Q2 Multi-Asset Outlook

Mar 2025

PGIM QUANTITATIVE SOLUTIONS

50 YEARS CELEBRATION

Executive Summary

Economic Outlook

- The second Trump administration has hit the ground running, advancing aggressive policy changes on tariffs, immigration, executive branch reform, and cease-fires in Israel and Ukraine. Tariff policies have been particularly disruptive to the economic landscape.
- Central bank responses to tariffs are critically important; if ignored, tariffs could lead to higher prices and lower long-term growth. However, accurately gauging tariff impacts amid other economic factors is difficult, raising the risk of policy errors.
- The Federal Reserve (Fed) has adopted a "wait-and-see" approach, but the futures market is pricing in additional rate cuts to counteract the tariff effects.
- Consumer sentiment has declined, and inflation expectations have risen, reflecting the strain of the new tariff policies.
- Although underlying economic indicators remain solid, as noted by Chair Powell, the Q1 Atlanta GDPNow forecast shows a sharp decline, indicating a potential economic slowdown.
- While a recession is not yet evident in the US data, the risk of a recession over the next year has risen, especially if the trade war escalates and higher tariffs are imposed.
- The Eurozone economy shows signs of weakness. Industrial production is struggling amid headwinds from high input costs and foreign competition. However, increased military spending by NATO nations could provide a stimulative economic boost, even as the European Central Bank continues cutting rates.
- Japan's economy maintains growth, but persistent inflation concerns have prompted the Bank of Japan to raise interest rates.
- China's economy has achieved its growth target through stimulus measures, but the external economic environment poses challenges to sustained growth.

For Professional Investors Only.
All investments involve risk, including the possible loss of capital.

Market Outlook

- Traditional post-election market patterns have been disrupted. While initial equity gains followed the US election, significant volatility surged due to tariff announcements and Fed policy shifts.
- Recent months have seen rotations across asset classes. US markets are lagging due to growth concerns, while international equities and emerging markets are gaining amid improved growth prospects and easing tariff fears. The dominance of growth stocks has waned, reflecting changing market dynamics.
- The Trump administration's focus on growth-negative policies such as tariffs and immigration has heightened recession fears and increased market volatility, posing a significant risk to economic growth.
- The Q1 market pullback has improved US equity valuations, with the forward price-to-earnings multiple on the S&P 500 easing to around 21X, down from nearly 25X at the start of the year. However, risks of policy missteps and geopolitical shocks remain.
- Corporate management sentiment remains positive, and US large-cap earnings expectations are robust, but small-cap earnings face potential downward revisions if the economic outlook deteriorates.
- The risk-return tradeoff between stocks and bonds is mixed, with positive equity-bond correlations diminishing diversification benefits and a less favorable yield gap between bonds and stocks.
- Trade policy uncertainty, fluctuating growth and inflation expectations, and central bank actions are driving increased volatility across asset classes.
- Total return expectations for high yield bonds are solid, supported by higher yields, even as the growth environment remains benign. Meanwhile, global government bonds face pressure from tightening monetary policy and increased fiscal spending. Commodities have a mixed outlook amid inflation hedging and slower growth.
- While US equity valuations have improved slightly, international equities, particularly in emerging markets, offer more attractive valuations. If trade tensions ease and global financial conditions improve, the rotation toward these markets could gain momentum.

Economic Outlook

Tariffs, Trade, and Turbulence Ahead

The second Trump administration has hit the ground running with a slew of measures designed to shake up both policy and the US economy, sending tremors through markets and exposing fault lines in the status quo. The administration's major initiatives have thus far focused on tariffs, tamping down on illegal immigration, executive branch reform (carried out largely by the newly created Department of Government Efficiency – DOGE), and brokering cease-fires in the conflicts in Israel and Ukraine[1]. Among these, tariff policy has emerged as the most disruptive factor for the economic outlook.

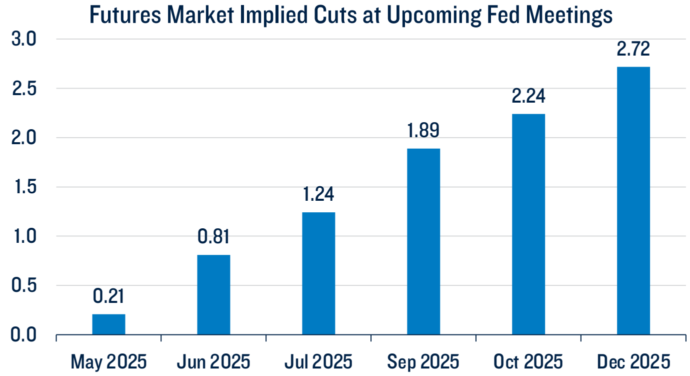
In contrast to the more narrowly focused approach of the first Trump administration, the second administration has adopted broad-based policies that span a wide range of goods and countries. Its aggressive new tariff measures have ignited a trade war with major US trading partners, creating a rapidly evolving situation that has kept markets on edge. Market sell-offs have followed each new announcement, while postponements or reversals have provided only brief respites. In fact, policy shifts occurred multiple times even during the writing of this piece, and further changes are almost certain by the time this is read. The heightened uncertainty around policy direction significantly increases near-term downside risks. The accompanying sidebar on page 4 provides quantitative insight into the recent increase in economic policy uncertainty.

Turning to tariff policies themselves, economists generally agree that, all else being equal, tariffs will reduce a country's long-run GDP growth rate. In the textbook aggregate supply and demand model, tariffs act as a negative aggregate supply shock, leading to higher inflation and slower GDP growth in the short term. However, the ultimate impact of tariffs depends heavily on how central banks respond. If central bank policy ignores the effects of new tariffs[2], the inflation rate would temporarily rise before fading, leaving the price level permanently higher. GDP growth would take a short-term hit but would eventually settle into a lower economic growth trajectory. Unfortunately for central banks, the reality is far more complex. Distinguishing the specific impact of tariffs from other shocks in real time is challenging, increasing the risk of policy mistakes.

Currently, the Federal Reserve (Fed) is taking a wait-and-see approach. After cutting rates by 100 basis points (bps) in late 2024, the Fed left rates unchanged in Q1 2025 as progress toward its 2% inflation target stalled. In a speech delivered in early March, Chair Powell noted that the US economy remains in a good place but acknowledged significant uncertainty surrounding the effects of policy changes from the new administration. Powell emphasized that the Fed does not feel pressured to "be in a hurry" to tweak policy. Nevertheless, the futures market is now pricing in roughly three rate cuts by year-end, compared to just 1.5 cuts anticipated before the tariff announcements and subsequent market sell-off.

While additional rate cuts may provide some relief to consumers – particularly as credit card and auto loan delinquencies rise under the strain of elevated interest – their impact must be weighed against the effect of the tariffs driving them. What rate cuts giveth, tariffs taketh away.

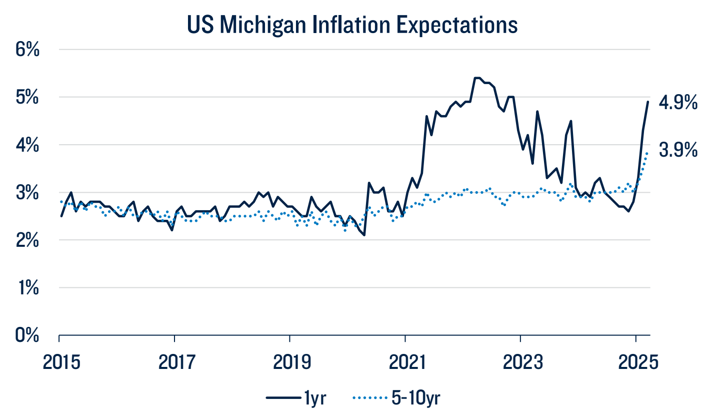
Figure 1: Futures Market Prices Roughly Three Cuts by Year-End 2025



Source: Bloomberg, as of Mar 20, 2025

So far, the impact of the tariffs has been felt primarily in asset markets, though some survey-based economic data is also beginning to reflect the strain. For example, the University of Michigan March (preliminary) survey for inflation expectations climbed to its highest level since November 2022 – a potentially self-fulfilling prophecy for future inflation. At the same time, overall consumer sentiment dropped to its lowest level since November 2022. However, not all survey-based data has turned negative. Business confidence indicators have remained resilient, particularly in the services sector, which constitutes a larger share of the economy and is less directly exposed to the impact of tariffs.

Figure 2: University of Michigan Inflation Expectations Jump Higher After Tariff News

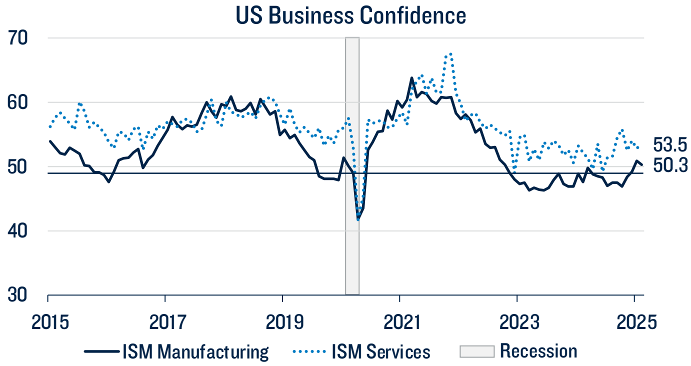


Source: Bloomberg, as of Mar 14, 2025

[1] Given the narrow Republican majority in Congress, the administration has prioritized areas where the President has (or has been delegated) authority to act without Congress. Budget realities prompted Congress to pass a continuing resolution in mid-March to avert a government shutdown. The next step is passing a budget resolution for the upcoming fiscal year through the reconciliation process.

[2] Best practices in monetary policy generally suggest ignoring supply shocks, such as tariffs. However, standard monetary policy rules, like the Taylor rule, may recommend adjustments in interest rate policy depending on how forecasts for GDP growth and inflation respond to new fiscal policies.

Figure 3: Services Confidence Holding Up, but Manufacturing Mixed

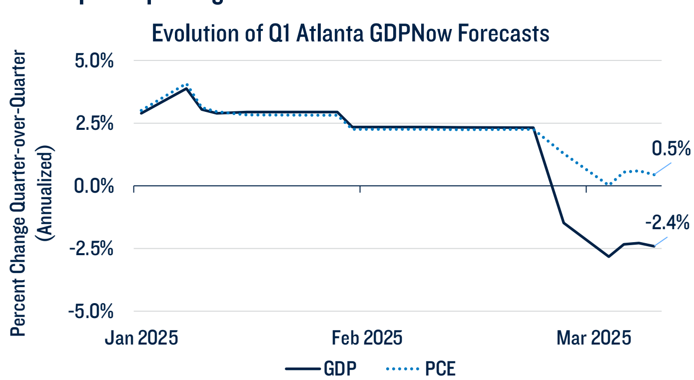


Source: Bloomberg, as of Mar 13, 2025

As Chair Powell has noted, the underlying conditions of the economy have held up. Key metrics used by the NBER to determine recessions still point to an ongoing expansion. However, the most recent major monthly US economic indicators, such as the unemployment rate and Consumer Price Index (CPI), reflect periods from early February – before many of the new tariffs took effect. As a result, these indicators have largely continued to follow recent trends.

Despite the strong economic data, the Q1 Atlanta GDPNow – a real-time estimate of current-quarter real GDP growth – has dropped sharply, predicting a -2.4% Quarter-over-Quarter (QoQ) annualized decline in GDP (as of March 6). Economists at Goldman Sachs have pointed out that the threat of tariffs triggered a surge in gold imports, which GDPNow includes in its calculation, but will ultimately be excluded from the official GDP release. But even after accounting for this distortion, the latest data suggests a modest slowdown in the pace of economic growth in Q1 compared to the post-COVID pace. For instance, the GDPNow's forecast for consumer spending growth is now just modestly positive, a significant drop from the robust 3.5%+ annualized growth seen in the second half of 2024.

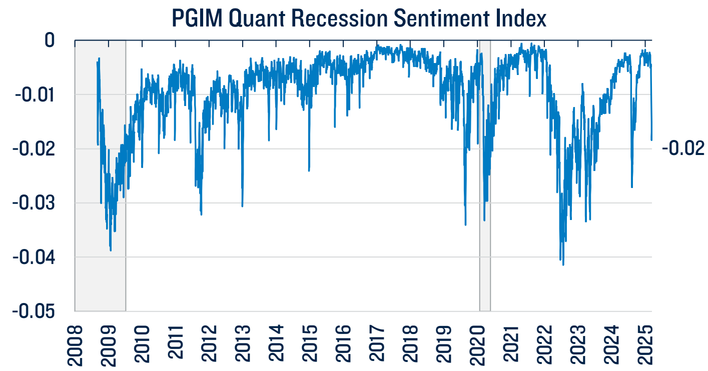
Figure 4: Atlanta GDPNow Headline Forecast Dips; Consumption Spending Resilient



Source: Bloomberg, as of Mar 13, 2025

So while a recession is not yet evident in the US data, the risk of a recession over the next year has risen, especially if the trade war intensifies and higher tariffs become a reality.

Figure 5: Economic News Sentiment Turns Increasingly Negative



Source: PGIM Quant as of Mar 17, 2024

Note: more negative values are consistent with a larger number of recent news articles using words related to recessions.

Shifting focus internationally, the challenges of interpreting economic trends are even greater due to the lack of hard data covering the period impacted by new tariffs. The European economy, in particular, did not enter 2025 firing on all cylinders. Eurozone GDP grew just 0.2% QoQ in Q4, following mixed performance in Q3. The industrial sector continues to face headwinds from high input costs and stiff foreign competition. These struggles have fueled concerns about weak growth and potential downside risks to the inflation outlook. Despite core inflation remaining modestly above 2%, the European Central Bank (ECB) has responded by steering policy rates toward neutral. This year alone, the ECB has cut policy rates 50bps, following a 100bps reduction in 2024, bringing the deposit rate to 2.5%. But not all news out of Europe is bleak. NATO governments across the continent have steadily increased military spending, which could provide a stimulative boost to the economy.

The Japanese economy entered 2025 on a stronger footing, with GDP increasing over 2% QoQ annualized in Q4 2024 – marking its third consecutive increase. However, inflation remains a persistent concern. Nationwide headline inflation climbed to 4% in January, just shy of the 40-year high of 4.3% reached in early 2023. After dipping below 2% in mid-2024, core inflation has also resumed its upward trajectory. While the Bank of Japan (BoJ) left policy rates unchanged in Q4, it kicked off 2025 with a rate hike in January. Adding to inflationary pressures, major companies have agreed to wage increases as part of spring negotiations, which could sustain upward pressure on inflation – and consequently, on policy rates.

China reported robust GDP growth in Q4, allowing it to achieve its 5% annual growth target. The economy was supported by various fiscal and monetary stimulus measures aimed at reversing the slowdown tied to the real estate sector. However, given the challenging external economic environment, these measures may prove insufficient to sustain the target, potentially necessitating further expansion.

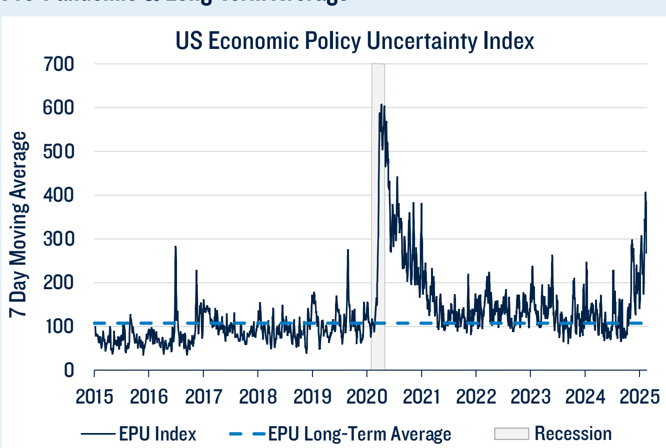
Policy Flux: How Uncertainty is Shaping Markets and Confidence

Today's investment environment is brimming with economic policy uncertainty, from shifting trade policies to unpredictable fiscal moves. The US Economic Policy Uncertainty (EPU) Index has steadily climbed, surpassing pre-pandemic levels and its long-term average (Figure 6A), creating a complex landscape that is challenging to hedge against. Understanding policy-driven volatility is critical for asset allocation, as a forward-looking strategy can help portfolios absorb shocks, capture alpha, and distinguish proactive investors from reactive ones.

Economic policy uncertainty spiked under both Trump administrations, fueled by abrupt shifts in trade and fiscal policies (Figure 6B). In February 2025, trade policy uncertainty reached a staggering 2446 – more than 17 times its long-term average of 136. These policy swings shape market expectations, influence inflation forecasts, and cloud the Fed's rate outlook.

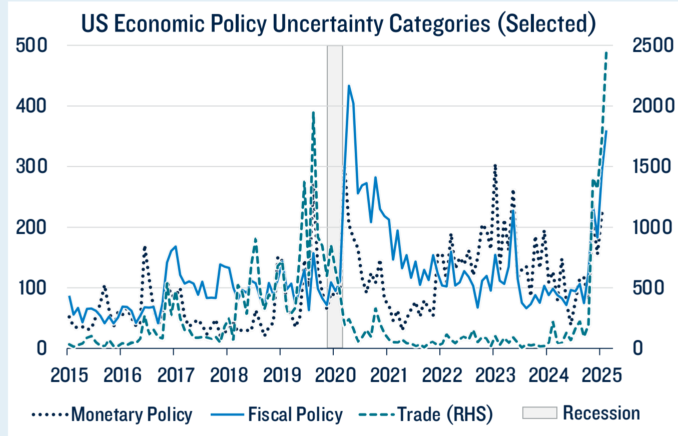
- **Trade Policy Uncertainty:** Frequent use of tariffs, particularly in disputes with China and during USMCA negotiations, has created significant unpredictability. While strategic from a game-theory perspective, outcomes depend heavily on trade partners' responses, perpetuating uncertainty across supply chains, pricing, and margins.
- **Fiscal Policy Uncertainty:** With US debt surpassing $36 trillion, proposed tax cuts and spending plans have raised concerns about fiscal sustainability and bond market stability. Without offsetting spending cuts, rising deficits could pressure interest rates and threaten the dollar's global reserve currency status.
- **Monetary Policy Uncertainty:** Uncertainty in trade and fiscal policy complicates the Fed's decision-making. Tariff-driven inflation may necessitate rate hikes, while volatile policy changes risk either Fed overreaction or delayed responses. Coupled with fiscal deficits, these factors amplify market unpredictability.

Figure 6A: Economic Policy Uncertainty Surpasses Pre-Pandemic & Long-Term Average



Source: Bloomberg. Data from Jan 01, 2015 – Feb 28, 2025.

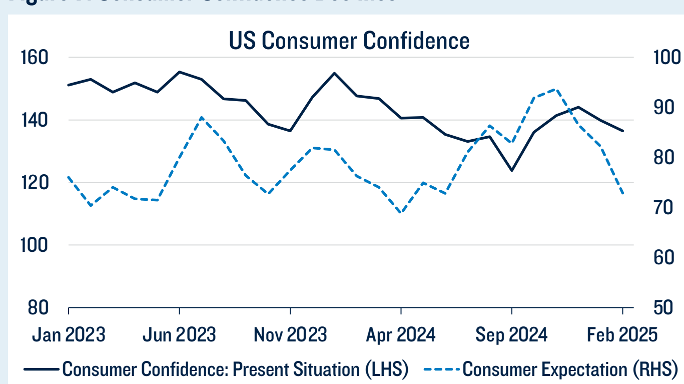
Figure 6B: Economic Policy Uncertainty Spikes Across All Metrics



Source: Bloomberg. Data from Jan 2015 – Feb 2025.
Note: The grey bar denotes the recession dated by NBER.

Despite elevated uncertainty, business confidence remains resilient (see Figure 3), while consumer confidence shows signs of weakening (Figure 7). Research by Stanford's Nicolas Bloom shows that heightened uncertainty slows investment and hiring, with asymmetric effects: uncertainty spikes cause sharper downturns, while periods of clarity provide only modest recovery benefits[3]. Investors may face rising risk premiums, heightened volatility, and deeper drawdowns, with recoveries likely to remain slow and uneven.

Figure 7: Consumer Confidence Declines



Source: The Confidence Board/Haver Analytics. Data from Jan 2023 – Feb 2025.
Note: Both series are seasonally adjusted.

Prolonged periods of high policy uncertainty can have lasting repercussions on markets, dampening economic growth and investor confidence. Investors should remain agile and explore portable alpha overlays to enhance returns without altering core allocations. Option-based strategies, such as buffered ETFs – which limit downside risk while preserving some upside potential – can also help investors manage market uncertainty. To navigate today's uncertain investment landscape, staying informed, maintaining flexibility, and preparing for heightened volatility is essential.

[3] Bloom, N. (2009). The impact of uncertainty shocks. Econometrica, 77(3), 623-685.
Bloom, N. (2014). Fluctuations in uncertainty. Journal of Economic Perspectives, 28(2), 153-176.
Bloom, N., Floetotto, M., Jaimovich, N., Saporta-Eksten, I., & Terry, S. J. (2018). Really uncertain business cycles. Econometrica, 86(3), 1031-1065.

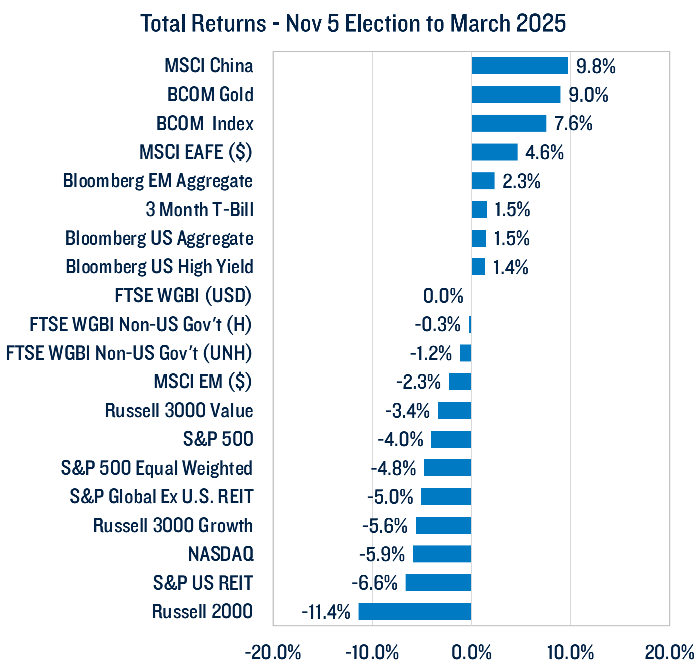
Market Outlook

Navigating Rotations and Drawdowns

Financial market participants have swiftly cast aside their traditional playbooks for predicting market behavior following US elections. Historically, equity markets have turned in muted performance in the run-up to elections, followed by a post-election relief rally. Initially, markets appeared to follow this pattern, with US equities posting strong gains into early Q1, supported in part by robust economic data despite elevated valuations. However, international equities reacted negatively after then-President-elect Trump announced plans to impose additional tariffs on Mexico, Canada, and China.

Subsequently, markets stumbled as the Fed pivoted hawkishly in December. Over the past couple of months, we've observed rotations across major asset classes, with US markets lagging due to weaker growth expectations, while China and EAFE stocks have gained amid improving growth prospects and a moderation of extreme tariff concerns. Growth stocks, which were the market darlings of 2024, have lagged value stocks year to date. The dollar, previously buoyed by a much stronger US economy, has softened, providing support to emerging market assets. Meanwhile, gold and commodities have also benefited from elevated inflation concerns.

Figure 8: China and Commodities Outperform Post-US Elections

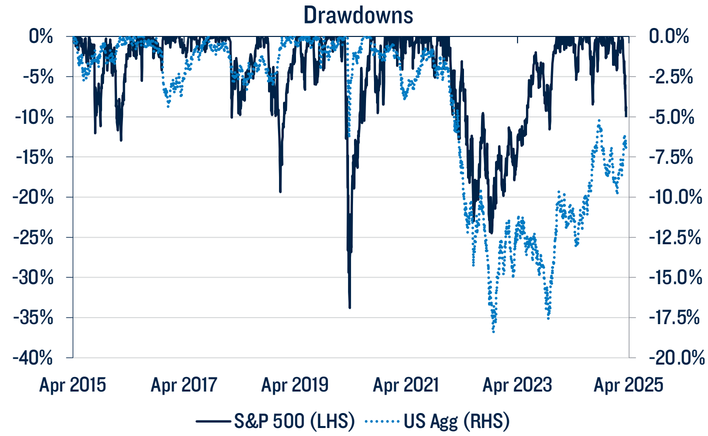


Source: Bloomberg as of Mar 14, 2025

US stocks sold off as the whiplash from tariff-related news heightened recession fears and raised concerns about a potential correction – or worse. In recent years, US equities have faced several 5-10% drawdowns (e.g., the 2024 yen carry trade unwind) along with larger drawdowns in the 10-20% range, such as those during the intense growth scares of 2015-16 and 2018. As of this writing, equity markets are down nearly -10% from peak to trough. While further downside to risk assets remains possible, the extent of additional declines is likely limited, barring a material increase in the prospects of an economic recession.

While the macro environment remains modestly supportive of risk assets, the Trump administration's focus on growth-negative policies, such as tariffs and immigration, as growth-positive policies like taxes and deregulation take a back seat, is likely to keep risk assets volatile in the near term. As highlighted in the Economic Outlook, while a recession is not yet evident in US data, the risk of one over the next year has risen – particularly if the trade war escalates and higher tariffs are implemented.

Figure 9: Volatility in Context: Recent Market Drawdowns



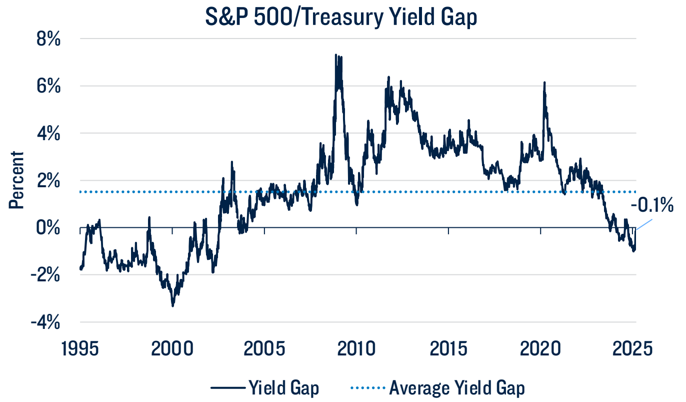
Source: Bloomberg as of Mar 14, 2025

Stock valuations have improved following the Q1 pullback, with the forward price-to-earnings multiple on the S&P 500 easing to around 21X, down from nearly 25X at the start of the year. While the Fed has taken a cautious stance on future policy moves, the Trump administration risks triggering a policy misstep by overplaying its tariff hand. Additionally, the potential for significant geopolitical shocks – such as escalation of the Russia-Ukraine conflict – persists, despite tentative signs of ceasefire negotiations.

A critical factor in assessing the outlook for risk assets in the coming months will be the confidence firms have in their future prospects. High-frequency measures of management sentiment, derived from our company transcript analysis, indicate that both US and global sentiment have continued to improve year to date, reaching even higher levels in mid-March. Earnings growth expectations for US large-cap companies stand at around 11% for 2025. However, full-year 2025 expectations for small-cap companies have been revised downward since the beginning of the year to approximately 26% year-over-year, with the risk of further downward revisions if the economic outlook worsens.

The risk-return tradeoff between stocks and bonds is currently mixed. Equity-bond correlations have recently turned positive again, diminishing the diversification benefits typically offered by bonds. Furthermore, the current yield gap between stocks and bonds remains significantly below its long-term historical average of 1.5%, indicating a less favorable risk-return profile for stocks relative to bonds.

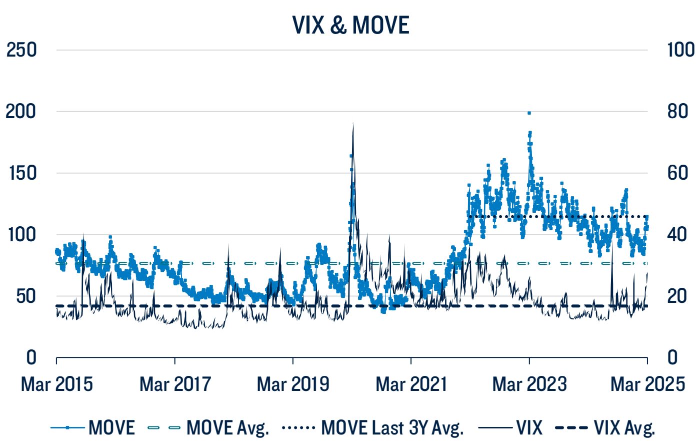
Figure 10: US Stock Valuations Remain Unfavorable Compared to Bonds



Source: Bloomberg as of Mar 14, 2025

Fixed income yields have fluctuated within a wide range since last year, driven by alternating concerns about growth and inflation. Recently, interest rates have shifted rapidly from the upper end of this range – when credit spreads were tight – to the lower end now, accompanied by widening credit spreads. While a slower growth environment and expectations of rate cuts could provide support for bonds, bouts of inflation concerns are likely to keep yields range-bound. Furthermore, the potential support for bond yields from central bank policy may be more limited compared to previous years as major central banks, including the Fed and the BoJ, have been signaling a shift toward higher neutral rates.

Figure 11: Get Used to Higher Volatility

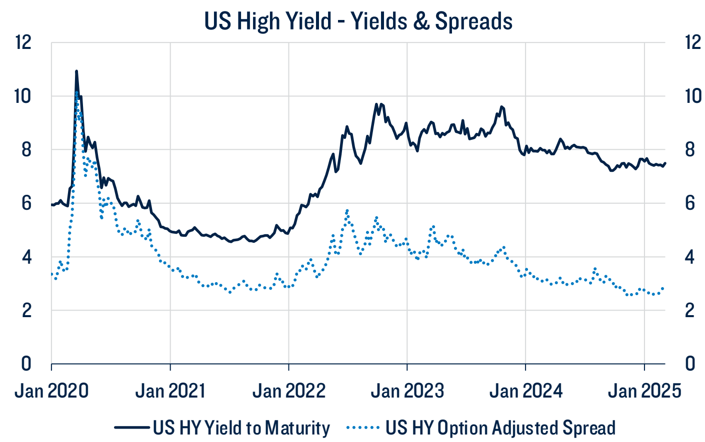


Source: Bloomberg as of Mar 14, 2025

One key takeaway from Q1 developments is that the heightened noise surrounding trade policy is likely to sustain day-to-day volatility across individual asset classes. The ongoing tussle between shifting growth and inflation expectations, coupled with unexpected developments, further adds to volatility. As shown in Figure 9, the recent spike in the VIX aligns with other spikes observed over the past year but appears to be normalizing after two years of relatively low volatility during bullish markets. In contrast, fixed income volatility has settled at a higher level over the past three years, driven by the Fed's rate hike cycle and persistent inflation pressures, which are likely to keep volatility elevated.

Credit spreads have widened slightly, but total return expectations for high yield bonds remain solid, supported by higher starting nominal yields, even as the growth environment remains benign. Global government bonds, however, are generally under pressure. Japanese Government Bond (JGB) yields are likely to remain under pressure as the BoJ continues its tightening stance amid rising inflation. Meanwhile, German bond yields have risen, driven by expectations of increased fiscal spending to bolster security and infrastructure, as well as potentially reduced safe haven demand. The outlook for commodities is mixed, with increased demand from inflation hedging offset by the drag of a slower growth environment.

Figure 12: Solid Total Return Expectation for High Yield Bonds



Source: Bloomberg as of Mar 14, 2025

Our 2025 Q1 Capital Market Assumptions highlighted a higher 10-year forecast for emerging markets and international equities compared to US large-cap equities, largely due to more attractive valuations. While the Q1 pullback in US stocks has somewhat improved US equity valuations, potential structural changes – particularly in Europe – could further enhance the strategic appeal of international equities. Although the "US Exceptionalism" trade has faced headwinds in recent months, it is difficult to confirm a definitive shift trend amid the fog of the ongoing tariff war. Should tariff concerns subside in the coming months and global financial conditions ease alongside a moderating dollar, a sustained rotation into international assets could gain momentum.

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 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

50 YEARS CELEBRATION

AUTHORS

Manoj Rengarajan, CFA, Portfolio Manager
John Hall, CFA, Portfolio Manager
Di Wang, PhD, Multi-Asset Researcher
Sameer Ahmed, 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
PGIM Quant Multi-Asset Team

FOR MORE INFORMATION

To learn more about our capabilities, please visit www.pgimquantitativesolutions.com.

ABOUT PGIM Quantitative Solutions

PGIM Quantitative Solutions is a pioneer of quantitative investing. For 50 years, PGIM Quant has been helping investors around the world solve their unique needs by leveraging the power of technology, data, and advanced academic research. Since our founding in 1975, our time-tested process, based on academic, economic and behavioral foundations, has been used to successfully navigate a wide variety of market environments.

Today, we manage systematic equity and multi-asset portfolios against a wide range of benchmarks. PGIM Quant's global client base includes corporate and public pension plans, endowments and foundations, sovereign wealth funds, multi-employer pension plans, and sub-advisory accounts for leading financial services companies. As of December 31, 2024, PGIM Quant managed, advised on, or administered approximately $111 billion of client assets*.

*PGIM Quant provides model portfolios for certain accounts, the assets of which (Assets Under Administration) are included in the total AUM/AUA figure of $111.3 billion, (AUM $108.5 billion and AUA $2.8 billion) as of December 31, 2024.