Q3

PGIM QUANTITATIVE SOLUTIONS

June 2024

Q3 2024 OUTLOOK

PGIM Quantitative Solutions Multi-Asset Team

Executive Summary

Economic Outlook

- "Will they, won't they" remains center stage for central banks with the Federal Reserve (Fed) taking outsized importance.
- The projections suggest the Fed will cut rates only once this year, compared to earlier expectations of three cuts, but markets have not yet settled on when this cut will occur.
- But the exact timing of rate cuts may not matter as much as whether the pace is "too much or too little."
- A Taylor rule analysis suggests the Fed was behind the curve in 2022 and 2023 but may have moved into more restrictive territory recently.
- However, there are few signs of recession currently, with PGIM Quant's news-based recession sentiment indicators mild and the US labor market humming along.
- Meanwhile, inflation has made progress back toward the Fed's 2% target.
- Falling inflation in developed markets outside the US has provided room for a number of central banks to cut rates in response to weak economic activity.
- In Europe, the struggling manufacturing sector continues to weigh on economic growth.
- The European Central Bank (ECB) cut rates by 25bps in early June, but inflation remaining above its 2% target prevents the ECB from futher cutting rates too aggressively.
- The Bank of Japan (BoJ) ended its negative interest rate policy and brought rates positive for the first time since 2016. Nevertheless, yields remain low, contributing to a weak yen. To keep the yen from depreciating further, the BoJ announced a plan to reduce JGB purchases with details expected shortly.
- Growth in developed economies remains sound, while growth in China is slowly recovering.

Market Outlook

- The macro environment in the US continued to be supportive of risk assets in Q2 2024 with equities posting solid gains while fixed income returns finished the first half slightly down. While economic growth remains solid, the summer months have historically seen lower volumes and lackluster markets.
- November's US presidential election is also likely to impact markets, with equity market volatility typically increasing in the months leading up to elections.
- Nearly all of the S&P 500's first-quarter earnings were driven by the Magnificent 7. This extreme skew is likely to moderate over the coming quarters, with earnings growth for the rest of the market anticipated to improve.
- Stock valuations suggest that much of the optimism around economic and earnings growth has already been priced in, with the S&P 500 forward multiple well above historical averages.
- The stocks-bonds yield gap is now well below the historical average of 2.6%, suggesting an unfavorable risk-return profile for stocks relative to bonds.
- Fixed income assets have been under pressure and volatile, as expectations for the various plausible macro scenarios have waxed and waned.
- We expect rate volatility to continue and yields to remain elevated but range-bound.
- Credit fundamentals remain solid amid the supportive macro environment and low near-term recession likelihood. However, the historically narrow spreads for both high yield and investment grade credit amid tightening financial conditions are negatives.
- Commodities are likely to live up to their historical track record as late-cycle plays. Commodity prices have typically climbed with rising inflation and solid demand.

Economic Outlook

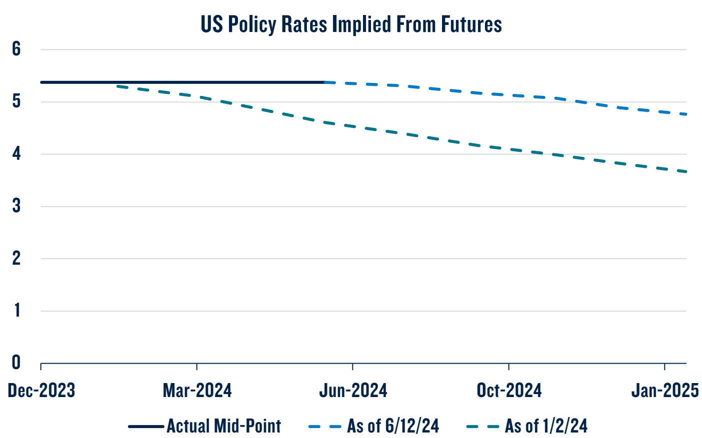
A Classic Trope in Sitcoms: "Will They, Won't They"

Friends aficionados will recall the mid-1990s hubbub surrounding Ross and Rachel. Okay, maybe that's a tired and dated reference. How about Pam and Jim from The Office? But even they've been off the air for a decade.

Is "will they, won't they" dead?

Maybe for sitcoms, but certainly not for central banks. For central banks, "will they, won't they" is still very much center stage. Stock and bond market investors are attuned to the utterances of central bankers around the world, but senior Federal Reserve (Fed) officials have an outsized importance. Prior to the Fed's June meeting, several participants highlighted concerns that inflation was sticky and slow to return to target. While the Fed ultimately left policy rates unchanged at that meeting, these concerns prompted an update to the Fed's guidance. The Summary of Economic Projections (SEP) suggested the Fed will cut rates only once this year, compared to expectations of three cuts following the March meeting. Markets have not yet settled on when these cuts will occur (as of this writing): July is priced consistent with a hold, pricing for September suggests better-than-even odds, and the likelihood of a cut toward the end of the year increases. And yet, this contrasts significantly from expectations at the start of 2024 when markets priced a good chance for a cut by the March meeting and two cuts by May.

Figure 1: Modest Rate Cuts Likely in 2024



Source: Bloomberg as of 12-Jun-2024

But the question of "will they, won't they" is somewhat arbitrary. Is there a significant macroeconomic impact if the Fed cuts rates in September versus December? No doubt there are derivatives traders who will profit handsomely in that scenario, but such fine gradations rarely make a difference for investors with broadly diversified portfolios and longer time horizons.

Focusing solely on when the rate cuts are likely to start also distracts from other important information in the report. While the June SEP suggested two fewer cuts this year compared to expectations in March, the projections made up for it with additional rate cuts in 2025 and 2026, ultimately leaving the range for the Fed funds rate unchanged between 3% and 3.25% by the end of 2026. This helps explain the muted equity and bond market reactions following the meeting. Moving from three cuts to one cut in 2024 was a surprise. The Bloomberg consensus for 2024 was for two, but forecasts for subsequent years were consistent with expectations. In the near term, the expected rate path is an important driver of the performance of longer duration assets, like equities and Treasury bonds. The forecasted path of interest rates also matters for the economic outlook, but it can be difficult to determine whether the current pace of rate cuts priced in by the markets is consistent with achieving the Fed's policy objectives of reining in inflation and keeping the labor markets solid.

Perhaps what matters more than "will they, won't they" is "too much or too little"?

One way to evaluate "too much or too little" is to compare the Fed's rate policy to some kind of benchmark, like the Taylor rule. The Atlanta Fed has a tool that allows users to create their own policy rules and compare the current level of rates to it. All three of the default options suggest the optimal policy rate is lower than the Fed's current range[1]. This is a relatively recent phenomenon. The tool suggested much higher policy rates in 2022 and 2023 to combat elevated inflation. In other words, the Fed was behind the curve – compared to alternative policy rules – when inflation got out of control and may be behind the curve again as inflation comes down. Or even simpler: "too little".

This has important implications for the outlook for growth and inflation both in the US and worldwide. If the Fed is behind the curve on interest rate policy, then monetary policy may be more restrictive than is appropriate given current conditions. This increases downside risks to the economy and inflation.

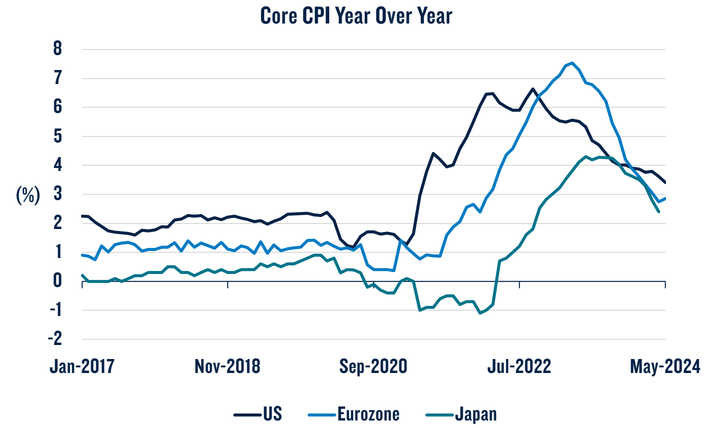
[1]Taking a similar approach to the path of economic projections from the SEP or the Philadelphia Survey of Professional Forecasters and comparing it to the path of rates from the SEP gives similar results.

Admittedly, there have been fewer signs of recession recently. While traditional indicators, including the LEI and yield curves, continue to suggest a recession is around the corner, PGIM Quant's news-based recession sentiment indicators suggest recession sentiment in the US as of the end of April 2024 is mild relative to its history. The US labor market is humming along with non-farm payrolls increasing on average more than 200,000 per month in the first half of 2024 together with continued strong earnings growth. Although Q1 real GDP growth was weak, median forecasts from the Philadelphia Fed Survey of Professional Forecasters (SPF) for the remaining quarters of the year are around 1.5% to 2.5%, consistent with the average seen after the Global Financial Crisis (GFC). Pockets of the economy are experiencing strain, particularly those that are highly interest rate sensitive. Keeping an eye on a variety of indicators can help identify a downshift from the expected pace.

Meanwhile, the Fed has acknowledged modest progress toward bringing inflation back to target, but at the same time has bumped up its inflation forecasts. The most recent SEP, largely consistent with professional forecasters, is for PCE inflation to end the year at 2.6% before falling to 2.3% in 2025 and returning to 2% in 2026. The Fed's implicit view is that the current level of restrictiveness needs to be kept to ensure those inflation forecasts are met. Sticky components of services inflation, such as housing, have been slow to return to their pre-COVID pace and are a major contributor to the outlook. But significant uncertainty surrounds the predictions for housing inflation. Regardless, a period of weaker-than-expected economic activity will likely weigh on the other components of inflation and could pose a downside risk for the inflation outlook.

Although the Fed is still in wait-and-see mode, falling inflation has provided room for a number of other developed market central banks to cut rates in response to weak economic activity. In Europe, the struggling manufacturing sector continues to weigh on economic growth, but the European Central Bank (ECB) likely saw some solace in core inflation falling back below 3% when cutting policy rates by 25bps in early June. Nevertheless, inflation remaining above its 2% target still prevents the ECB from cutting rates too aggressively.

Figure 2: Core Inflation Still Too High for Comfort



Source: FactSet as of 31-May-2024

In contrast, the Bank of Japan (BoJ) remains an outlier among developed markets. In an effort to normalize policy after inflation returned post-COVID, the BoJ ended its negative interest rate policy, bringing rates positive for the first time since 2016. Even after the hike, rates are still low – and are expected to remain low – compared to the rest of the world. This has contributed to the recent depreciation of the yen that briefly sent USD/JPY above 160 before the government intervened to prop the currency up.

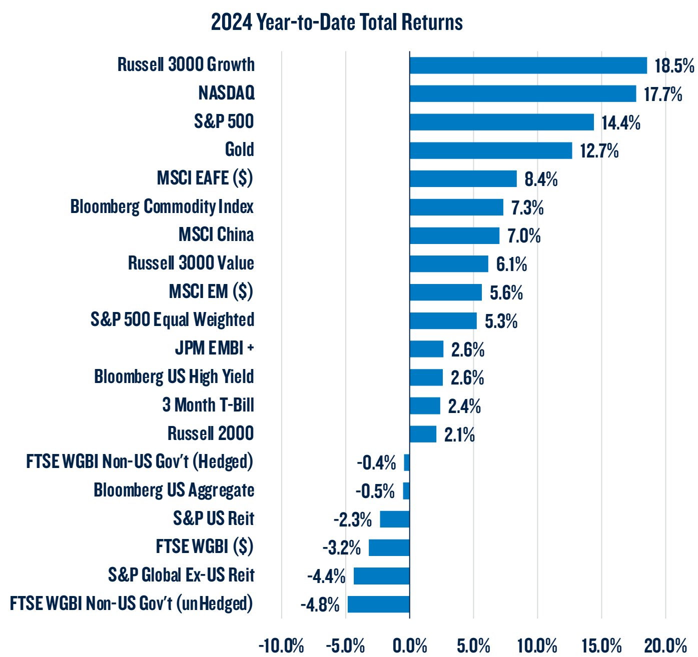
To keep the yen from depreciating further, the BoJ announced a plan to reduce JGB purchases. Details will be provided at its late-July meeting, where Governor Ueda also left the door open for further rate increases. The rate hikes and quantitative tightening come during a period of weak Japanese economic activity. However, near-zero policy rates and positive inflation means real rates are negative. A modest rate hike may merely mean that policy is less accommodative than in the past.

Market Outlook

Summer Doldrums

The macro environment in the US continued to be supportive of risk assets in Q2 2024 with economic growth remaining solid. Although slow, progress on the Fed's fight against inflation kept alive hopes of rate cuts, and together with ongoing optimism about AI, continued to bolster financial markets. However, strong economic data in April, including solid ISM confidence and robust jobs gains, raised concerns that the US economy was still running hot, and the Fed may leave rates elevated for an extended time. Concerns about tight monetary policy contributed to a pullback in equities and rising bond yields. Nevertheless, the trend turned in the second half of the quarter with the Fed adopting a less hawkish stance in May, taking rate hikes off the table. Equity returns (S&P 500) for the year to date are tracking at around 14.4% (Figure 3, as of 6/13/2024). Fixed income returns are slightly negative at -0.5% for the first half of the year. Consistent with conventional late-cycle dynamics, commodities posted year-to-date gains of 7.3%, led in part by gold, which has advanced 12.7% amid purchases by foreign central banks and resurfacing inflation worries.

Figure 3: Growth and Gold Lead the Pack



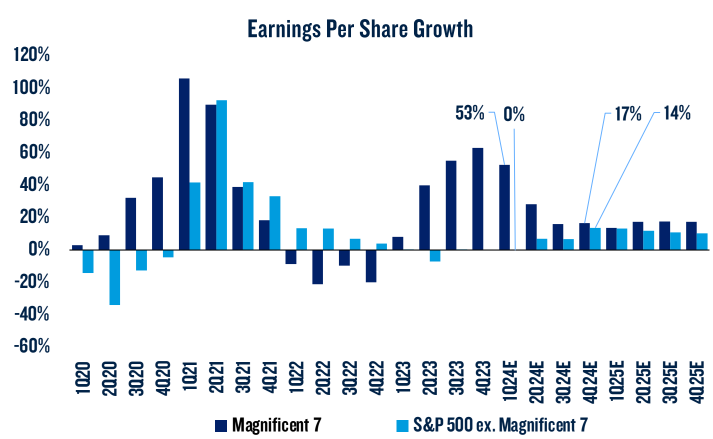
Source: FactSet as of 13-Jun-2024

Concentration remains a key theme in equity markets this year. The Magnificent 7 (Mag-7) account for nearly 1/3 of the weight of the S&P 500 Index now at 32%, up from 28% at the end of 2023 and 20% at the end of 2022. It is therefore no surprise that US large-cap stocks were the top performers this quarter, posting 18.5% gains year to date.

Solid economic growth, strong and resilient corporate profits, and improved liquidity despite elevated policy rates have offset investors' concerns about valuations, prospects for interest rates, and geopolitics. Financial markets have bounced around between expectations for a "soft landing," a "hard landing," or possibly "no landing" for the economy. Each scenario has differing implications for the expected Fed funds rate at a time when the Fed itself is heavily data dependent. This dynamic is expected to continue as we head into the second half of the year, raising the potential of elevated volatility for major asset classes in the remainder of 2024. While the broad macro environment still remains solid and supportive of risk assets, the summer months have historically seen lower volumes and lackluster markets. The added wrinkle of the upcoming US presidential election is also likely to impact markets as November nears.

Even as stocks have posted strong gains year to date, equity market gains have generally been driven by the largest technology stocks. While the market cap weighted S&P 500 has gained approximately 3.5% in Q2 to date, the equally weighted S&P 500 declined -2.5%, giving back some of its Q1 gains. Large-cap growth stocks have been driven by much stronger-than-expected Q1 earnings as well as increasing optimism about AI-related demand over the coming quarters. This phenomenon of concentrated stock price performance was also reflected to some extent in earnings. Nearly all of the S&P 500's first-quarter earnings (Figure 4) were driven by the Mag-7, whose earnings rose 53% YoY for the quarter. In contrast, earnings growth for the rest of the S&P 500 was flat. This extreme skew is likely to moderate over the coming quarters with earnings for the Mag-7 expected to slow to a still-solid 17% by Q4, while earnings growth for the rest of the market is anticipated to improve to around 14%. Anecdotally, it seems that the key beneficiaries of the optimism surrounding AI have primarily been chip makers and cloud infrastructure services providers. The benefits of increased AI demand or productivity to a broader swath of companies have yet to materialize.

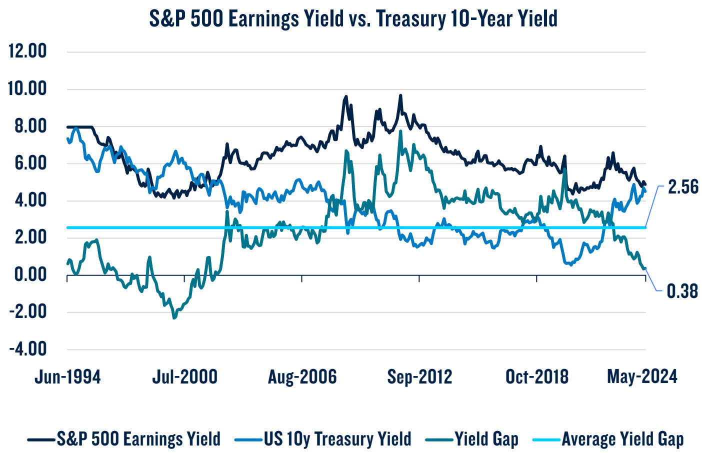
Figure 4: Concentrated Earnings Expected to Broaden



Source: PGIM Quant, Bank of America as of 13-Jun-2024

Stock valuations suggest that much of the optimism around economic and earnings growth has already been priced in, with the S&P 500 forward multiple at around 20.5x versus a historical average of 15.7x. The stock-bonds yield gap, currently at approximately 0.4% (Figure 5), has narrowed significantly despite bond yields falling from their highs in April. The yield gap is now well below the historical average of 2.6%, suggesting an unfavorable risk-return profile for stocks relative to bonds.

Figure 5: Stock/Bond Yield Gap Implies Little Risk/Return Benefit



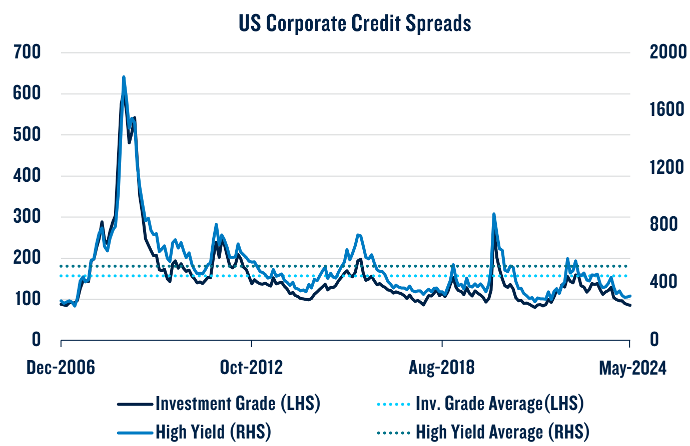
Source: FactSet as of 31-May-2024

The elephant in the room is of course November's US presidential election. Historically, equity market volatility has typically increased in the months leading up to the election, although performance has been varied. We expect similar trends during this presidential election year, especially following the strong equity market gains during the first half of 2024. Furthermore, summer seasonality is another factor likely to weigh on stocks in the coming months. Compared to prior elections, the candidates of both major parties are well known by the electorate, suggesting less potential for policy uncertainty. And regardless of which candidate wins, the federal government will continue to run significant deficits in the near to medium term.

While risk assets have enjoyed a supportive environment in the first half of the year, fixed income assets have been under pressure and volatile, as expectations for the various plausible macro scenarios have waxed and waned. Bond market volatility, as measured by the ICE BofAML MOVE Index, has come down from the peak levels observed in March 2023. However, current readings are still high and well above the post-GFC average. We expect this period of volatile rates to continue so long as the Fed remains extremely data dependent regarding the future course of policy rates. And all of this is against a backdrop of increased scrutiny focused on the US Treasury auctions and significant ongoing US budget deficits. Yields are therefore likely to remain elevated but fluctuate around these high levels, with softer economic data, especially on the growth side, potentially offset by stronger inflation data, keeping yields range bound.

Credit fundamentals remain solid amid the supportive macro environment and low near-term recession likelihood. However, the historically narrow spreads for both high yield and investment grade credit (Figure 6) amid tightening financial conditions as the Fed remains on hold are negatives. We therefore find credit attractive, supported by sound coupons and a lack of specific catalysts to trigger spread widening.

Figure 6: Corporate Spreads Close to Historical Lows



Source: FactSet as of 31-May-2024

Our team expects commodities to live up to their historical track record as late-cycle plays. Commodity prices have typically climbed with rising inflation and solid demand. Growth in developed economies remains sound, while growth in China is slowly recovering. However, any sign of a slowdown is likely to dampen commodity returns.

Finally, from a portfolio context, equity/bond correlations have turned positive since July 2023 due to inflation concerns. However, as our research has shown, commodity/equity correlations have historically been negative during periods of elevated inflation. Commodities can also potentially provide a hedge during periods of market turmoil. Equity/commodity correlations have decreased significantly since October 2023 and commodities are attractive as a potential diversifier within a multi-asset portfolio.

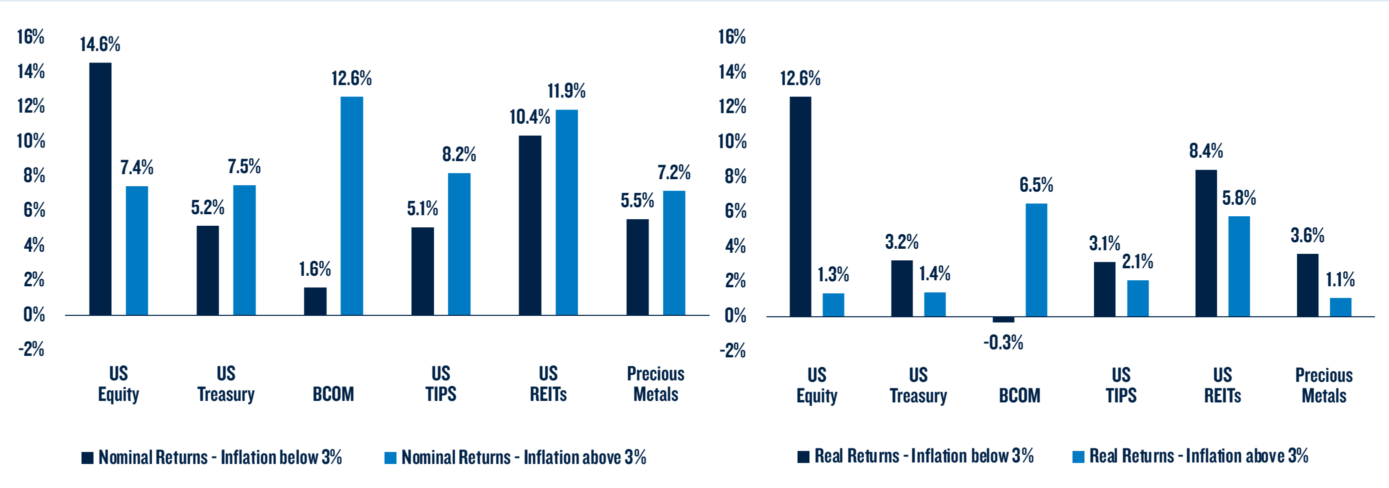
Commodities Set to Gain Amid Elevated Inflation Regime

After surging in the post-COVID recovery, US and developed market inflation has pulled back from historic highs but has yet to revert to pre-COVID lows. Historically, periods of high inflation have produced notably different outcomes across asset classes compared to the returns we saw over the decades before COVID.

We investigated the implications of elevated inflation levels on asset class returns in a May 2022 piece, Portfolio Implications of a Higher US Inflation Regime. Today, with inflation still elevated, the insights from this paper can continue to inform how investors position their portfolios.

An assessment of nearly the last 50 years of US asset returns confirms vastly different outcomes for public-market asset classes in regimes of elevated inflation compared to returns from the low-inflation period from the early 1990s-2020. Our evaluation of asset class performance during the period from 1973- 2024, building on the results presented in **Portfolio Implications of a Higher US Inflation Regime**, finds that high-inflation regimes correspond to subdued returns for equities and nominal bonds relative to commodities. And while equity and nominal bond returns are now positive, real assets (which we define as investments that are understood to have inflation hedging properties, even if they have no "real" physical component) such as Treasury Inflation-Protected Securities (TIPS), Real Estate Investment Trusts (REITs), precious metals, and broad commodities, provide meaningfully higher nominal and real returns during periods of inflation above 3%. REITs perform quite strongly in both low- and high-inflation regimes, while broad commodities stand out with markedly improved nominal and real returns in the high-inflation regime versus the low-inflation regime.

Figure7: Asset Class Nominal and Real Returns



Source: FactSet from Q2 1973 to Q1 2024

While TIPS, REITs, precious metals, and a diversified portfolio of commodities have historically performed better than equities and nominal bonds in real terms during regimes of higher inflation, there is a wide dispersion in outcomes among these real assets. Only commodities have performed better in both nominal and real terms in higher-inflationary periods versus low-inflation periods. TIPS and precious metals have better nominal returns in higher-inflation periods than in lower-inflation periods, but lower real returns. REITs, while still delivering positive real returns in higher-inflation periods, underperform on a real-return basis compared to their performance in lower-inflation periods.

A regime of higher inflation and higher-inflation expectations, such as the one that emerged in 2022 and remains in place today, has important implications for investor outcomes, particularly if inflation remains elevated. Strategic allocations like a 60/40 split between equities and nominal bonds have historically delivered negative real returns in periods of elevated inflation. The good news is that there are allocation options for public market real assets that perform materially better than stocks and nominal bonds in higher-inflation regimes. Increasing allocations to real assets, particularly commodities, in an elevated inflation regime can meaningfully improve expected portfolio outcomes.

Notes to Disclosure

This is intended for Professional Investors only. All investments involve risk, including the possible loss of capital. Past performance is not a guarantee or a reliable indicator of future results.

PGIM Quantitative Solutions LLC (“PGIM Quantitative Solutions” or “PGIM Quant”) is an investment adviser registered with the U.S. Securities and Exchange Commission (the “SEC”). Registration with the SEC does not imply a certain level of skill or training. PGIM Quant is an indirect, wholly-owned subsidiary of PGIM, Inc. PGIM is the trading name of PGIM, Inc and its global subsidiaries, representing the principal asset management business of Prudential Financial, Inc. (“PFI”), a company incorporated and with its principal place of business in the United States. PFI of the United States is not affiliated in any manner with Prudential plc, which is headquartered in the United Kingdom or with Prudential Assurance Company, a subsidiary of M&G plc, incorporated in the United Kingdom.

The comments, opinions and estimates contained herein are based on and/or derived from publicly available information from sources that PGIM Quantitative Solutions believes to be reliable. We do not guarantee the accuracy of such sources of information and have no obligation to provide updates or changes to these materials. This material is for informational purposes and sets forth our views as of the date of this presentation. The underlying assumptions and our views are subject to change.

These materials are neither intended as investment advice nor an offer or solicitation with respect to the purchase or sale of any security or financial instrument. These materials are not intended to be an offer with respect to the provision of investment management services.

These materials are for informational or educational purposes. In providing these materials, PGIM Quant is not acting as your fiduciary. These materials do not take into account individual client circumstances, objectives or needs. No determination has been made regarding the suitability of any securities, financial instruments or strategies for particular clients or prospects. These materials do not purport to provide any legal, tax or accounting advice.

The opinions expressed herein do not take into account individual client circumstances, objectives, or needs and are therefore are not intended to serve as investment recommendations. No determination has been made regarding the suitability of particular strategies to particular clients or prospects. The financial indices referenced herein is provided for informational purposes only. You cannot invest directly in an index. The statistical data regarding such indices has been obtained from sources believed to be reliable but has not been independently verified.

Certain information contained herein may constitute “forward-looking statements,” (including observations about markets and industry and regulatory trends as of the original date of this document). Due to various risks and uncertainties, actual events or results may differ materially from those reflected or contemplated in such forward-looking statements. As a result, you should not rely on such forward-looking statements in making any decisions. No representation or warranty is made as to future performance or such forward-looking statements.

In the **United Kingdom**, information is issued by PGIM Limited with registered office: Grand Buildings, 1-3 Strand, Trafalgar Square, London, WC2N 5HR. PGIM Limited is authorised and regulated by the Financial Conduct Authority (“FCA”) of the United Kingdom (Firm Reference Number 193418). In the **European Economic Area (“EEA”)**, information is issued by PGIM Netherlands B.V. with registered office at Eduard van Beinumstraat 6 1077CZ, Amsterdam, The Netherlands. PGIM Netherlands B.V. is authorised by the Autoriteit Financiële Markten (“AFM”) in the Netherlands (Registration number 15003620) and operating on the basis of a European passport. In certain EEA countries, information is, where permitted, presented by PGIM Limited in reliance of provisions, exemptions or licenses available to PGIM Limited under temporary permission arrangements following the exit of the United Kingdom from the European Union. These materials are issued by PGIM Limited and/or PGIM Netherlands B.V. to persons who are professional clients as defined under the rules of the FCA and/or to persons who are professional clients as defined in the relevant local implementation of Directive 2014/65/EU (MiFID II). PGIM Quantitative Solutions LLC, PGIM Limited and/or PGIM Netherlands B.V. are indirect, wholly-owned subsidiaries of PGIM, Inc. (“PGIM”).

In **Canada**, PGIM Quantitative Solutions LLC relies upon the “International Advisor Exemption” pursuant to National Instrument 31-103 in certain provinces of Canada.

In **Australia**, information is issued by PGIM (Australia) Pty Ltd (“PGIM Australia”) for the general information of its “wholesale” customers (as defined in the Corporations Act 2001). PGIM Australia is a representative of PGIM Limited, which is exempt from the requirement to hold an Australian Financial Services License under the Australian Corporations Act 2001 in respect of financial services. PGIM Limited is exempt by virtue of its regulation by the FCA (Reg: 193418) under the laws of the United Kingdom and the application of ASIC Class Order 03/1099. The laws of the United Kingdom differ from Australian laws.

To the extent that these materials are distributed by PGIM Quantitative Solutions, it is done so under the exemption from the requirement to hold an Australian Financial Services License under the Australian Corporations Act 2001 in respect of financial services. PGIM Quantitative Solutions is exempt by virtue of its regulation by the Securities and Exchange Commission (SEC #801-62692) under the laws of the United States and the application of ASIC Class Order 03/1100.

In **Singapore**, information is issued by PGIM (Singapore) Pte. Ltd. (“PGIM Singapore”), a regulated entity with the Monetary Authority of Singapore under a Capital Markets Services License to conduct fund management and an exempt financial adviser. This material is issued by PGIM Singapore for the general information of “institutional investors” pursuant to Section 304 of the Securities and Futures Act 2001 of Singapore (the “SFA”) and “accredited investors” and other relevant persons in accordance with the conditions specified in Section 305 of the SFA.

In **Hong Kong**, information is provided by PGIM (Hong Kong) Limited, a regulated entity with the Securities & Futures Commission in Hong Kong to professional investors as defined in Section 1 of Part 1 of Schedule 1 of the Securities and Futures Ordinance (Cap.571).

In **Korea**, PGIM Quantitative Solutions LLC holds cross-border discretionary investment management and investment advisory licenses under the Korea Financial Investment Services and Capital Markets Act (“FSCMA”), and is registered in such capacities with the Financial Services Commission of Korea. These materials are intended solely for Qualified Professional Investors as defined under the FSCMA and should not be given or shown to any other persons.

In **Japan**, the investment management capabilities and services described in the attached materials are offered by PGIM Japan Co., Ltd (PGIMJ), a Japanese registered investment adviser (Director-General of the Kanto Local Finance Bureau (FIBO) No. 392). Retention of PGIMJ for the actual provision of such investment advisory services may only be effected pursuant to the terms of an investment management contract executed directly between PGIMJ and the party desiring such services, It is anticipated that PGIMJ would delegate certain investment management services to its US-registered investment advisory affiliate.

SPECIAL RISKS

Foreign investments may be volatile and involve additional expenses and special risks, including currency fluctuations, foreign taxes and political and economic uncertainties. Emerging and developing market investments may be especially volatile. Investments in securities of growth companies may be especially volatile. Due to the recent global economic crisis that caused financial difficulties for many European Union countries, Eurozone investments may be subject to volatility and liquidity issues. Value investing involves the risk that undervalued securities may not appreciate as anticipated. Small and mid-sized company stock is typically more volatile than that of larger, more established businesses, as these stocks tend to be more sensitive to changes in earnings expectations and tend to have lower trading volumes than large-cap securities, creating potential for more erratic price movements. It may take a substantial period of time to realize a gain on an investment in a small or mid-sized company, if any gain is realized at all. Diversification does not guarantee profit or protect against loss.

Emerging markets are countries that are beginning to emerge with increased consumer potential driven by rapid industrial expansion and economic growth. Investing in emerging markets is very risky due to the additional political, economic and currency risks associated with these underdeveloped geographic areas. Fixed-income investments are subject to interest rate risk, and their value will decline as interest rates rise. Unlike other investment vehicles, U.S. government securities and U.S. Treasury bills are backed by the full faith and credit of the U.S. government, are less volatile than equity investments, and provide a guaranteed return of principal at maturity. Treasury Inflation-Protected Securities (TIPS) are inflation-index bonds that may experience greater losses than other fixed income securities with similar durations and are more likely to cause fluctuations in a Portfolio’s income distribution. Investing in real estate poses risks related to an individual property, credit risk and interest rate fluctuations. High yield bonds, commonly known as junk bonds, are subject to a high level of credit and market risks. Investing involves risks. Some investments are riskier than others. The investment return and principal value will fluctuate and when sold may be worth more or less than the original cost.

PGIM QUANTITATIVE SOLUTIONS

AUTHORS

Manoj Rengarajan, CFA, Portfolio Manager
John Hall, CFA, Portfolio Manager
Edward J. Tostanoski III, CFA, Portfolio Manager

CONTRIBUTORS

Marco Aiolfi, PhD, Head of Multi Asset and Portfolio Manager
Lorne Johnson, PhD, Head of Multi-Asset Portfolio Design and Portfolio Manager
Multi-Asset Team

FOR MORE INFORMATION

To learn more about our capabilities, please contact PGIM Quantitative Solutions by email at contactus@pgim.com or by phone in the US at +1 (866) 748-0643 or in the UK at +44 (0) 20-7663-3400.

ABOUT PGIM Quantitative Solutions

As the quantitative and multi-asset specialist of PGIM, we combine the agility of an independently run boutique with the stability and scale of a leading global institutional asset manager*. For over 45 years, we have designed proprietary methods that seek to solve beyond alpha by combining the latest technology with scalable, rigorous risk controls to nimbly build and manage diversified and customized solutions that help solve clients' evolving challenges. We manage portfolios across equities, multi asset and liquid alts for a global client base with $102 billion** in assets under management as of 31-Mar-2024.

*PGIM is the investment management business of Prudential Financial, Inc. (PFI). PFI is the 11th largest investment manager (out of 444 firms surveyed) in terms of worldwide institutional assets under management based on Pensions & Investments' Top Money Managers list published June 2023. This ranking represents institutional client assets under management by PFI as of December 31, 2022. Participation in the P&I ranking is voluntary and open to managers that have any kind of U.S. institutional tax-exempt AUM. Managers self-report their data via a survey. P&I sends the survey to previously identified managers and to any new managers asking to participate in the survey/ranking. No compensation is required to participate in the ranking.

**PGIM Quant provides model portfolios for certain accounts, the assets of which (Assets Under Administration) are included in the total AUM/AUA figure of $101.6 billion, (AUM $98.9 billion and AUA $2.7 billion). In addition, the total AUM/AUA figure of $101.6 billion also includes $1.4 billion of AUM attributable to PGIM Wadhwani LLP (PGIM Wadhwani). PGIM Wadhwani operates as a part of the PGIM Quant business but is a separate legal entity. PGIM Quant and PGIM Wadhwani's respective investment platforms, however, operate independently of each other.