timescales.

The second approach is the calculation of a rolling 7-year Z-score on the difference of YoY changes in inflation (likewise monthly headline CPI NSA), i.e. the rate of change in inflation (or second derivative). Simply put, this approach captures how quickly (or slowly) inflation accelerates or decelerates compared to its previous 7-year window mean.

These two approaches should capture two separate effects: one is the sensitivity of asset class performance to inflation being above or below a specific standard deviation, and the other the sensitivity of asset class performance to the rate of change of inflation being above or below thresholds.

In figure 3 we plot the Z-score of the first approach, showing the deviation of inflation from its 7-year mean in level of sigma.



Source: Bloomberg, CFM

Fig 3. The rolling 7-year Z-score of YoY changes in inflation (Headline CPI, NSA), along with CPI YoY changes (in %). Source: Bloomberg, CFM

We flag those intervals, i.e. those periods where inflation is beyond a certain level of standard deviation to its longer-term mean. We deem inflation to be in a high/low regime when the Z-score is greater than 1.5/smaller than 1.5⁴

We then look at the asset class performance within each of these regimes.

³ A Z-score is a statistical measurement of the magnitude by which an observed value is above or below the mean value of the population (time series).

Z-score = $(x - \mu) / \sigma$ where:

μ is the mean of the population.

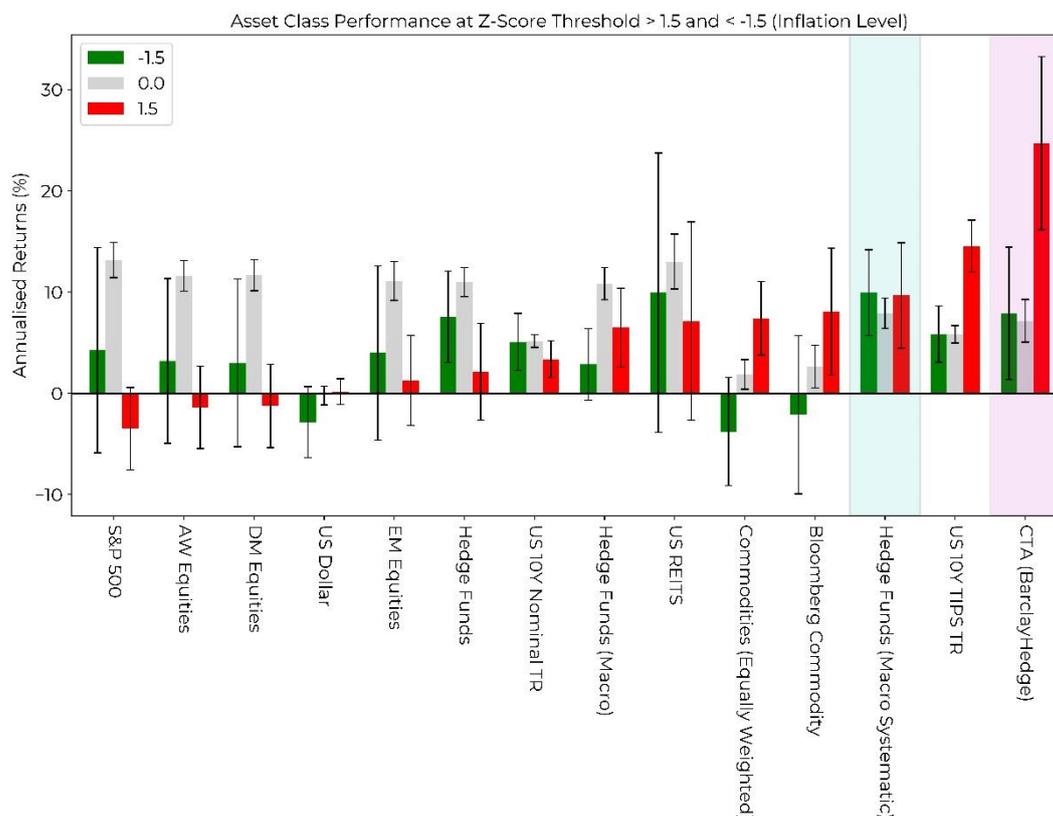
σ is the standard deviation of the population

⁴ One caveat to bear in mind with this approach (as with any other approach), is that above a certain threshold of sigma, i.e. when inflation deviates significantly from its mean over a given window, the data availability to calculate returns gets reduced. This is simply that inflation – a non-stationary process – typically does not linger above or below any set threshold for an extended period of time, and, as such, the number of contemporaneous returns to be found above or below that given threshold would be fewer. This makes drawing any conclusions of average returns during such periods of extreme deviation potentially less significant. Below are two tables showing the number of events (data points) of the Z-score time series within each 'regime' for each of the two approaches. Choosing a level of greater and smaller than 1.5 seems appropriate for both the availability of data and the historical evolution of inflation.

Changes in Inflation			
Z-Score	< -1.5	0	> 1.5
Number of Events	109	1041	192
Rate of change in Inflation			
Z-Score	< -1.5	0	> 1.5
Number of Events	83	1029	89

Asset Class Performance in Inflationary Regimes

The results of the annualised returns of different asset classes (along with common proxies for alternatives – CTAs and hedge funds) within each of the flagged intervals for changes in inflation (or regimes) are presented in figure 4.



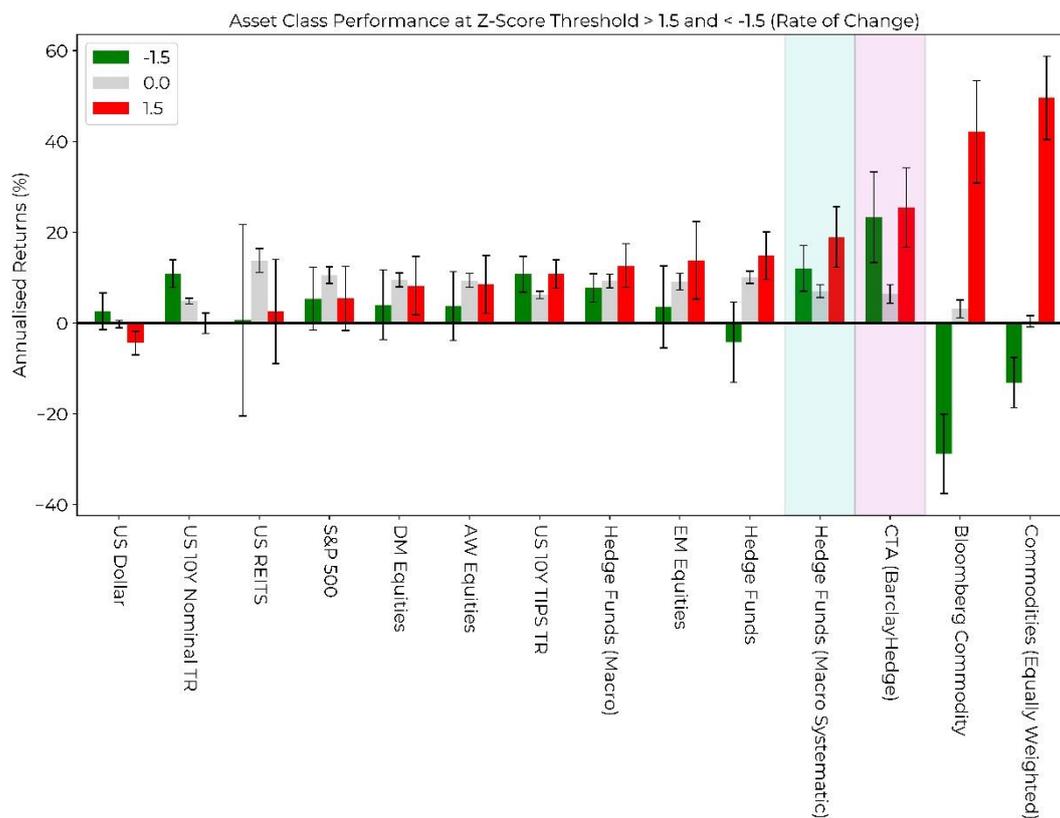
Source: Bloomberg, GFD, CFM

Fig 4. The annualised returns of various key asset classes in each of the pre-defined 'regimes' as calculated by deviations of inflation from its longer-term mean. The regimes are 1.5 (high inflationary period) / -1.5 (low inflationary period) where the Z-Score is greater than 1.5 / Z-Score is smaller than -1.5. Zero is the regime where the inflation is considered 'stable', i.e. fluctuating between 1.5 and -1.5.

A few notable observations need discussion. Rate sensitive assets (notably Nominal US Treasuries – also to be discussed in a following paper of this series) react as one would reasonably expect, i.e. performing better in lower inflationary regimes. Treasury Inflation-Protected Securities (TIPS) perform similarly, but, as expected, better (protects) in high inflationary periods.

Commodities, specifically, perform worst in low inflationary regimes but significantly better in higher inflationary periods. Performance amongst key equity indices are more mixed, but typically underperform in very high inflationary periods. The performance of hedge funds as, however, remain relatively stable and robust irrespective of inflationary regime, showing strictly positive performance in all inflationary regimes. Macro hedge funds, especially those employing a systematic approach, do well during inflationary periods (and equally well in low inflationary periods). Using this approach, we observe, however, that trend following programmes offer the best hedge during periods of high inflation.

We now repeat the exercise but this time looking at the rate of change in inflation. This can be considered akin to inflation shocks, and we plot the results in figure 5.



Source: Bloomberg, GFD, CFM

Fig 5. The annualised returns of various key asset classes in each of the pre-defined 'regimes' as calculated by the rate of change of deviations of inflation from its longer-term mean.

Again, as expected, rate-sensitive assets such as US Treasuries perform better when inflation decelerates – but this approach shows more pronounced results since as the rate of change increases, the performance decreases near-linearly. TIPS, again, offer the protection as one would expect during periods of accelerating inflation.

The pattern remains mostly intact for commodities, except that this asset class shows significant underperformance when inflation decelerates. Notably, however, hedge funds' performance as well as trend following strategies remain relatively stable and robust irrespective of inflationary regime, with especially CTAs and systematic macro hedge funds revealing a certain level of 'convexity', i.e. with performance best in the two extremes. This feature is, however, not evident from hedge funds in general, which is likely explained by the stronger correlation with equities than most macro hedge funds.

Emerging market equities do better in periods of inflationary shock, having traditionally benefitted from rallies in commodities, most being large raw material exporters. As commodity prices increase, fanning inflation, these markets benefit. In fact, emerging markets on aggregate feature a strong, and increasing correlation with commodity prices. However, the performance of these markets are ostensibly more sensitive to a shock in inflation, rather than more persistent levels of inflation. (This is a topic that we will discuss in a future paper.)

Conclusion

Inflation remains a topic that garners strong interest (and fierce debate) among market participants. While the thesis of 'transitory' inflation is arguably sound, there are, equally, valid concerns – backed by suggestive data – that the surge in inflation might be less transitory than the Fed purports (or wishes). A few points to consider:

- ▶ Even by the Fed's own account, the persistent supply-chain disruption has caused inflation to remain higher than previously expected, with, especially, many of the regional Fed Governors suggesting the transitory nature of inflation is in question.
- ▶ Using the same Z-Score methodology as presented above, and applied to all the individual CPI subseries, we observe that near all individual subcomponents are significantly above their respective long-term means (see exhibit 4). This broadening out of price pressure, beyond those sectors directly affected by Covid and/or supply-chain issues, pulls into question the Fed's transitory thesis. Especially the rising cost of housing and rent (a major component of the overall CPI basket) is broadly expected to keep headline inflation elevated as this now starts to be reflected in the data.
- ▶ Meanwhile, the pace of consumer spending in the US, a substantial component of GDP, seems to be slowing. This can to some extent be explained by the rise in commodity prices, which, in turn, has already led to higher costs being passed on to consumers. Higher household bills drains consumer confidence, while rising gasoline prices are especially difficult to substitute in the US (which has the highest Vehicle-Kilometres Travelled Per Capita rate amongst all OECD countries, and where ~ 70% of all goods are transported by road, over long distances)⁵. Although overall consumer spending remains 'healthy', the pace at which Americans spend is slowing across a wide spectrum of goods and services (see exhibit 5).

One concern is that the Fed is going to be behind the curve and underreact to what it views as 'transitory' inflation, which in turn, potentially creates longer term inflationary problems. When anchored inflation expectations shift, realised inflation is likely driven higher. Very simply, if consumers expect inflation to rise, goods manufacturers and service providers can more easily raise prices knowing full well that consumers are expecting it to happen. Therefore, it is possible that the absolute level of inflation is not that important, but, rather the difference between realised and expected inflation or inflation acceleration (shocks) that drives the market.

Monitoring the correlation between equity and bond returns shows that the 'safe-haven' status of fixed income is not necessarily assured, with our previous research showing an empirical link between higher inflation and positive bond and equity price change correlation.

While it is broadly understood that different asset classes have different levels of sensitivity to inflation, it is not straightforward to either identify unambiguously an inflationary regime, or then test asset class performance therein.

We proposed two quantitative, systematic alternatives of 'identifying' inflation regimes and inspect the asset class performance during those regimes. Our results support much of the broader expectations of performance, but in a manner which can monitor both the changes, and rate of changes in inflation.

We have also shown the robustness of trend following strategies and especially systematic macro hedge fund performance irrespective of inflationary regime, with these strategies performing well during periods of inflationary shock.

In future papers of this series we construct generic trend following strategies on various asset classes and examine the performance of these on a much longer historical time scale. Knowing that trend following strategies are robust in most inflationary regimes as we defined, one would expect, especially on commodities – given how we have observed commodities to react to inflation – to provide a level of convexity – i.e. positive trend performance in both increasing and decreasing inflationary periods.

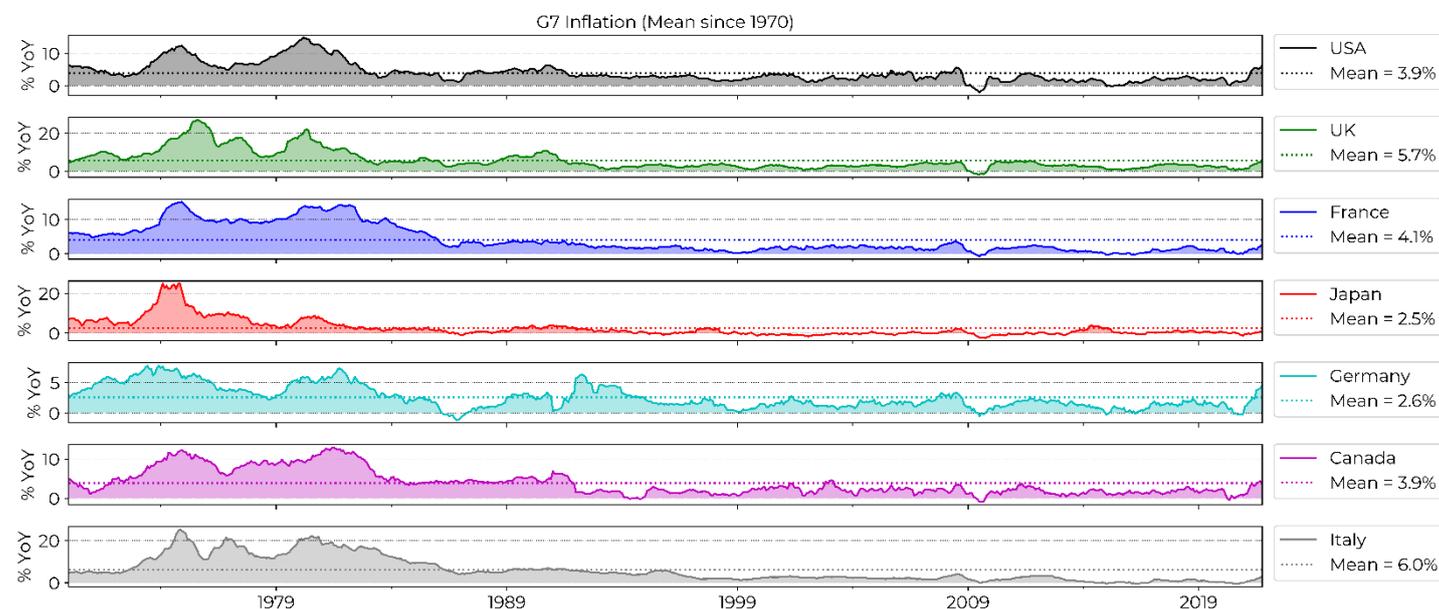
⁵ Ecola et al, The Future of Driving in Developing Countries. Santa Monica, CA: RAND Corporation, 2014. https://www.rand.org/pubs/research_reports/RR636.html

Appendix

Asset class proxies

Asset Class	Ticker	Description	First Observation
S&P 500	_SPXTRD	S&P 500 Total Return Index (w/GFD extension)	1900-02
EM Equities	TRGFDEM	GFD Indices Emerging Markets Return Index	1926-01
DM Equities	TRWLDM	GFD Indices Developed World Return Index	1926-01
AW Equities	TRWLDAM	GFD Indices All World Return Index	1926-01
Commodities (Equal Weighted)	_TRCCID	Thompson Reuters Core Commodity Equal Weighted Index	1914-09
Bloomberg Commodity	BCOM Index	Bloomberg Commodity Index	1960-02
CTA (Barclay Hedge)	BARCCTA Index	Barclay Hedge CTA Trend Following Index	1980-01
US Dollar	XRNUSAM	United States Dollar Nominal Effective Exchange Rate	1964-02
US REITS	USWILLREITIND	Wilshire US Real Estate Investment Trust Total Market Index	1978-01
Hedge Funds	HFRIFWI Index	Hedge Fund Research HFRI Fund Weighted Composite Index	1990-01
Hedge Funds (Macro)	HFRIMI Index	Hedge Fund Research HFRI Macro Total Index	1990-01
Hedge Funds (Macro Systematic)	HFRIMTI Index	Hedge Fund Research HFRI Macro Systematic Diversified Index	1990-01
US 10Y Nominal TR	TRUSG10M	GFD Indices USA 10-year Government Bond Total Return Index	1900-02
US 10Y TIPS TR	CFM ⁶	US 10-year TIPS Total Return	1971-10

Exhibit 1. G7 Inflation

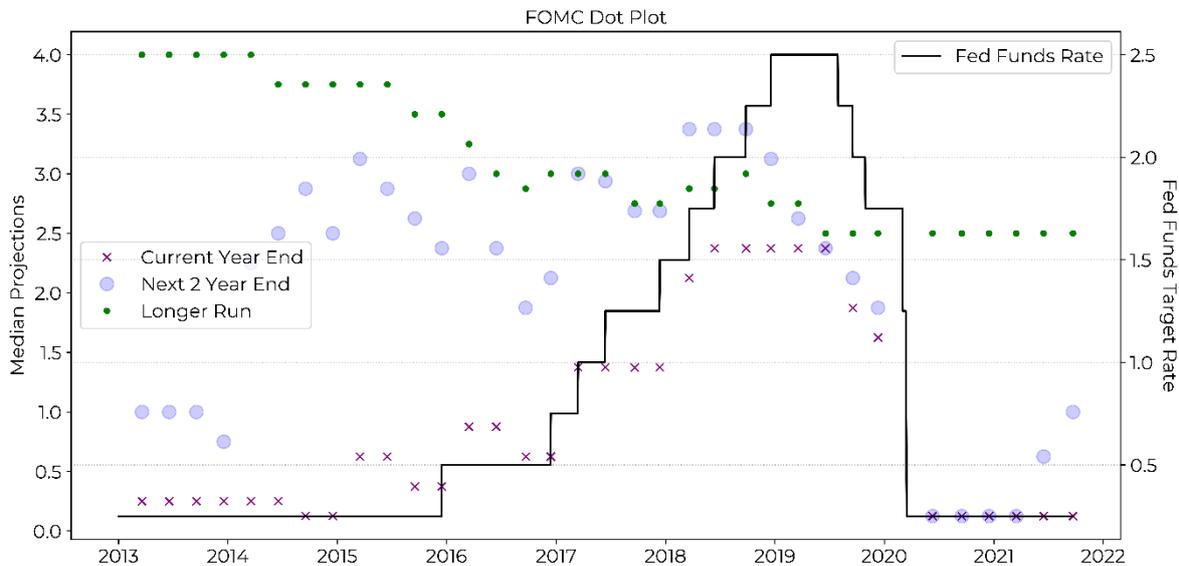


Source: Bloomberg, GFD, CFM

Inflation of key developed markets since 1960. Short of the inflationary spike observed during the 1970s, the level and volatility of inflation have remained largely benign in all these economies, with the level of inflation, since the 1980s, tracking below its longer-term mean.

⁶ We construct a US 10-year TIPS Total Return Index using 'backcasted' breakeven rate data from the Fed, by converting the back-casted data into a 10-year TIPS yield (TIPS = US Nominal - Breakeven), and then convert the yield into a total return series as per Swinkels et al. US TIPS only started trading in the late 1990s, which limits the performance assessment of this asset class over a longer look-back period.

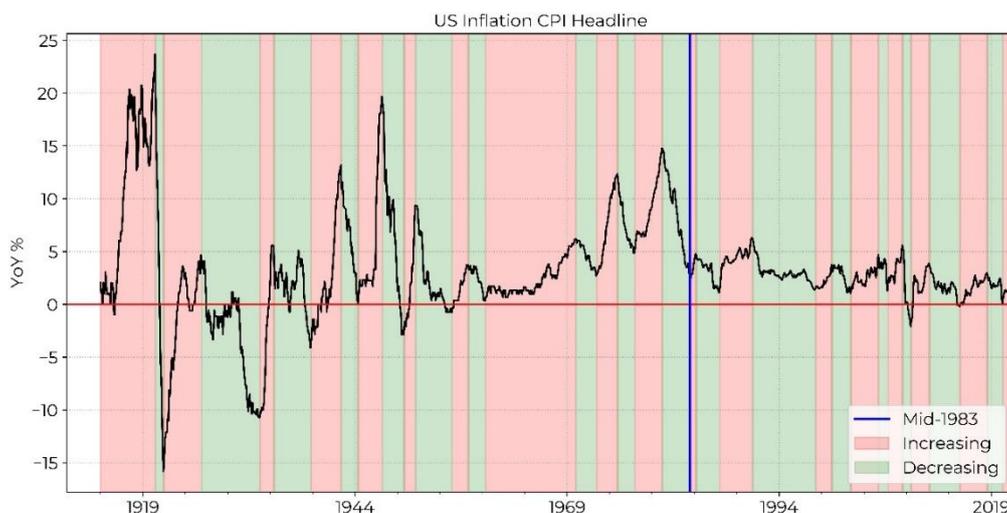
Exhibit 2. Fed 'Dot-plot'



Source: Bloomberg, CFM

Following the 21-22 September 2021 FOMC meeting, which also produced a set of projections, the FOMC members were evenly split regarding the likely and most appropriate date for an increase in interest rates. Half of FOMC members now expect an increase in interest rates by the end of 2022.

Exhibit 3 A. 'Brutal' binary definition of Increasing / Decreasing Inflationary Periods



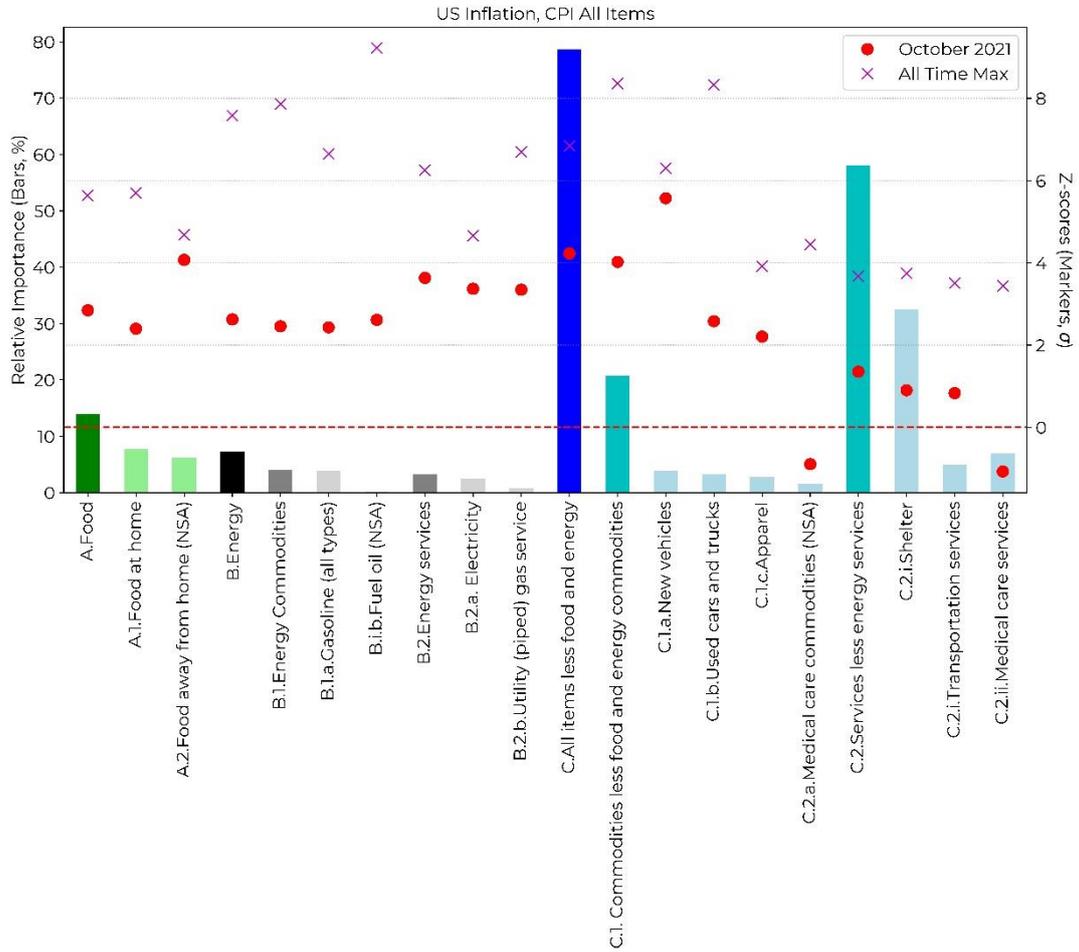
Source: Bloomberg, CFM

Exhibit 3 B. Performance of Asset Classes in 'Brutal' binary definition of Increasing / Decreasing Inflationary Periods

Regimes	Δ CPI (%)		Bloomberg Commodity	Commodities (Equally Weighted)	CTA (Barclay Hedge)	Hedge Funds	Hedge Funds (Macro)	Hedge Funds (Macro Systematic)	US 10Y TIPS TR	US 10Y Nomina ITR	DM Equities	S&P500	EM Equities	AW Equities	US Dollar	US REITS	
1914-01 → 1920-06	21.6	Increasing		12.4						1.0		5.8					
1921-07 → 1925-11	19.6			12.9						8.2		22.3					
1944-06 → 1947-03	19.1			23.0						2.9	-5.8	12.4	3.2	-5.2			
1938-11 → 1942-05	16.6			17.0						3.8	7.4	-7.0	-1.4	6.8			
1932-11 → 1934-06	15.7			28.8						6.0	39.4	28.2	55.6	40.3			
1949-11 → 1951-02	11.0			40.7						-0.3	30.8	35.0	14.6	29.8			
1977-01 → 1980-03	9.5			19.2	7.4					-2.7	8.2	3.5	27.5	9.0	-2.1	20.2	
1972-07 → 1974-12	9.4			66.5	28.5					12.8	3.5	-12.3	-13.3	7.7	-11.7	-1.8	
2020-06 → 2021-10	5.6			41.0	25.9	6.5	22.1	10.1	7.8	6.2	-4.6	34.2	36.0	27.5	33.4	-3.6	35.8
1959-06 → 1970-01	5.5			0.8	0.2						2.3	7.1	6.9	8.1	7.1	0.9	
2009-08 → 2011-09	5.4			4.9	16.1	3.2	4.8	3.6	5.1	11.2	10.0	5.3	8.7	4.6	5.2	-1.9	25.3
1987-01 → 1990-11	4.8			9.6	1.7	25.0	8.0	14.6	9.5	7.2	7.0	8.7	11.3	25.6	8.9	-5.1	-3.7
1955-07 → 1957-05	4.1				-0.1						-1.3	11.7	12.0	10.1	11.6		
2006-11 → 2008-07	3.6			12.5	22.7	9.8	5.5	10.7	13.9	9.1	7.5	0.2	-2.8	18.0	1.7	-6.8	-9.5
2002-07 → 2005-09	3.2			19.6	15.4	7.5	9.7	10.4	9.4	8.6	5.5	12.0	8.8	28.8	12.8	-4.8	20.6
2015-05 → 2018-07	3.0			-5.8	-1.3	-1.9	3.3	-0.6	-2.7	0.4	-0.2	8.8	12.0	4.1	8.3	0.4	5.9
1983-08 → 1984-03	2.2			-0.2	13.6	21.3				6.8	5.3	15.3	1.2	27.9	15.8	0.1	21.3
1998-05 → 2000-03	2.1			-3.1	-2.3	4.8	17.5	9.7	28.9	2.4	4.3	17.8	18.4	10.7	17.5	-0.7	-7.0
2000-04 → 2002-06	-2.0		Decreasing	0.4	-1.1	3.4	1.7	4.4	1.9	10.2	8.7	-17.0	-15.8	-16.1	-17.0	1.6	23.9
2018-08 → 2020-05	-2.6			-14.9	-7.5	2.9	-2.2	1.9	2.2	9.8	14.3	2.4	6.5	-5.8	1.4	2.1	-3.2
1957-06 → 1959-05	-3.0				-2.4						1.3	14.5	15.4	6.4	14.5		
2005-10 → 2006-10	-3.0			-5.9	13.9	3.3	10.3	6.0	13.0	1.7	2.8	17.4	13.2	24.3	17.9	-3.0	32.9
1970-02 → 1972-06	-3.4			11.3	2.0					3.4	12.1	14.0	13.8	21.2	14.2	-3.6	
1984-04 → 1986-12	-3.5			-9.2	-10.4	13.3				8.6	24.5	30.0	21.2	13.7	29.4	-4.6	16.3
2011-10 → 2015-04	-3.7			-8.1	-7.7	1.2	6.3	1.4	1.5	1.3	1.8	17.3	21.2	7.8	16.1	4.7	17.8
1990-12 → 1998-04	-4.7			0.1	0.0	5.4	20.8	24.3	14.4	4.8	9.6	14.9	21.3	14.9	14.6	2.1	15.8
1934-07 → 1938-10	-6.4				1.5						4.6	5.9	12.2	4.2	5.8		
1975-01 → 1976-12	-6.9				-1.3	0.2				7.6	10.3	24.2	30.3	14.1	23.8	2.2	
2008-08 → 2009-07	-7.5			-38.3	-24.7	5.3	-5.6	3.0	6.3	1.3	7.2	-21.1	-20.0	-16.6	-20.5	6.3	-41.3
1951-03 → 1955-06	-10.1				-7.5						1.2	21.5	22.3	2.6	20.8		
1942-06 → 1944-05	-10.9				2.1						2.1	9.9	30.3	21.4	10.4		
1980-04 → 1983-07	-12.3			-8.9	0.2	21.1				11.7	14.9	17.0	21.0	-0.9	16.1	5.8	31.2
1925-12 → 1932-10	-14.2				-16.9						3.8	-1.6	-3.2	0.3	-1.5		
1947-04 → 1949-10	-21.9				-11.8						1.7	-2.1	8.4	-10.1	-2.7		
1920-07 → 1921-06	-35.3				-46.7						5.7		-13.3				
Increasing (All obs.)				15.0	14.6	9.5	10.1	8.4	10.3	7.6	3.2	11.8	11.1	17.0	12.0	-2.3	12.1
Decreasing (All obs.)				-7.5	-6.9	7.0	5.2	6.8	6.5	6.0	7.4	9.2	10.9	5.1	8.9	1.4	11.7
Increasing (Top 3 obs.)				42.2	16.1	11.6	11.6	9.5	7.5	10.0	4.1	13.6	13.5	19.1	14.0	-2.5	27.1
Decreasing (Top 3 obs.)			-16.2	-14.6	10.6	7.1	9.6	7.4	6.9	3.7	4.4	-2.7	-3.6	4.0	4.8	1.9	

The annualised returns of asset classes in each of the unique increasing and decreasing periods. The change of the CPI is ranked, from biggest overall increase, to biggest overall decrease, with the corresponding annualised returns of each asset class for that period. Once all the returns for all the asset classes for each of the increasing and decreasing periods of inflation are averaged, a similar pattern is recognisable. Rate-sensitive asset classes (US 10-year) and commodities, on average, perform better and worse respectively in decreasing and increasing periods of inflation, while hedge funds and trend following performance remains relatively stable irrespective of inflationary period. The non-value cells are where the particular asset class does not have any history. Source: Bloomberg, CFM.

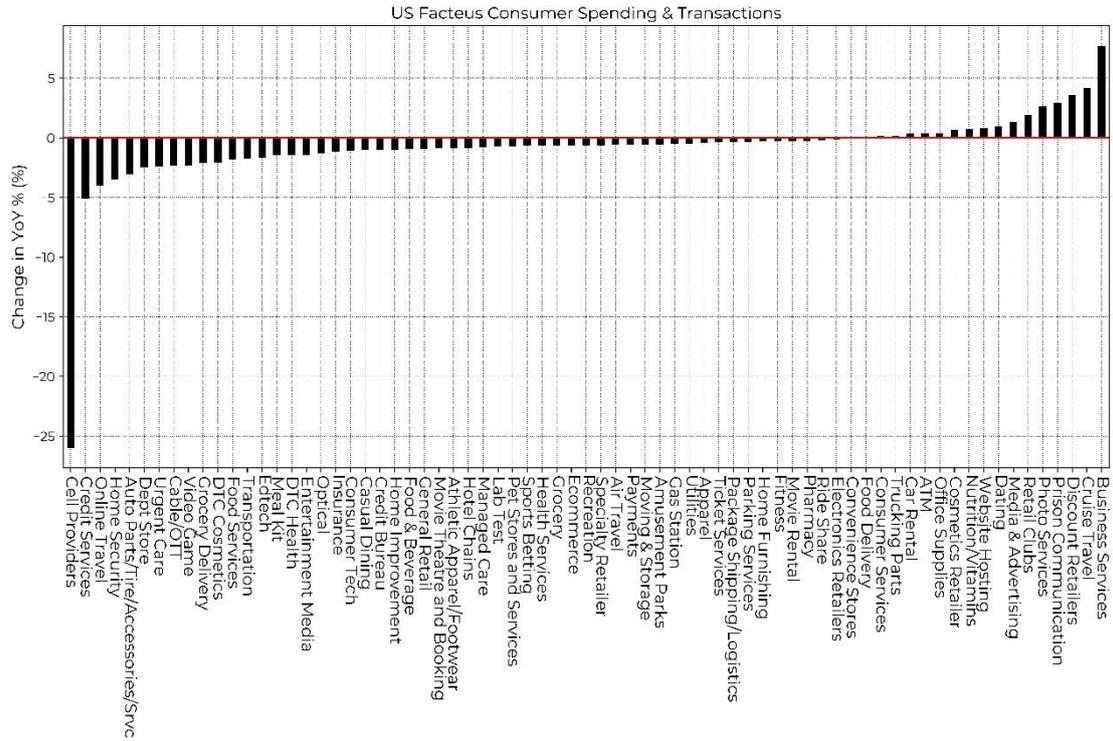
Exhibit 4



Source: Bloomberg, CFM

The 'relative importance' or weight of each of the underlying components of Headline CPI in % (on the left-hand y-axis), along with the Z-scores of each corresponding component (calculated on a 10-year rolling window) on the right-hand y-axis for both April and September 2021. Not only are the CPI readings of all subseries well above their longer term means, but they have continued to move further away from their respective means. Data as of November 2021 (which includes the CPI figure for the month of October 2021).

Exhibit 5



Source: Bloomberg, CFM

The Facticeus US Consumer Spend Indices shows the percentage change in spending, on a daily basis, compared to consumer spending in the prior year. While many sectors still show an increase in spending, these increases are slowing. Here we plot the difference of the change over the past five months (July - November 2021), with a majority of sectors showing a decline in the pace of spending. Ominously, 'Discount Retailers' shows amongst the strongest increase in the pace of spending over this period.

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