3D Report

The real world

> **"I wish the real world would just stop hasslin' me"**
>
> **—Matchbox Twenty**

July 31, 2023, might have been the most important day of the year for Wall Street. This was the day that the Treasury Department announced the funding schedule for the government for the second half of the year. The shock to the bond market was profound. The Treasury would be issuing a significant amount of debt—much more than the market had expected. From the Treasury press release:

- During the July–September 2023 quarter, Treasury expects to borrow $1.007 trillion in privately held net marketable debt, assuming an end-of-September cash balance of $650 billion.[1] The borrowing estimate is $274 billion higher than announced in May 2023, primarily due to the lower beginning-of-quarter cash balance ($148 billion) and higher end-of-quarter cash balance ($50 billion), as well as projections of lower receipts and higher outlays ($83 billion).[2]
- During the October–December 2023 quarter, Treasury expects to borrow $852 billion in privately held net marketable debt, assuming an end-of-December cash balance of $750 billion.[3]

Ryan Caldwell, Chief Investment Officer

Ryan Caldwell serves as Chief Investment Officer of FS Chiron funds. Prior to founding Chiron, Mr. Caldwell spent 14 years at Waddell & Reed, where he helped lead portfolio management decision-making for a suite of funds totaling $40 billion in assets under management, including Ivy Asset Strategy, W&R Asset Strategy and Ivy Funds/VIP Asset Strategy. Mr. Caldwell has over 20 years of portfolio management experience. In 2009 he was named one of Institutional Investor magazine's "Rising Stars of Mutual Funds," and in 2007 he was a finalist for Morningstar's Manager of the Year. He holds a BBA from Texas State University.

Co-authors:

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Brian Cho is a Co-Portfolio Manager and Head of Quantitative Research for FS Chiron funds, where he drives the proprietary quantamental investment strategy. In 2002, Mr. Cho co-founded Empirical Research Partners LLC, an independent research boutique where he served as Partner and Director of Quantitative Research. Mr. Cho is a CFA charter holder and graduated from MIT.

Andrew Korz, CFA, Director, Investment Research

Andrew Korz is a Director on the Investment Research team at FS Investments, where he leads research efforts on equities and the U.S. commercial real estate market. Mr. Korz is a CFA charter holder, holds a BBA in Finance and Economics from Villanova University and has prior experience with structuring and pricing interest rate derivatives.

Scott Sullivan, Head of Fundamental Research

Scott Sullivan is a Portfolio Manager for FS Chiron Funds, where he drives the proprietary quantamental investment strategy as Head of Fundamental Research. Prior to joining Chiron, Mr. Sullivan spent 10 years at Ivy Investments. Mr. Sullivan earned a BA in Economics and Political Science from Tufts University and an MBA in Applied Security Analysis from the Wisconsin School of Business.

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A note to our new readers:

For those new to the Chiron Investment Management team our investment process combines rigorous quantitative modeling with deep fundamental research. Our quantitative work helps guide our fundamental research in asset selection (with two top-down models, Domain and Dispersion) and security selection (with two bottom-up models, Core and Dispute).

Our Domain model seeks to identify the factors that are being rewarded in a given region or market, with domains ranging from Deep Value to Full Growth. In this way we seek to gauge market sentiment, and therefore in this report we refer to Domain and Market Sentiment together. Our Dispersion model seeks to assess the relative valuation within regions, countries and sectors, and thus we refer to Dispersion and Valuation together.

Our Core model seeks to identify which factors and characteristics tend to outperform so that our fundamental work can identify the companies to go long, and so we refer to Core and Long together. Conversely, our Dispute model seeks to avoid the characteristics which tend to underperform so that we can construct our proprietary hedge, and so we refer to Dispute and Short together.

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About the 3D Report

Each quarter, the team offers their insight on macroeconomic trends and potential impacts on global investment opportunities.

Want to learn more?

Reach out to your
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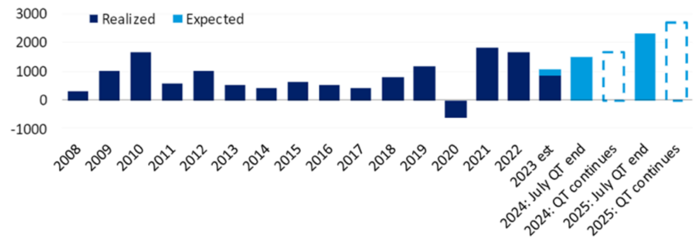
Exhibit 2: Net coupon supply ex Fed purchases and including Fed QT impact by FY

Net coupon supply to the public after accounting for Fed will increase in coming years with upside risk if QT continues for longer than expected



Source: BofA Global Research, US Treasury, FRBNY, alternate assumption for longer QT period assumes that it continues through mid '25

BofA GLOBAL RESEARCH

This was the day the Real World would start to hassle market participants. It was also the day that the bill for the CARES Act, the Build Back Better Act, the Chips Act and the Inflation Reduction Act began to come due. Between fiscal and monetary stimulus, COVID "cost" the U.S. taxpayer $13.4 trillion and Treasury's announcement made it clear that starting in the second half, the market would start questioning the U.S. fiscal position.

This was also a seminal moment for real interest rates. The main point of the story is that the cost of capital needed to adjust. The St. Louis Fed defines real interest rates as:

A "real interest rate" is an interest rate that has been adjusted for inflation.

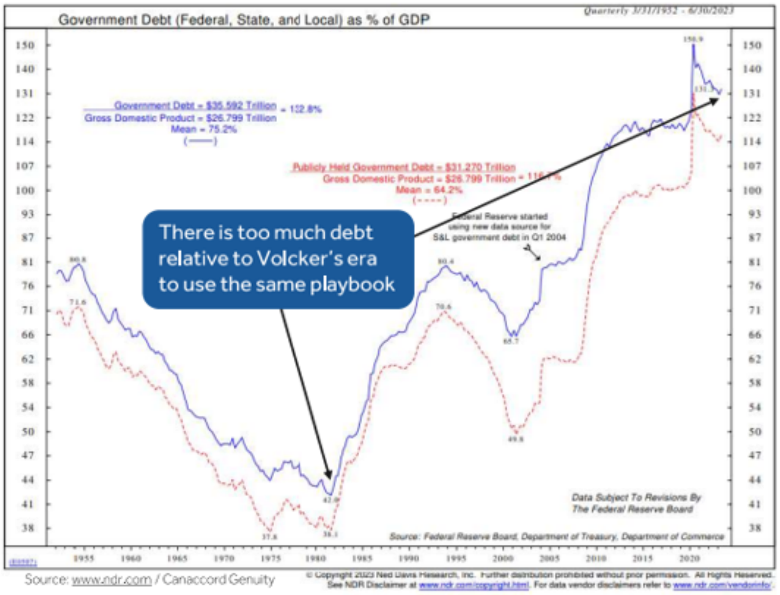
To calculate a real interest rate, you subtract the inflation rate from the nominal interest rate. In mathematical terms we would phrase it this way: The real interest rate equals the nominal interest rate minus the inflation rate.

Real interest rates are one of the primary inputs into the concept of financial conditions. Higher real interest rates impart a significant tightening in financial conditions and liquidity. Since the move in real rates started in earnest over a year and a half ago, financial conditions have continued to tighten, and the latest round has been significant. The chart below shows the Goldman Sachs Financial Conditions Index. 100 is considered neutral—anything above that level suggests capital markets conditions are tighter than neutral in aggregate, while anything below implies the opposite. At the height of the COVID downturn, financial conditions were incredibly loose (partially a function of rock-bottom interest rates), contributing to higher growth and inflation. Following the commencement of the Fed's aggressive tightening cycle, this chart went vertical. We did get some reprieve in the early part of the year, the result of declining inflation and the AI/Magnificent 7 equity rally. The aforementioned July 31 stands as the bottom for the year, and since that landmark Treasury announcement we have seen a significant tightening in financial conditions.

Source: Bloomberg Finance, L.P., as of October 13, 2023.

We did not predict this real rate shock. We have been in the camp that inflation would work itself down and that the "higher for longer" narrative would likely crash into left tail risks. To date, I have been dead wrong on that outcome. However, I continue to be concerned that this is not your parents' tightening cycle, and that a real rate shock is likely to lead to fat tails. My strategy and process is, and has always been, about exploiting tail events. To give some perspective on this, I have included a chart from our friend Tony Dwyer at Canaccord Genuity which I think sums up our view on this tightening cycle.

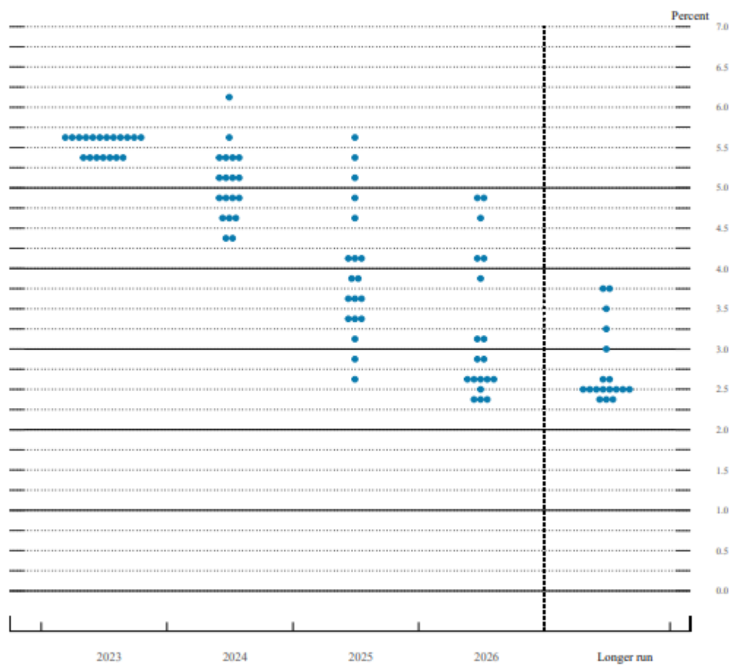
Credit outlook—Pulling a Volcker in a Levered System Is a Bad Idea



Source: Ned Davis Research, Inc.

We have heard many times from Chairman Powell about Paul Volcker and the defeating of inflation. Our worry is exactly what you see: The Volcker Fed did not have a mountain of Treasury debt to finance. Running an aggressive rate tightening cycle while also draining liquidity through Quantitative Tightening was likely to pressure markets. That is the phase of the cycle we have now entered and in our opinion, the left tail is growing fatter. The equity market has seen multiples expand this year, an outcome we certainly wouldn't have expected. In fact, given the rise in real interest rates we would have expected the multiple to contract 2–3 points and instead it grew almost 3–4 points, largely driven by the Magnificent 7 and AI beneficiaries. Given their weight in the index, it does explain almost the entire story. There is also the possibility that equity investors remain more skeptical than bond markets about the "higher for longer" narrative. The most recent FOMC meeting in late September did seem to shake equity investor confidence. The Committee, in its Summary of Economic Projections (SEP), aggressively raised the policy rate forecast for the next 12–18 months, basically eliminating any rate cuts in 2024. This helped to create a sharp upward move in the term premium of the bond market, undoing much of the inversion that had been in yield curves for about a year.

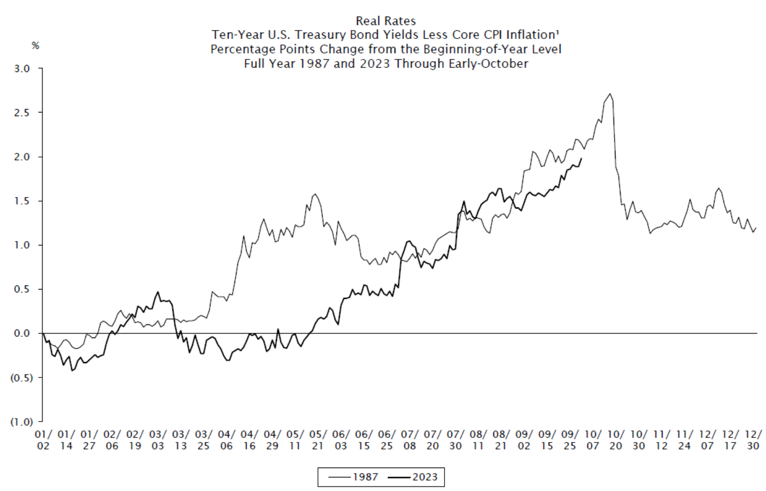
Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



Source: Federal Reserve, as of September 2023.

As Chair Powell has often indicated, the SEP is not to be taken as gospel, as the Fed has an incredibly poor track record at predicting their own monetary policy, but alas, the market responded anyway.

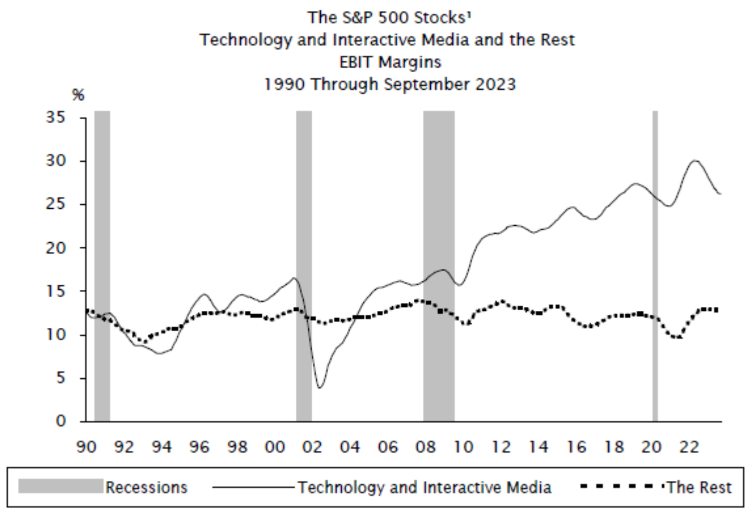
Another way to visualize this tightening in real rates is to compare it to other periods. I normally hate these comparisons as they offer spurious correlations at best, but I do believe this one is worth considering. In our business you must consider not only the direction and magnitude of an activity, but also the rate of change. The rate of change in real rates is comparable to another period, 1987. The below chart is from Michael Goldstein at Empirical Research Partners:



Source: Federal Reserve Board, Bureau of Labor Statistics, Empirical Research Partners Analysis.
[1] Less the trailing three-month average of core CPI inflation.

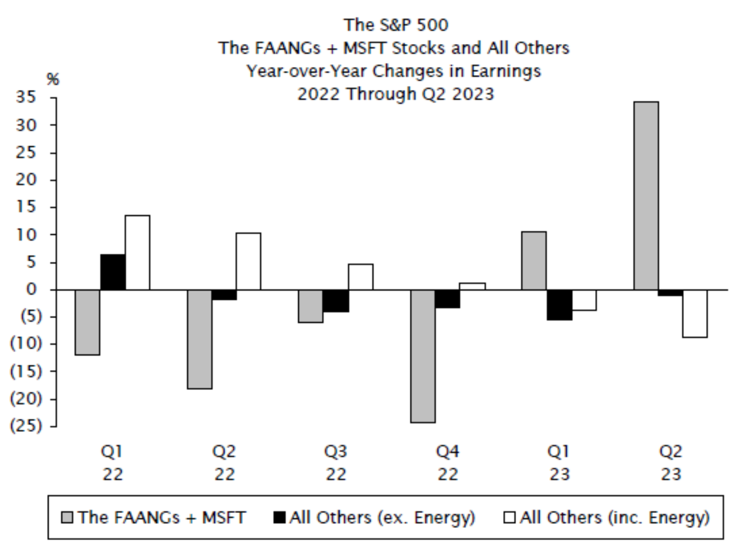
The point of the chart is not to predict another 1987, but rather to illustrate what happens when real rates spike and the equity market is late to recognize the impact. In Chiron speak, this is the stuff of fat tails.

Pulling my head out of the tails for a moment, I also think it is important to highlight what has gone right and, importantly, what we missed this year. There are a few notable things to highlight. We clearly missed the strength of the U.S. economy this year. We believed the tightening of financial conditions would slow the economy sooner. It did not. Empirically speaking, the economy is just less rate-sensitive than in prior periods due to a U.S. consumer that is financed long and invested short and corporations that termed out debt when real rates were negative. The other glaring standout this year is technology and its margins. While it has clearly been a narrow market, it has also been straightforward. The margins of the big cash flow-generating tech stocks are remarkable, both in their level and their resilience.



Source: National Bureau of Economic Research, Corporate Reports, Empirical Research Partners Analysis.
[1]Measured as aggregates and data smoothed on a trailing six-month basis. Excludes financials and REITs.

This explains most of what has gone on for the past decade. Outside of these margins, there just isn't that much to do because the bar is so high. To get into the top decile of our Free Cash Flow Margin work, you need margins in excess of 23%. We have no period in history where companies at the top have been this cash flow productive. The FAANG earnings story is not particularly sensitive to real rates in any direct manner, and that was proved out this year.



Source: Empirical Research Partners Analysis.

I was taught many years ago that stock prices follow earnings. That seems to indeed be the case. Once the big cash flow growers started to cut costs and cut capex (think metaverse going away, layoffs, etc.) the management teams of the big cash flow growers explicitly endorsed the high margins, and the revaluation was on. In this sense, higher rates meant higher earnings for these companies as their substantial cash piles became cash flow generative.

Going forward, I am mindful of this particular setup in the equity market where one group has a superordinary set of financial characteristics and the rest of the market is fighting topline slowdown and margin compression. Narrowness is likely to be a feature not a bug. However, I am mindful that the left tail continues to grow and ultimately the risk of real rates breaking something, even as the Fed winds down the front-end tightening cycle, is very real. Quantitative tightening is likely to end well before we reach the Feds stated goal of a $5 trillion balance sheet; the operative questions are when and why. Until then we continue to move forward with cash flow-generating companies and a large eye on creating convexity to left tail shocks.

-Ryan Caldwell, CIO

Chiron Domain Model-Market Sentiment

Asset allocation framework

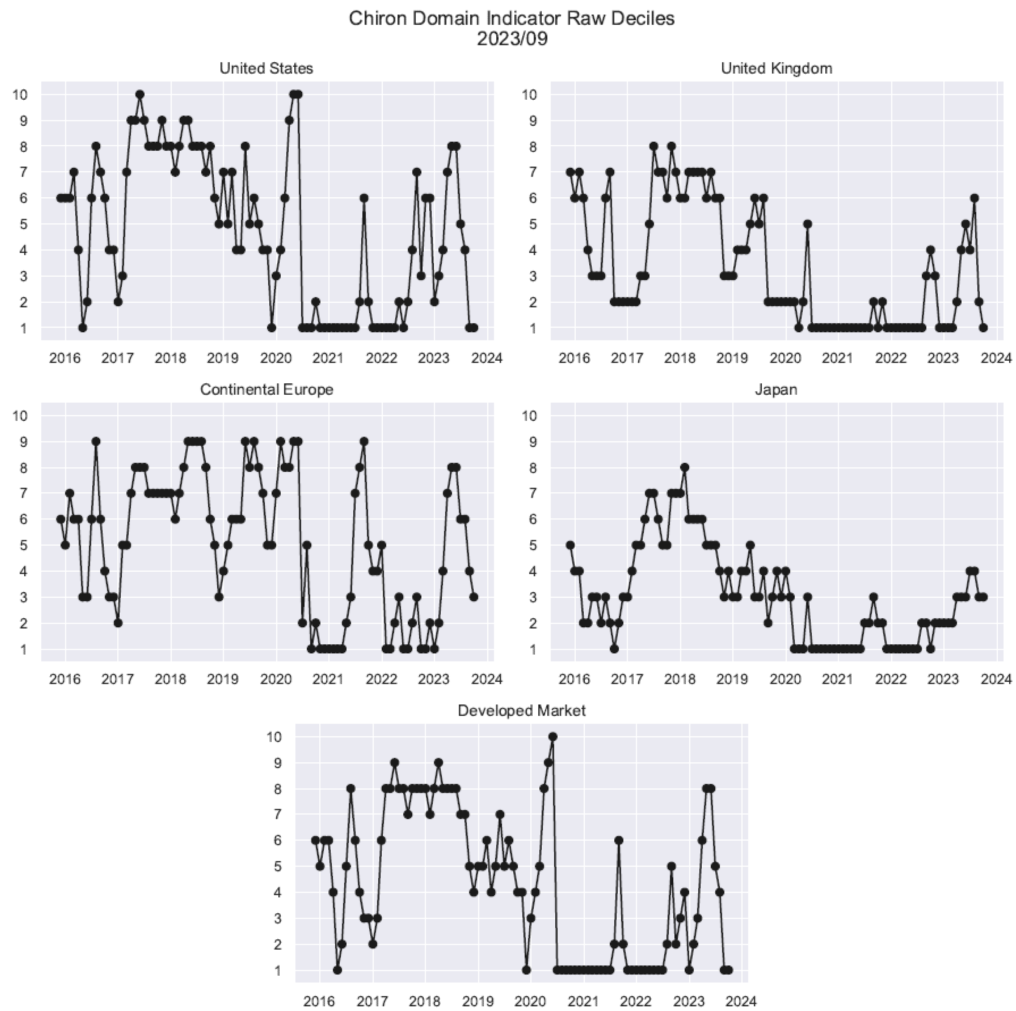
Market sentiment	Portfolio positioning	Portfolio concentration	Target asset allocation	Investment emphasis
Full growth	Defensive	High	25%–60% Equities 15%–50% Fixed income 0%–50% Cash/other	• Growth equity securities • Sovereign credit, cash, gold/gold miners
Growth			50%–75% Equities 15%–40% Fixed income 0%–10% Cash/other	• Growth equity securities • Investment grade and sovereign credit, cash
Neutral			50%–75% Equities 15%–40% Fixed income 0%–10% Cash/other	• Value and growth equity securities • Investment grade credit
Value			50%–75% Equities 15%–40% Fixed income 0%–10% Cash/other	• Value equity securities • High yield credit
Deep value	Aggressive	Low	65%–80% Equities 10%–25% Fixed income 0%–5% Cash/other	• Value equity securities • High yield credit

Chiron Developed Market Domain indicator is a compilation of the U.S., U.K., continental Europe and Japan Domain Indicators. Individual country/region domains are computed separately and are customized for those individual markets. Results are combined by using weights that are proportional to the market capitalization of the individual markets which comprise the Developed Market segment of the MSCI ACWI index.

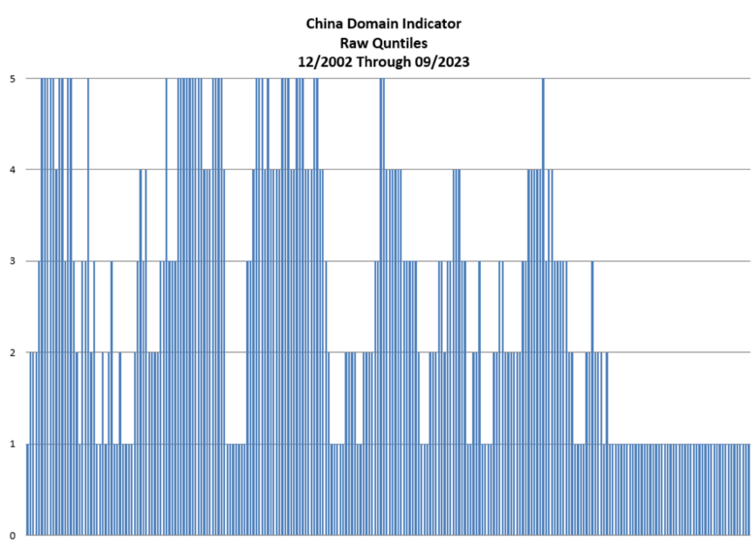
The Chiron Domain Indicator is based on Chiron's proprietary quantitative Domain models. Our process gathers and analyzes data on over 8,000 companies and market variables utilizing third-party data sources. The Domain Model measures on a global and regional basis what style is being rewarded (value or growth) and is an anchor point for top-down asset allocation within our investment process allowing us to adapt to various market phases.

I wanted to revisit the Chiron Domain indicator and why it is important. Our Domain indicator is really a gauge of investor, management and policymaker sentiment. What we are looking to capture is what management teams are doing—are they investing to grow or are they cutting costs and managing the business to survive? We are also looking at investors to see what they are rewarding; are investors rewarding companies that invest heavily but grow fast or are they rewarding companies that generate cash flow and return it to investors to shorten duration? This interplay helps us understand where we are in the business cycle and what characteristics we should be looking for. We then set this to a backdrop of policy decisions and how those are reflected in the market. Are yields rising or falling? Is the dollar gaining against other currencies or losing? What we have seen this year is significant movement in our indicator from very cautious in late March to very aggressive by late July.

Our domain indicator has been very volatile in 2023 across most regions. This is to be expected given the amount of macro and policy volatility we have seen so far. This is also indicative looking back to prior periods of challenging risk asset markets. While the Magnificent 7 stocks have been standouts, the rest of the market has been poor. This is somewhat consistent with what we see below. It is not surprising that Developed Markets (with the exception of Japan) have been following U.S. interest rate policy. Japan is the most promising region in our work given the rise out of deflation in the domestic economy and a more stable value early cycle reading. We are overweight Japan in our funds.



The one area of consistency all year has been China. China is mired in a very deep value reading. This is now becoming much more indicative of a value trap than an early cycle value move. So, while Japan may be leaving their value trap, China may be entering theirs.



Chiron Dispersion Model— Market Valuation

The Chiron Dispersion/Valuation Model allows us to measure how we believe investors value equity issues. When the Dispersion/Valuation Indicator shows a wide reading (above 1 standard deviation), investors tend to value the most expensive stocks very differently than the market average. When the Dispersion/Valuation Indicator shows a narrow reading (0 to -1 standard deviation), investors assess equity issues relatively similarly. This Indicator is very similar to bond spreads. When the Indicator is narrow and rising, distress is building. When the Indicator is wide and falling, valuations are narrowing, and distress is falling.

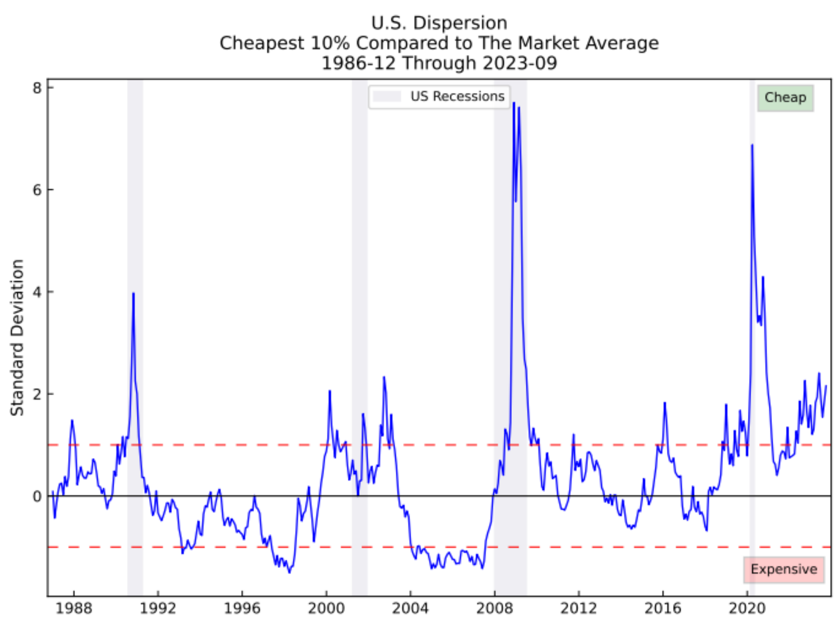
In Q3, dispersion spreads widened globally, largely in response to higher short-term and long-term interest rates in developed markets. As noted in last quarter's 3D report, spreads widening FROM HERE is likely to lead to well below average equity market returns.

Dispersion (Cheapest 10%) (Positive is "Cheap")

Aug. 2023	Sep. 2023	Region
1.7	1.7	**DM**
1.8	2.2	**US**
-0.3	0.2	**Canada**
3.6	3.5	**UK**
2.5	2.2	**Europe**
1.1	0.6	**Japan**
3.7	4.1	**Asia exJapan**

Aug. 2023	Sep. 2023	Region
4.8	5.0	**EM**
2.8	2.1	**LATAM**
7.2	7.5	**China**
2.1	2.2	**South Asia**
10.8	10.2	**Korea**
-0.1	-0.1	**Taiwan**
1.6	1.9	**EMEA**

Typically, if spreads widen FROM HERE bad things have typically followed.



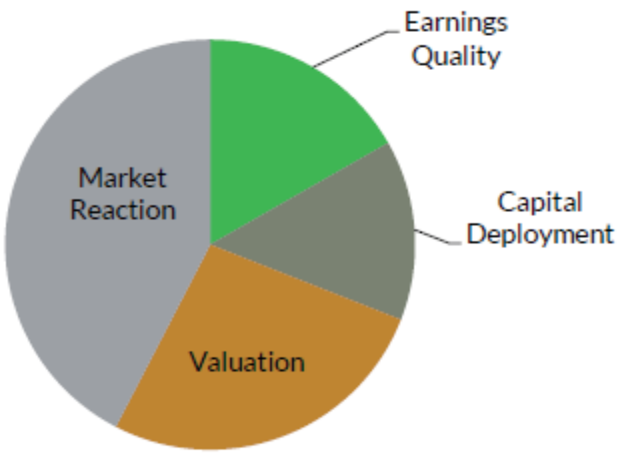
Dispersion Standardization Period: 12/1986 to 9/2015. Mean and STD from US Dispersion.

Japan, again, is the outlier here, a clear spread compressor which has been great for value-oriented equities in Japan.

Chiron Dispute Model— Short/Avoidance

The dispute model identifies characteristics that commonly lead to underperformance, such as high valuation, high cash burn, low profitability and poor momentum. We not only use this model to identify companies to avoid but also to construct our proprietary hedge.

Underperformance characteristics



Given our Full Growth readings and valuation concerns, we instituted Dispute as a hedge in Q2 of 2023. The hedge has been quite helpful to the fund in Q3, helping to dampen volatility, particularly in negative cash flow companies. As a reminder, we are looking for companies that are in the most expensive decile, with bad earnings quality and market financing needs. These companies tend to act as long volatility proxies when the market draws down.

Estimated Forward 3-Month Relative Returns of	Current	1M Change	Average	Curr - Avg	Percentile (1%=Highest)
S&P 500 – RT10 Index	-2.12%	2.51%↑	-0.38%	-1.74%	71%
DM US Valuation Q1 – DM US	-0.87%	-1.04%↓	1.53%	-2.40%	76%
DM US Arb Q5 (High) – DM US	-3.51%	1.54%↑	-0.76%	-2.75%	77%
DM US Beta Q5 (High) – DM US	-2.27%	-1.54%↓	-0.34%	-1.93%	77%
Chiron Core Q5 – S&P 500	-2.24%	-0.61%↓	-1.07%	-1.17%	81%
MSCI ACWI Total Return – US TIPS Index	-4.59%	2.57%↑	-0.52%	-4.07%	82%
S&P 500 Value – S&P 500	-1.17%	-1.09%↓	-0.14%	-1.03%	83%
DM US Growth Score Q5 – DM US	-1.78%	0.10%↑	0.30%	-2.08%	86%

We also see that in our "worst" categories, bad growth scores, high beta and high arbitrage or idiosyncratic risk is to be exploited. We also see the size bias continuing here, with large cap over small cap.

1. Footnote #2: https://home.treasury.gov/news/press-releases/jy1662#ftn2
2. Footnote #3: https://home.treasury.gov/news/press-releases/jy1662#ftn3
3. Footnote #4: https://home.treasury.gov/news/press-releases/jy1662#ftn4