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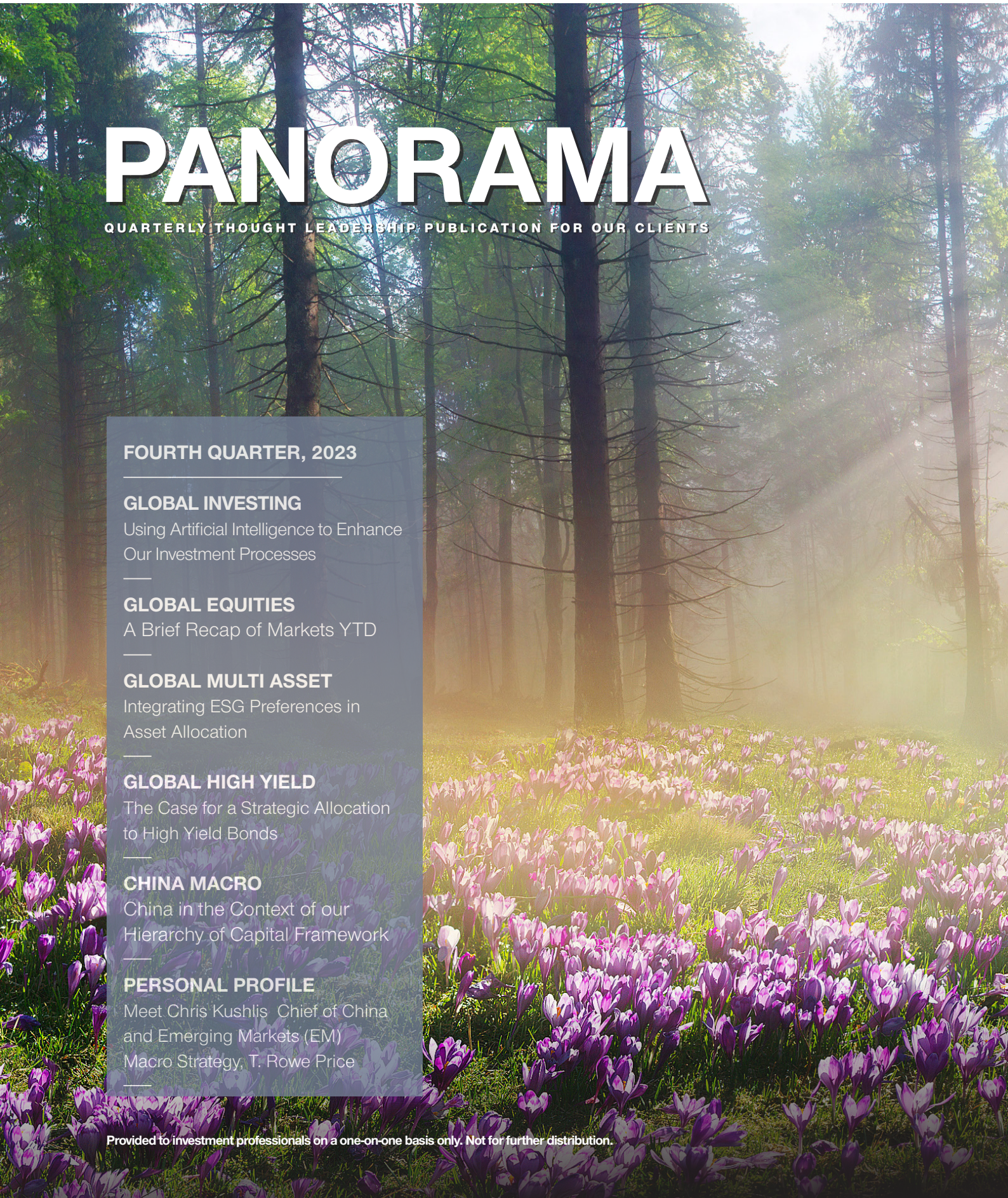

PANORAMA

QUARTERLY THOUGHT LEADERSHIP PUBLICATION FOR OUR CLIENTS

FOURTH QUARTER, 2023

GLOBAL INVESTING
Using Artificial Intelligence to Enhance Our Investment Processes

GLOBAL EQUITIES
A Brief Recap of Markets YTD

GLOBAL MULTI ASSET
Integrating ESG Preferences in Asset Allocation

GLOBAL HIGH YIELD
The Case for a Strategic Allocation to High Yield Bonds

CHINA MACRO
China in the Context of our Hierarchy of Capital Framework

PERSONAL PROFILE
Meet Chris Kushlis Chief of China and Emerging Markets (EM) Macro Strategy, T. Rowe Price

Provided to investment professionals on a one-on-one basis only. Not for further distribution.

WELCOME.....

.....to the fourth quarter 2023 edition of Panorama, T. Rowe Price's investment magazine for Asian investors.

Looking back on 2023, the year delivered three major surprises to investors. First, the relative resilience of the developed economies given initial expectations of recession. Second, the rapid economic re-opening of China and how quickly the post-Covid rebound faded. Third, few in January foresaw how strongly the AI (artificial intelligence) investment theme would come to impact global equity markets. No doubt further surprises lie ahead, underscoring the need for investors to maintain a well-diversified global portfolio.

In our lead article, T. Rowe Price's CEO and President, Rob Sharps, reveals how in future AI is likely to play a key role in investment management, as innovative AI tools help to boost human decision-making. Rather than automate decision-making, the aim is to empower our portfolio managers with new data and insights, bringing fresh perspectives to their investment process.

Portfolio Specialist Rahul Ghosh in our second article provides a brief recap of global stock markets year-to-date: how we got here and where we might be headed in the final months of 2023. Many of our clients have been asking about the dominance of the "Magnificent Seven" U.S. mega-cap technology stocks in index returns. However, Rahul argues that there is still a deep pool of stocks with good prospects to choose from.

Our Global Multi-Asset Solutions team show how adding a third dimension to the traditional two-dimensional efficient frontier of portfolio returns and risk can incorporate ESG preferences. Wenting Shen and Nathan Wang employ a consistent ESG scoring methodology across asset classes to drive the asset allocation of more ESG-aware portfolios

The global high yield (HY) bond market, established in the U.S. in the mid-1980s, is arguably the world's most enduring and successful post-war financial innovation. Portfolio Manager Kevin Loome and Portfolio Specialist Ashley Wiersma argue that HY bonds have a key role as a strategic long-term investment and deserve a place in any well-diversified global multi-asset portfolio.

Next, Chris Kushlis, Chief of China and Emerging Markets Macro Strategy at T. Rowe Price, and Samy Muaddi, Head of Emerging Markets Fixed Income, view China through the lens of their "Hierarchy of Capital" framework in order to better understand the Chinese government's policymaking objectives, the financial constraints that they face, and the tradeoffs they manage between the two.

Finally, in our Personal Profile interview we spoke with Chris Kushlis. We asked Chris about his role and responsibilities as a macro strategist at a bottom-up investment manager like T. Rowe Price.

As always, we welcome comments and feedback on Panorama. Our contact details can be found on page 26 of the magazine.

T. Rowe Price Australia

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USING ARTIFICIAL INTELLIGENCE TO ENHANCE OUR INVESTMENT PROCESSES

Driving deliberate innovation with AI tools to boost human decision-making

- Through our New York Technology Development Center, established six years ago, T. Rowe Price has developed artificial intelligence (AI) tools that seek to enhance client outcomes.
- Our approach focuses on "intelligent augmentation"—AI designed to help deepen the insights of our investment professionals.
- Our Data Insights Group is developing a solution that will incorporate a large language model to help our analysts and portfolio managers gain insights from massive internal and external datasets.

Rob Sharps
Chief Executive Officer and President

The launch of ChatGPT in November 2022 was a watershed moment. It unleashed a huge wave of interest in generative artificial intelligence (AI) and its possibilities. Leaders in virtually every industry across the globe are now evaluating how their businesses may be impacted by AI—and asset management is no exception.

While its popularity is relatively new, AI itself is not new to T. Rowe Price. For the past six years, we have been investing in capabilities around data science and machine learning to support our business and pursue positive outcomes for clients. Throughout this journey, we've been exploring how AI can be harnessed to connect our investment professionals to our firm's wealth of knowledge, which is built on decades of fundamental research and learning.

To this end, our approach is one of "intelligent augmentation" (IA). Rather than automate decision-making, we seek to empower our decision-makers with additional data and insights, bringing new perspectives within the existing investment process. We believe this approach has the potential to transform the ways we work and enhance the outcomes we deliver for clients.

In addition to the benefits offered by generative AI, we believe our powerful, collaborative research approaches help to accelerate the learning process. It brings together senior leaders, portfolio managers, analysts, data scientists, software engineers, and user experience designers in a truly collaborative way. By supporting collective learning, it enables us to effectively navigate the rapidly changing landscape of AI technology.

> The sheer amount of information available on every potential investment we analyze is vast and continues to grow.

A Model for Intelligent Augmentation

Recently, our Data Insights Group has focused on the potential of large language models (LLMs) to improve the delivery of data and insights to our portfolio managers and analysts. LLMs, of which ChatGPT is the most famous example, are computerized language models that are trained on vast amounts of text to generate human-like responses to queries or prompts.

The ability of LLMs to instantly analyze vast amounts of data could prove invaluable. The sheer amount of information available on every potential investment we analyze is vast and continues to grow. Given the immense amounts of publicly available research and a deep archive of knowledge from our internal research platforms, technologies such as natural language processing (NLP) are becoming a necessity to help analysts retrieve and distill information.

To address this challenge, our Data Insights Group is developing a solution that would incorporate all the data and research we've amassed over many years to make that information significantly more accessible and retrievable by the appropriate investment adviser.

A solution that leverages an LLM and is tailored to the needs of our analysts and portfolio managers has multiple uses, which we classify as the three C's: consumption, characterization, and creation.

Consumption: This involves how data and insights are retrieved for analysis. Consumption offers the biggest potential productivity gains in the near to medium term. An investment analyst might leverage an LLM to help learn more about a potential investment. The LLM facilitates this by rapidly analyzing and summarizing an aggregate set of information sources.

The analyst will then be able to conduct a back-and-forth conversation with the LLM to refine the request. This would enable an analyst to spend more time focused on evaluating the differentiating factors relating to individual companies that might make good long-term investment prospects—through fundamental analysis, factor analysis, or insights from management interviews.

Characterization: This refers to the ability of AI to analyze unstructured data (such as text or images) to uncover complex but useful patterns that might otherwise be hard to identify. For example, academics in data science have analyzed years of the language used in 10-K reports. They've discovered a correlation between subtle changes in the presence of negative or positive words in those reports and subsequent stock returns. In a similar vein, we see huge potential in AI's ability to review, in seconds, how sentiment on a stock has changed over time and to compare that with multiple data sources.

Creation: This refers to the way an LLM might also be used to draft content, including insights, investment updates, meeting notes, and other written materials. Automating aspects of content creation that were previously manual means that analysts can focus on more value-added analysis and decision-making.

Enhanced, Not Replaced, Human Decision-Making

While AI-powered tools have significant potential to automate tasks and magnify the insights of our portfolio managers and analysts, we are also cognizant of the potential risks and the need for people to monitor and manage them.

One key risk is bias. AI accesses vast amounts of information but cannot determine the reliability of that information. If the data used by an AI-powered tool are biased, the algorithms created using that data will also be biased. Even the way a question is posed to an AI tool, known as a "prompt," can introduce

behavioral bias. For example, a negatively formulated prompt—such as “find holes in my thesis”—increases the risk of a negatively biased response, which may not be supported by the facts.

Another risk is around transparency. AI models can be complex and opaque, making it difficult to trace the basis of a response. This will clearly be a focus of regulatory scrutiny as capabilities evolve. We are also cognizant of privacy and security risks, as large volumes of data are consumed in training and using AI models.

> Our preferred pathway is to harness AI to improve human decision-making....

Such risks warrant caution in the adoption of AI and the application of its outputs while our teams work to unlock its potential. Ultimately, we believe that investment processes augmented by AI will require human oversight and governance for successful active management.

Our preferred pathway is to harness AI to improve human decision-making, create more efficient processes, and enable associates in key functions to focus on tasks that generate the most value. The journey we began six years ago, with a collaborative team of data scientists and investment associates, positions us to capitalize on the enormous potential of this rapidly evolving landscape. ■

OUR AI JOURNEY—BUILT ON COLLABORATION

Our AI journey began in early 2017, when we established a Technology Development Center (TDC) in New York City. We recruited a diverse team of technologists (data scientists, data engineers, application developers, and user experience designers) to build new capabilities for the firm. Led by Jordan Vinarub, our head of the TDC, we created a Data Insights Tech team with a mission to generate data, applications, and insights to support decision-makers across the business.

The team initially partnered with our Marketing and Business Intelligence Groups to leverage the vast amount of data to drive personalized content and offerings for clients. The team focused on building data science and machine learning solutions to empower our clients with more knowledge and ideas.

In late 2018, Vinit Agrawal was appointed to head up a new Investment Data Insights team. Its objective has been to strengthen the investment process through alternative data and data-driven insights. Vinit partners with Jordan to drive our efforts in NLP, alpha generation models, and alternative data.

The onset of the coronavirus pandemic at the start of 2020 provided new opportunities to put their research to work. The investment teams sought additional research, access to alternative data, and new insights based on timely information. Confronted with a dramatic increase in the amount of research generated, the Data Insights Tech team helped create a new platform to showcase insights and promote internal collaboration.

In contending with the remote working environment compelled by the pandemic, innovation and collaboration were essential. The platform they created enabled our insights ecosystem to flourish through shared research, projects, and the continuous generation of thought leadership.

The business and technology teams partnered closely with our quantitative and fundamental investment professionals to address a number of opportunities across the investment platform. This ultimately resulted in new solutions for detecting environmental, social, and governance themes in earnings call transcripts; the NLP analysis of SEC filings; and the derivation of new insights through the use of alternative data.

With the release of OpenAI’s ChatGPT in late 2022, its user base rapidly grew to over a billion users in a matter of months. The Data Insights Group was uniquely positioned to respond, conducting research and building proofs of concept to leverage the technology internally. The team continues to collaborate across the firm and operates as the epicenter of our work on AI today.

While AI technology is new and evolving, our approach to realizing its potential in asset management is consistent with a legacy of collaboration and intellectual curiosity that we value at T. Rowe Price. We like to say, “AI is all about the people.” Associates across our firm are engaged in a shared pursuit of solutions to enhance our research ecosystem and support our clients’ investment goals.

A BRIEF RECAP OF MARKETS YTD

How we got here, where we might be headed.

Rahul Ghosh
Portfolio Specialist,
Global Equity Dividend Strategy

Now that the dog days of summer are over, the earnings season is done and the traditional seasonal lull in markets has ended, many clients are asking "Where do we go from here?"

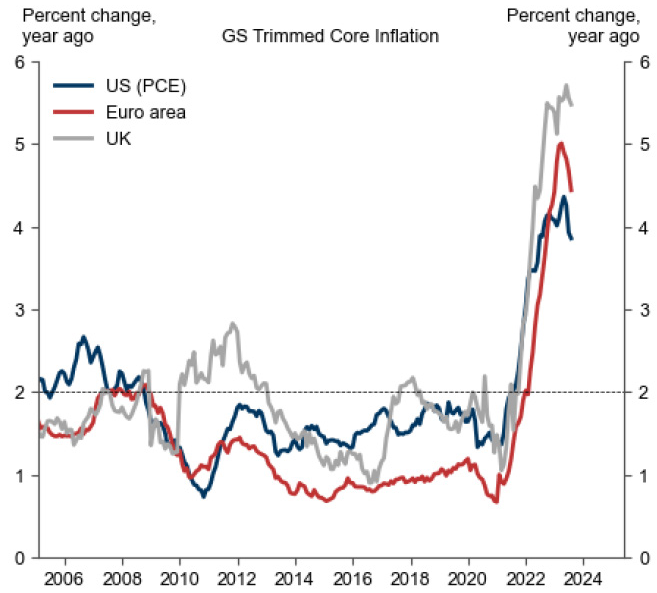
The year so far for many investors has been, to put it kindly, confusing, if not confounding. We entered 2023 with market participants predicting a value-driven environment, with full year market returns expected to be back-end loaded. A weak H1 due to slowing economic growth and tighter money would be followed by a decent H2 as investors anticipated better times in 2024.

Fast forward to today, and what have we seen? The MSCI All Country World Index Gross Return is up 10.5% YTD (as of October 31 2023), with Growth (+18.4%) outpacing Value (+3.1%) over the first nine months (as of September 30 2023). This after the market has given back some performance over the past three months.

The World We Live In Has Changed...

Coming in to 2023, financial markets seemed to revolve around what I have termed the I-R-R conundrum. If **Inflation** remained high, **Rates** would need to stay restrictive until we likely entered a **Recession**.

FIGURE 1: Developed Economy Inflation Is Still High
Trimmed mean consumer core inflation



Past performance is not a reliable indicator of future performance.
US wage tracker is composition-adjusted in 2020 and 2021.
As of September 4, 2023.
Source: Goldman Sachs Global Investment Research.

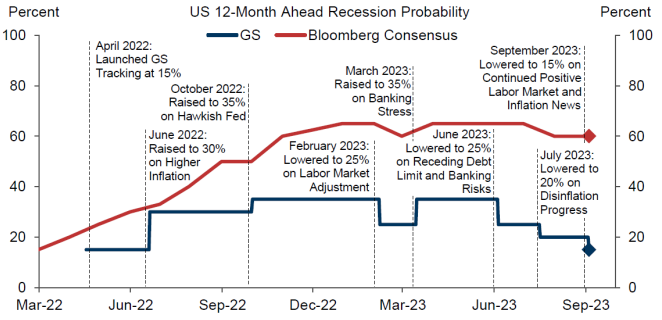
While we broadly agreed with consensus that inflation and interest rates were likely to be higher going forward, we were more constructive than the market on the issue of recession risk, primarily as we found it hard to discern a "credit-bubble-cycle" that in the past typically led to deep recessions. That is still our thinking today, so it's worth diving a bit into what drives those views.

Inflation And Interest Rates Are Interlinked...

When we look at the global economy during the past decade and a half, (i.e. post the Global Financial Crisis), it has been shaped by a few key things:

- A new disinflationary environment unfolded as a result of the combination of a de-leveraging US consumer (the end of the 'shop-'til-you-drop' phenomenon), cheap and abundant energy supplies from U.S. shale oil and Russian gas, and continued globalization.
- We had maximum liquidity support and low interest rates from Central Banks, globally. They intentionally had investors' backs, encouraging a robust attitude toward risk taking. This in effect led to a situation where the cost of capital for business became artificially suppressed. And due to the deflationary aspects mentioned above, inflation was not an issue for any of the major economies.
- In that benign environment, with relatively low volatility, one could afford to take a view on duration and just identify the fastest growing industries/companies/regions and invest in them without too much to worry about. It was that simple!

FIGURE 2: Consensus Still Sees 60% Chance Of A U.S. Recession
U.S. 12-month ahead recession probability



As of September, 2023.
Sources: Bloomberg LP, Goldman Sachs Global Investment Research.

The Post-Pandemic World...

Looking forward from 2022 onwards, it soon became apparent that things had changed fundamentally.

- Globalization was beginning to move toward "Re-Localization". A combination of the supply-chain SNAFUs that became apparent during the Covid years and the on-going geo-political tensions between China and the U.S. saw a move towards more local production or diversity in supply chains – be it Apple beginning production in India or Tesla building plants in Europe. Add to that the focus on re-shoring manufacturing in the US that is being brought on by the Inflation Reduction Act amidst a tight labor and equipment market and it raises the possibility that the Fed's 2% inflation target will take significantly longer to achieve.
- Energy is another inflation risk to the upside. There are signs that the cost curve in Energy (especially U.S. shale) has reached a bottom and the Russian oil industry is also likely to see falling productivity as investment decreases. Other drivers of higher energy prices could include the recovery and normalization of energy demand in China, or a (normal) cold winter in Europe.
- All of this with the continued strength in the U.S. economy (U.S. consumers are estimated to still have in the region of USD500 billion in excess savings) suggests a likelihood of inflation being stickier than previously expected. That in turn, will likely pressure the Fed to keep rates higher for longer. In addition, the possibility of Japan moving away from Yield Curve Control, and the resulting oversupply in U.S. Treasuries is also likely to add upward pressure on rates.

- The result is we have moved into an asynchronous investment world where portfolio construction and risk management matter much more for investors than in the QE era.

Taken together, however, it's important to note that the current situation does not necessarily require one to be a bear on markets. Inflation and interest rates can be higher for longer, but arguably "for the right reasons," i.e. there is decent growth in revenues and earnings, especially in nominal terms, and ultimately that is what drives stock prices. Looking at the MSCI AC World global equity index, it does not look that stretched technically, and forward trading multiples are not unreasonably high.

Other Thoughts

AI Is Real

At T. Rowe Price, we believe the AI investment theme is real. We have been thinking about it along three broad axes:

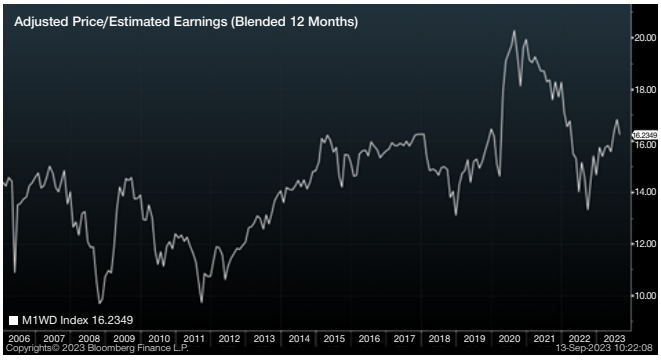
1. Development – these are the companies providing the infrastructure and hardware for AI, such as Nvidia, Synopsys, ASML etc.

2. Disruption, Distribution & Monetization – these are the companies that are innovating and providing solutions (e.g. ChatGPT). They have the broadest customer reach and are likely to be able to provide use-cases with monetization (think Microsoft, Adobe, RELX for example).

3. Disrupted – no prizes for guessing – these are the companies likely to lose out from AI that we want to avoid!

Between semiconductor-related holdings like Nvidia, AMD, Synopsys as well as enablers and distributors like Adobe/Microsoft and potentially META/Amazon, other tech companies can also be thought of as having quite direct links to the AI thematic. Though the reality is that as AI apps proliferate, the indirect impact will grow in importance and could be much higher. For example, financial exchanges like the New York Stock Exchange or London Stock Exchange Group will likely be able to use AI to provide analytics and solutions to its customers, but they would not currently be thought of in the AI "winner's" bucket.

FIGURE 3: MSCI AC World Index 12m forward P/E
Multiples on global stocks do not appear stretched



The specific securities identified and described are for informational purposes only and do not represent recommendations.
Source: Bloomberg LP.
As of September 13, 2023.

Market Concentration Is Not An Insurmountable Hurdle

Much has been written recently about the "problem" of excessive concentration in today's equity markets thanks to the presence of a small number of tech 'mega-cap' stocks. This is a fact. The top seven global companies, or "Magnificent 7" as they have been termed, represented approximately 16.8% of the MSCI ACWI index, as of August 31, 2023. They were collectively responsible for about 50% of 2023 global equity returns (MSCI ACWI) up to that point.

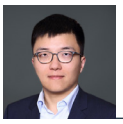
There are solutions to this "problem" of concentration that investors can adopt. Being mindful of the outsized impact that the 'Magnificent 7' stocks can have on relative returns, investors must be careful with position sizes in order to carefully manage risk and minimize downside capture. We can think of these mega-cap tech stocks as acting as more like a sector than as individual companies whose performance is driven by stock-specific fundamentals. With that done, let's look at the broader market through the lens of an optimist (we are talking equity investing after all….). Excluding the Magnificent 7, there were **still** 1633 stocks that had a positive return in this period. Of those stocks, there were **844** names that returned **in excess of 15%**. So with proper portfolio construction and risk management, there is still a deep pool of stocks from which investors can do what they're meant to do – and that is to pick stocks to outperform.

To paraphrase a saying, "We go to invest in the markets we have, and not the markets we want or wish for." ■

INTEGRATING ESG PREFERENCES IN ASSET ALLOCATION

Optimizing with an added ESG risk constraint.

- Incorporating ESG factors into our investment process alongside economic, valuation and other factors can help our clients to meet their long-term goals.
- We show how scores from our proprietary Responsible Investment Indicator Model (RIIM) can help to drive asset allocation in ESG-aware multi-asset portfolios.
- Our framework allows us to adjust portfolio asset allocation in order to incorporate ESG preferences in a consistent manner.



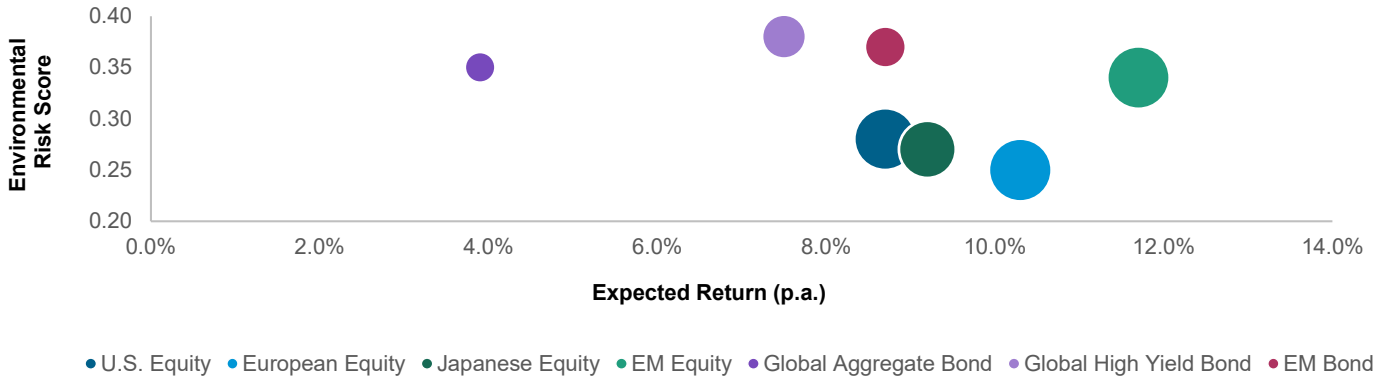
Nathan Wang
Solutions Analyst
Global Multi-Asset Team

Wenting Shen
Solutions Strategist and Portfolio Manager
Global Multi-Asset Team

We introduced an asset allocation framework for incorporating ESG preferences systematically in an earlier paper[1]. It used hypothetical examples to illustrate how to add a third dimension to the traditional two-dimensional efficient frontier of portfolio returns and risk, allowing investors to take into consideration their ESG risk tolerance - in addition to return and risk objectives - when constructing a multi-asset portfolio.

[1] See "Adjusting Asset Allocation for ESG Preferences," Y Lustig, S Toy, R Panariello, and T Poullaouec, September 2022.

FIGURE 1: Assumptions For Portfolio Optimization With ESG Constraints



The forecasts contained herein are for illustrative purposes only and are not indicative of future results.
Based on T. Rowe Price 5-Year Capital Markets Assumptions (CMAs) and RIIM Model.
In Figure 1 the size of each bubble is proportional to the volatility of each asset class.
As of June 30, 2023.
Sources: Ice BofA, J.P. Morgan, S&P, MSCI, Bloomberg Finance L.P. Analysis by T. Rowe Price.
See Additional Disclosures for sourcing information.
This information is not intended to be investment advice or a recommendation to take any particular investment action. Forecasts are based on subjective estimates about market environments that may never occur. See the Appendix for Important Information on our capital market assumption and a representative list of indexes for the seven asset classes in Figure 1.
Expected returns are shown for asset classes without consideration of fees and expenses.

This paper is a natural extension to the first whereby the focus of the paper is on optimization around specific ESG pillars. We rely primarily on our proprietary Responsible Investment Indicator Model (RIIM), which develops an environmental, social and governance profile for corporate, sovereign, municipal and securitized securities using both qualitative and quantitative measures. It provides a systematic framework for measuring and comparing the ESG characteristics of over 15,000 corporate securities in addition to sovereign, securitized and municipal issuers. Because this model sets a common language for our investors to evaluate ESG risks across asset classes, the ESG scores from RIIM can be used to help drive the asset allocation of ESG-aware portfolios, with the ability to focus on specific sustainability topics.

> A consistent ESG scoring methodology across asset classes can be used to drive the asset allocation of ESG-aware portfolios.

More specifically, RIIM produces scores for each of the three pillars of ESG – environmental, social and governance. Instead of utilizing aggregate ESG risk scores, we can focus on specific environmental, social, or governance aspects in building the overall score for each asset class. Disaggregating the ratings allows us to consider the elements within ESG that are the more relevant for each investor or strategy.

> For illustration purposes, we have constructed a series of multi-asset portfolios that focus on environmental risks.

Before delving into the details, it is worth noting that while RIIM is our preferred ESG risk rating framework, the same asset allocation approach works for other ESG scoring systems too. What is important is that ratings across asset classes should be based on a single source of ESG risk scores so that they can be compared consistently.

For illustration purposes, we have constructed a series of multi-asset portfolios that focus on environmental risks. The same approach can be applied to ESG social and governance risks as well.

Investment Assumptions and Constraints

Our starting point is a balanced portfolio consisting of 60% global equities and 40% global bonds. We then apply the following assumptions and constraints to the portfolio design:

- The investment universe is comprised of major regional equity building blocks (i.e., the U.S., Europe, Japan, and Emerging Markets) and fixed income sectors (i.e., Global Aggregate, Global High Yield, and Emerging Markets Bonds) in order to construct a diversified global portfolio.
- Return forecasts for different asset classes are based on our 5-year Capital Markets Assumptions

FIGURE 2: Asset Class Past 5-Year Monthly U.S. Dollar Return Correlations

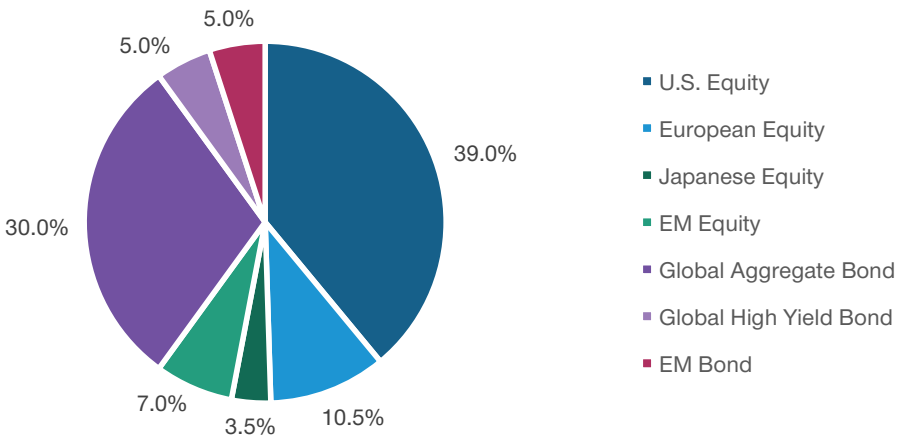
	U.S. Equity	European Equity	Japanese Equity	EM Equity	Global Aggregate Bond	Global High Yield Bond	EM Bond
U.S. Equity	1.00						
European Equity	0.88	1.00					
Japanese Equity	0.80	0.82	1.00				
EM Equity	0.73	0.79	0.74	1.00			
Global Aggregate Bond	0.44	0.41	0.41	0.42	1.00		
Global High Yield Bond	0.81	0.81	0.73	0.76	0.56	1.00	
EM Bond	0.61	0.68	0.60	0.76	0.60	0.89	1.00

As of June 30, 2023.
Sources: Ice BofA, J.P. Morgan, S&P, MSCI, Bloomberg Finance L.P. Analysis by T. Rowe Price. See Additional Disclosures for sourcing information.
See Appendix for a representative list of indexes.

(CMAs). Volatilities are constructed using historical return data over the past 5 years to reflect the most recent market environment (See Figures 1 and 2).

- Environmental risk scores are aggregated scores of individual securities at the asset class level based on our RIIM. The higher the score is, the more environmental risk the asset class carries.
- The allocation design of the initial portfolio is illustrated in Figure 3, in which regional equity allocations are based on country weights in the MSCI All Country World Index (ACWI) and fixed income sector allocations are based on the experience of a typical global institutional investor.
- In the optimization analysis (Figure 4 on the next page), we set a 3.0% limit for the tracking error to the initial portfolio for two reasons: 1) it is an investment constraint common to institutional clients, so it mirrors real world experience; 2) it anchors the portfolio design to the benchmark thereby removing extreme solutions from the optimization process.
- We set the constraint of a minimum single holding allocation of 3% and a maximum single holding allocation of 30% to ensure portfolio diversification and to avoid corner solutions.

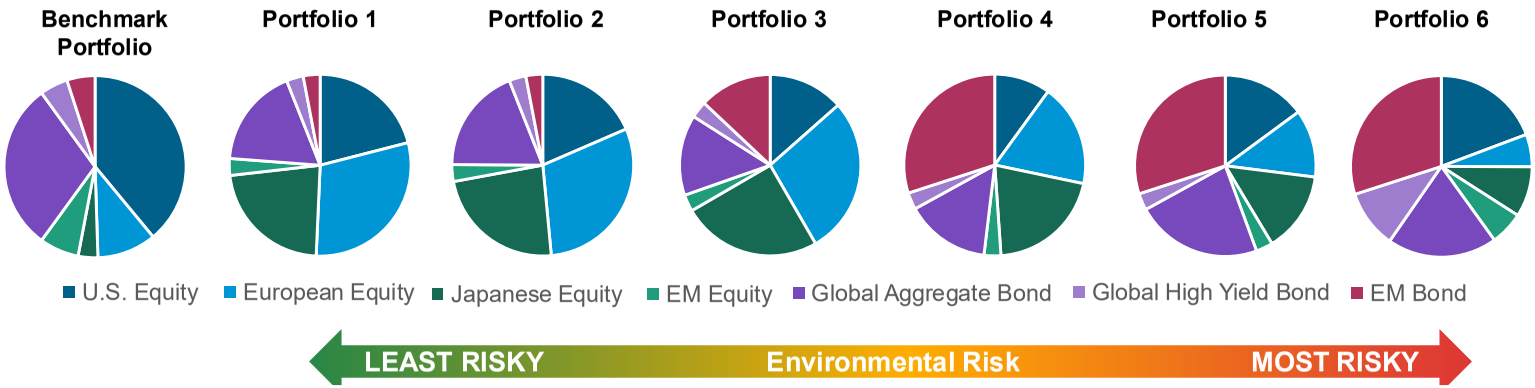
FIGURE 3: The Initial Portfolio



For illustrative purposes only (subject to change without further notice).
As of June 30, 2023.
Source: T. Rowe Price.
See Appendix for a representative list of indexes.

FIGURE 4: Optimization Results Summary For Environmental Risk-Constrained Portfolios

Returns are in U.S. dollars



Portfolio Characteristics							
Expected Return (p.a.)	7.6%	8.5%	8.4%	8.6%	8.4%	7.9%	8.0%
Expected Volatility (p.a.)	12.0%	13.7%	13.5%	13.0%	11.0%	10.1%	10.0%
Return/Risk Ratio	0.63	0.62	0.63	0.67	0.76	0.79	0.79
Portfolio vs. Benchmark							
Tracking Error	–	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Excess Return	–	0.9%	0.8%	1.1%	0.8%	0.3%	0.4%
Information Ratio	–	0.30	0.28	0.35	0.28	0.11	0.12

As of June 30, 2023.
The forecasts contained herein are for illustrative purposes only and are not indicative of future results.
Based on T. Rowe Price 5-Year Capital Markets Assumptions (CMAs) and RIIM Model.
Sources: Ice BofA, J.P. Morgan, S&P, MSCI, Bloomberg Finance L.P. Analysis by T. Rowe Price. See Additional Disclosures for sourcing information.
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Expected returns are shown for asset classes without consideration of fees and expenses.Expected returns are shown for asset classes without consideration of fees and expenses.

- We did not constrain the equity/fixed income mix in order to leave more room for the optimizer to find allocations with better risk-adjusted returns and mitigated environmental risk.

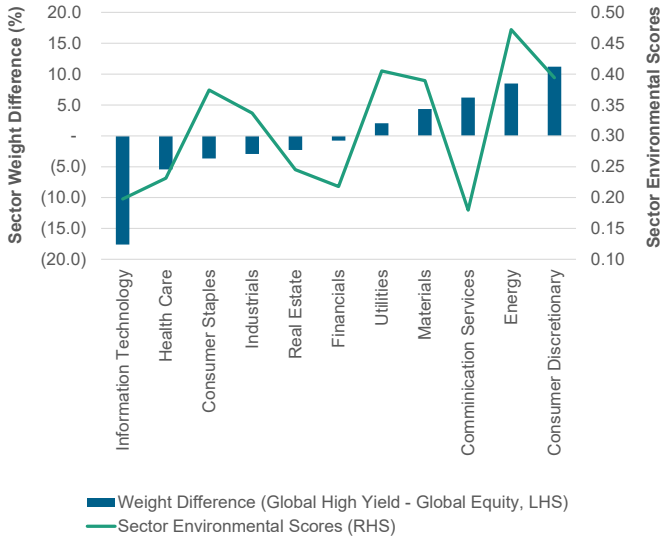
Optimization Results

Figure 4 above summarizes the optimization results of asset allocation across a range of different environmental risk tolerance levels. Starting from Portfolio 6 – the portfolio with no consideration given to environmental risk and which hence has the highest environmental risk score, a standard mean-variance optimizer would assign a significant overweight to Emerging Markets Bonds and Global High Yield Bonds. The reasons behind this are two-fold: 1) The two asset classes have attractive risk-adjusted returns base on our 5-year CMAs; 2) These two credit asset classes have high correlations to equity assets and thus act as equity substitutes in the optimized portfolio.

> Our framework allows us to adjust asset allocation and incorporate ESG preferences in a consistent manner.

As we decrease our tolerance for environmental risk moving toward the left-hand side of Figure 4, we observe reallocations from higher environmental risk assets, such as Emerging Markets Bond and Global High Yield Bond, to lower environmental risk assets like European and Japanese Equities. Interestingly, the allocation to U.S. Equity, which has higher environmental risk than its developed market peers, starts to increase as we further reduce environmental risk tolerance. This is likely due to the optimizer's attempt to use U.S. equity exposure to substitute for Emerging Markets Bond allocation to lower the overall environmental risk of the portfolio. The impact on the risk and return, however, does not follow a linear pattern.

FIGURE 5: A Comparison Between Global High Yield and Global Equity



As of June 30, 2023.
Source: ICE BofA, MSCI, Bloomberg Finance L.P. Analysis by T. Rowe Price. See Additional Disclosures for sourcing information.
Sector Environmental Scores are based on RIIM Model.
See Appendix for a representative list of indexes.

It turns out that this can be explained by their sector exposure differences to a large extent. As shown in Figure 5, compared to Global Equity, Global High Yield tends to overweight sectors with higher environmental risks, such as Consumer Discretionary and Energy, while underweighting sectors such as Information Technology and Health Care, which tend to be associated with lower environment risks.

Conclusion

In this simple illustrative exercise, we developed a framework to help investors adjust asset allocation and incorporate their ESG preferences in a consistent manner. ■

THE CASE FOR A STRATEGIC ALLOCATION TO HIGH YIELD BONDS

Hybrid characteristics provide attractive risk/reward profile.

- High yield bonds, in our view, have a key role as a strategic long-term investment and a mainstay allocation in a well-diversified portfolio.
- High yield bonds have an attractive risk/reward profile, having historically provided equity-like returns with less volatility than stocks.
- Investors have been able to recognize much of high yield's value by maintaining a long-term allocation and taking advantage of the regular coupon payments.

Kevin Loome, CFA
Portfolio Manager,
U.S. High Yield Bond Strategy

Ashley Wiersma
Portfolio Specialist

The High Yield Risk/Reward Dynamic

High yield bonds are typically issued by companies that are rated below investment grade by one or more of the three main credit rating agencies. Due to their lower credit ratings, investors typically receive higher yields on below investment-grade bonds in exchange for greater risk of default. This risk/reward dynamic is also expressed

> High yield bonds are often considered to be a hybrid asset class because they tend to exhibit characteristics of both fixed income and equities.

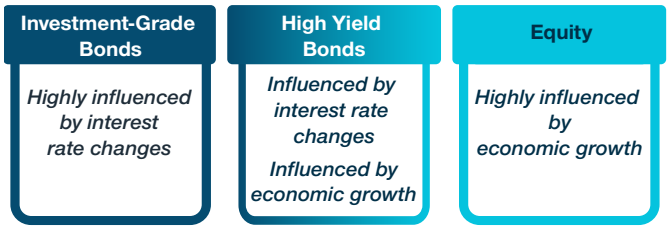
through credit spreads on high yield bonds, or their incremental yields over similar-maturity U.S. Treasuries, which are perceived to carry near-zero default risk. Typically, wider spreads indicate greater perceived risk.

Hybrid Asset Class

High yield bonds are often considered to be a hybrid asset class because they tend to exhibit characteristics of both fixed income and equities. Like most other fixed income securities, high yield bonds offer a steady stream of income in the form of coupon payments, which averaged 7.27% over the 20 years ended August 31, 2023.[1]

However, high yield bonds tend to be more equity-like in how they behave, given that credit (default) risk is the primary risk associated with investing in the asset class. Thus, unlike most other traditional fixed income instruments whose performance is closely tied to changes in interest rates, high yield bonds' performance tends to be much more strongly linked to the business results and fundamentals of the companies that issue them.

Characteristics of a Hybrid Asset Class



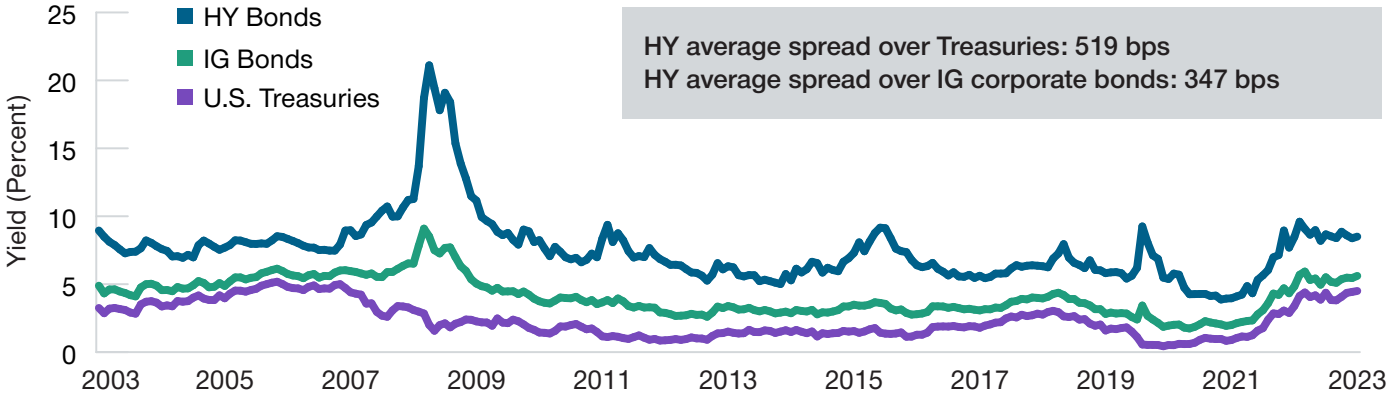
For illustrative purposes only.

Positioning in a Diversified Portfolio

Given their hybrid nature, high yield bonds have a unique and attractive risk/reward profile, having historically provided equity like returns with less volatility than stocks. Therefore, they can be thought of as either part of an overall fixed income allocation or a potential equity replacement. For fixed income investors, high yield bonds provide the potential for higher yields and greater returns, while also adding important diversification from traditional fixed income investments.[2] For equity investors, particularly those that may be more risk averse, high yield bonds can offer similar returns with lower volatility and potential downside than stocks.

In light of these shifts, we believe that high yield bonds continue to offer several compelling long-term advantages for investors:

FIGURE 1: Yields and Spreads Over Time
Wider spreads to Treasuries indicate greater risk



From August 31, 2003, to August 31, 2023.
Past performance is not a reliable indicator of future performance.
Source: T. Rowe Price calculations using data from FactSet Research Systems Inc. All rights reserved.
High yield bonds are represented by ICE BofA U.S. High Yield Constrained Index, investment-grade (IG) corporate bonds by Bloomberg U.S. Corporate Investment-Grade Index, and U.S. Treasuries by ICE BofA U.S. Treasury Index. A basis point (bp) is 0.01 percentage point.
Yield is based on yield to worst, which is the lowest potential yield that can be realized on a bond without the issuer defaulting.Morgan Asia Credit Index Diversified HY. This chart is shown for illustrative purposes only and does not represent the performance of any specific security, product or service. It is not possible to invest in an index. Source: Bloomberg Index Services Limited, JP Morgan, T. Rowe Price. Please refer to the Additional Disclosures section.

[1] Par-weighted coupon for the ICE BofA US High Yield Constrained Index. Source: Financial data and analytics provider FactSet. Copyright 2023 FactSet. All Rights Reserved. Index performance is for illustrative purposes only and is not indicative of any specific investment. Investors cannot invest directly in an index. Past performance is not a reliable indicator of future performance.
[2] Diversification cannot assure a profit or protect against loss in a declining market.

FIGURE 2: Key Asset Class Metrics
Twenty years ended August 31, 2023

	Average Annualized Return	Standard Deviation*	Average Yield	Sharpe Ratio†	Correlation‡ to High Yield Bonds
HY Bonds	6.62%	9.01%	7.87%	0.59	—
Stocks	9.93	14.76	1.88§	0.58	0.74
IG Bonds	4.06	6.25	4.10	0.44	0.66
U.S. Treasuries	2.72	4.58	2.39	0.30	-0.07

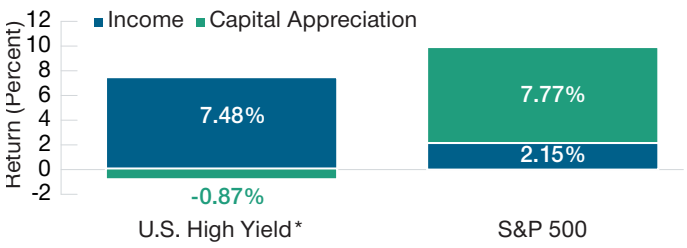
As of August 31, 2023.
Past performance is not a reliable indicator of future performance.
Source: Created with Zephyr StyleADVISOR. T. Rowe Price calculations using data from FactSet Research Systems Inc. All rights reserved. High yield bonds are represented by ICE BofA U.S. High Yield Constrained Index, stocks by S&P 500 Index, investment-grade corporate bonds by Bloomberg U.S. Corporate Investment-Grade Index, and U.S. Treasuries by ICE BofA U.S. Treasury Index. Average yield is based on yield to worst over the period.
*Standard deviation is a measure of the amount of variation or dispersion of a set of values. A low standard deviation indicates that the values tend to be close to the mean of the set, while a high standard deviation indicates that the values are spread out over a wider range.
† The Sharpe ratio is a measure of return relative to risk, calculated as an asset's return above the risk-free rate, divided by the standard deviation of the asset's excess return. The risk-free rate of return is a theoretical return of an investment with zero risk and the measure is used as a rate against which other returns are measured.
‡ Correlation measures how one asset class, style, or individual group may be related to another. A perfect positive correlation means that the correlation coefficient is exactly 1. This implies that as one security moves, either up or down, the other security moves in lockstep, in the same direction. A perfect negative correlation of -1 means that two assets move in opposite directions, while a zero correlation implies no relationship at all.
§ Trailing 12-month dividend yield.`

Income as a Key Source of Return

Most high yield bond portfolio managers focus on opportunities for both income and price appreciation as they invest. However, an analysis of historical sources of return shows that, unlike stocks, high yield bonds have typically derived the majority of their long-term total returns from income rather than capital appreciation.

Their relatively high and generally consistent coupon payments are a key reason why high yield bonds have historically exhibited lower volatility than stocks. Because their long-term returns have tended to be so heavily income driven, it pays to think of high yield bonds as a long-term strategic investment because the compounding effect of these regular coupon payments can be meaningful over time.

FIGURE 3: Long-Term Sources of Total Return
Compounding of coupon payments can be meaningful



Average annualized return. Twenty years ended August 31, 2023.
Past performance is not a reliable indicator of future performance.
Source: T. Rowe Price calculations using data from FactSet Research Systems Inc. All rights reserved.
*ICE BofA U.S. High Yield Constrained Index.

Historical Performance and Relative Returns

What should investors expect out of high yield as an asset class over the long term? While past performance is not indicative of future returns, history can serve as a helpful reference point. Over the long term, high yield bonds have outperformed almost every other major fixed income asset class. In fact, in the 10 years ended August 31, 2023 high yield bonds generated a cumulative total return of 54% compared with 11% for U.S. Treasuries and 29% for investment-grade corporates.[3]

As Figure 4 demonstrates, there have only been six calendar years with negative returns over the last 26 years and, for investors that had the patience to stay invested, negative return years typically have been immediately followed by outsized return years.

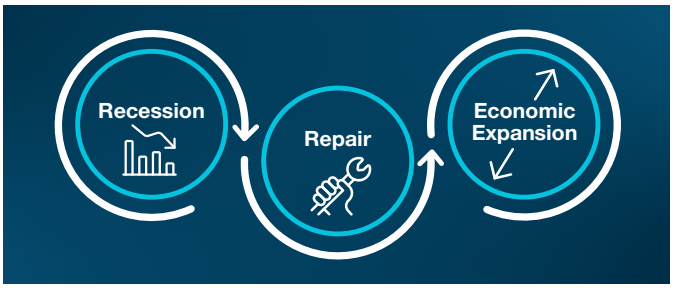
Performance Through Market Cycles

For high yield bonds, credit cycles tend to drive performance more than any other single factor, so a proper understanding of the stages of the economic cycle—and their investment implications—is critical. Below, we highlight the key components of a typical market cycle and discuss how we would typically expect high yield bonds to perform in each phase.

Recession: High yield bonds tend to be susceptible to recessionary environments as economic downturns typically result in lower economic activity and make it more difficult for high yield issuers to service their debt. Credit spreads also tend to widen in such environments in anticipation of increasing defaults. In recessionary environments,

[3] High yield bonds measured by the ICE BofA U.S. High Yield Constrained Index, U.S. Treasuries by the ICE BofA U.S. Treasury Index; and investment-grade corporate bonds by the Bloomberg U.S. Corporate Investment-Grade Index. **Past performance is not a reliable indicator of future performance.**

Components of the Credit Cycle



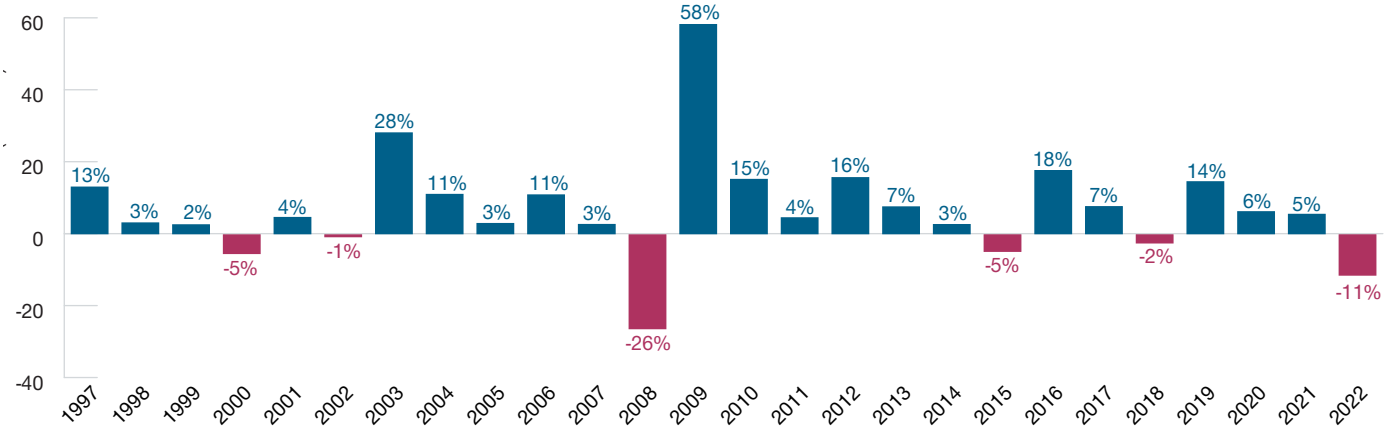
For illustrative purposes only.

high yield bonds tend to fare better than stocks but generally underperform "safer" fixed income asset classes such as Treasuries as investors flock to safety.

Repair: During the repair phase of the economic cycle, businesses generally seek to improve their balance sheets by trimming unproductive assets and paying off or restructuring debt. Default risk during these periods tends to decline as economic activity increases and it becomes easier for companies to service their debt.

FIGURE 4: High Yield Calendar Year Returns

Historical calendar year returns, U.S. high yield*



Number of Negative Calendar Years 1997–2022	
IG Bonds: 7	HY Bonds: 6
Stocks: 6	Treasuries: 5

Max. Drawdown† 20 Years Ended 8/31/23	
Treasuries: -18%	HY Bonds: -33%
IG Bonds: -20%	Stocks: -51%

As of December 31, 2022.

Past performance is not a reliable indicator of future performance.

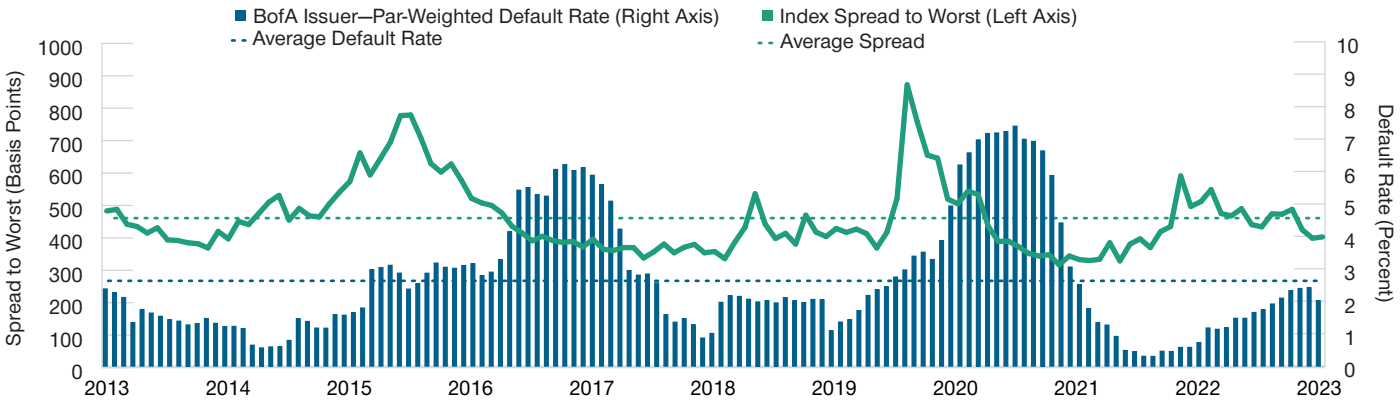
Source: T. Rowe Price calculations using data from FactSet Research Systems Inc. All rights reserved. Index performance is for illustrative purposes only and is not indicative of any specific investment. Investors cannot invest directly in an index.

* ICE BofA U.S. High Yield Constrained Index weighted by bond face amount outstanding. Investment-grade corporate bonds represented by Bloomberg U.S. Corporate Investment-Grade Index, U.S. Treasuries by ICE BofA U.S. Treasury Index, and stocks by S&P 500 Index.

† Maximum drawdown is the peak-to-trough decline during a specific year.

FIGURE 5: High Yield Spreads vs. Defaults

Defaults are an inherent part of the asset class.



As of August 31, 2023.

Past performance is not a reliable indicator of future performance.

Sources: ICE BofA (see Additional Disclosure), T. Rowe Price calculations using data from FactSet Research Systems Inc. All rights reserved.

Default rate is for ICE BofA U.S. High Yield Constrained Index weighted by bond face amount outstanding. Spread to worst is the lowest potential credit spread that can be realized on a bond without the issuer defaulting.

High yield bonds tend to outperform in these environments as default rates fall, credit spreads narrow, and higher coupons contribute to returns in excess of Treasuries.

Economic Expansion: During economic expansions, economic and credit conditions typically improve. Companies are generally able to earn more profits, making it easier for them to service their debt. Spreads tend to narrow. High yield bonds tend to outperform. When the cycle matures, interest rates rise as the Federal Reserve tightens monetary policy to slow the economy. High yield bonds tend to be more resilient to rising interest rates than other fixed income asset classes due to their shorter duration[4] and higher coupons.

Understanding Key Risks

Given the risk/reward trade-off associated with any investment, it's important to acknowledge and understand not only opportunities but also key risks.

High yield bonds have an asymmetrical nature of risk in that price appreciation potential is often limited by the fact that they typically pay back par at maturity (or sooner, if called by the issuer). Meanwhile, defaults can trigger significant principal losses and wipe out coupon gains, resulting in an outsized impact to the downside.

Therefore, when investing in high yield, it is important to work with an experienced portfolio manager with expertise in bottom-up credit research and a strong long-term security selection track record. Acknowledging that defaults are an inherent part of the asset class, the goal of most high yield managers isn't necessarily to avoid default risk altogether; rather, the goal is to understand and measure key sources of risk and then seek an adequate level of compensation via a return (or spread) over the risk-free rate to compensate for that risk. Backed by this risk management, we believe investors can maintain a long-term allocation to the high yield bond asset class in aiming to take advantage of its attractive income over time. ■

[4] Duration measures a bond's sensitivity to changes in interest rates.

CHINA IN THE CONTEXT OF OUR HIERARCHY OF CAPITAL FRAMEWORK

Broad China Economic Weakness Driving Elevated Investor Concerns

China's slowing economic growth, stresses in local government finances, and continued defaults in the property developer sector are raising understandable questions around how much worse economic activity can get and the potential impact on the rest of the world.

In the property sector, Country Garden, the country's largest private property developer, first missed paying a USD22 million coupon on a dollar-denominated security on August 2, 2023. While it was able to repay the interest within a 30-day grace period, bond prices fully priced in a potential default and fell to USD6 to USD7. Subsequently, Country Garden formally defaulted after it failed to pay interest on another dollar note in October. Country Garden has received various forms of government support in recent months, including access to credit lines from large state banks and guarantees on recent onshore bond issuances. However, balance sheet liquidity has worsened given the company's backlog of more than 3,000 housing projects carries higher exposure to smaller, lower tier cities where housing prices and sales volumes have been much weaker than in large tier 1 cities.

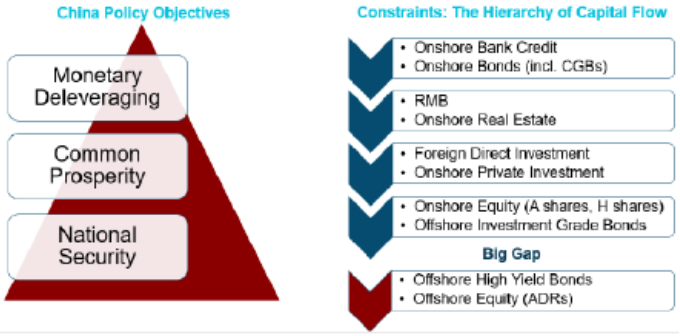
Chris Kushlis
Chief of China and Emerging Markets (EM) Macro Strategy

Samy Muaddi
Head of Emerging Markets Fixed Income

Separately, China's 10th largest trust company by assets, Zhongrong International Trust Co., has reportedly missed payments on products to several clients as it deals with broader liquidity stresses. Developments at Zhongrong are the latest incidents of strains in a shadow banking system that over the past three years have seen a small number of trust companies that required government intervention.

FIGURE 1: Dividends Have a Powerful Compounding Effect

MSCI World Index net total return composition



Source: T. Rowe Price Limited.

A review of the broader economy does not offer much relief. Recent trade activity has come off cyclical highs, inflation is persistently running below policymakers' target band of 2% to 4%. Recent trade activity has come off cyclical highs and inflation is persistently running below policymakers' target band of 2% to 4%. That said,third-quarter GDP growth of 1.3% was above forecasts as the government's incremental easing measures started to take effect.

Our Hierarchy of Capital Framework Helps Put these Strains into Context

Expecting government stimulus along the lines of what we saw in 2016 or 2020 has been a mistake the market has made multiple times this year. Forecasting a turnaround in growth and government support that is more than piecemeal and reactive requires understanding the economic tradeoffs China's policymakers are willing to make given their constraints. Given where losses have been most acutely felt thus far, we are not yet expecting a significant stimulus response out of China.

T. Rowe Price has an internal framework to help us understand where risks lie within China's broad capital markets and economy.

This framework, which we call the Hierarchy of Capital, combines the Chinese government's policymaking objectives with the constraints they face and helps us understand the tradeoffs they manage between the two. Since 2018 the primary objectives remain monetary deleveraging to move China's economy into a more sustainable long-term model; "Common Prosperity" to ensure equitable growth and social cohesion; and "National Security." The constraints that policymakers face are represented by the various stakeholders in China's capital markets and society—banks, equity markets, bond markets, homeowners, etc.

At the top of this hierarchy, where policymakers are less willing to see stresses, are China's large state-owned onshore banks. China conducts monetary policy through a monetary aggregate framework whereas most countries we invest in use a policy rate based transmission mechanism. The stability of the state owned banking industry is imperative to this policy transmission model. The lessons of the collapse of Guangdong International Trust and Investment Corp in 1998 are well understood. Conversely, at the bottom of the hierarchy where policymakers are comfortable with significant volatility, we find offshore high yield bonds and offshore listed equities. This is a particularly acute risk when the sub-sector business model runs against a policymaker objective, for example real estate with monetary deleveraging and education with common prosperity.

Thus far the most pain has been felt in the offshore high yield bond market utilized by property developers. Over the near-to-medium term, we do not expect that recent regulatory easing from the Chinese government will change the sector's weak trajectory and the focus will remain on the completion of housing projects over saving developers from bankruptcy. Reduction in down payment requirements and loosening home purchase restrictions will only marginally support struggling companies.

Stresses in the shadow banking sector are slightly further up the Hierarchy of Capital, but thus far we believe problems at the more embattled trust companies do not carry a systemic risk to China's financial system. Shadow banks and trust companies have come under increased scrutiny since 2017 when China's central government started taking stronger regulatory efforts to contain the industry. As a percentage of GDP, trust assets have fallen from 31% in 2017 to 17% today and much of the lending activity has been replaced by traditional banks. Nonetheless, the opacity of the industry and thin financial disclosures mean that we may not have full insight into the linkages through the financial system.

As China's government prioritizes its domestic banking system above all other economic stake

holders, we can expect headlines around shadow bank defaults on trust products to continue. In recent years the Chinese regulators have stepped in to ringfence failing financial institutions on a case-by-case basis with a view to containing more systemic risk; they will likely follow this playbook again.

The government is attempting to engineer a structural shift in the economy away from excessive credit creation, urbanization, and property development to one that is more advanced manufacturing and consumer demand focused. This process has involved an inevitable slowing in trend growth with the government mainly seeking to manage the pace of the slowdown and spread the adjustment over several years. Individual year growth targets may no longer be as sacrosanct as they once were but we would still expect the government to try to prevent a slowdown morphing into a deep recession that would lead to bigger social dislocation.

Potential red flags to watch that could trigger a more aggressive response from the Chinese government include a disorderly depreciation of the RMB against a basket of global trading partner currencies. The concern from policymakers here is that currency weakness would underpin a broader surge in capital outflows that is highly disruptive to its domestic banking institutions and balance of payments position.

The impact to global growth is more nuanced, and we have started to see a de-linking of China's long-time role as Emerging Markets' primary driver of growth. This is due, in part, to the resilience of services in domestic economies relative to goods demand. In addition, several frontier countries have been well placed to pick up slack in basic manufacturing and global exports that China is losing (Bangladesh, Vietnam, etc). That said, if China's growth were to significantly undershoot expectations it could prompt developed market central banks to take a more pronounced pause in policy tightening as they assess more restrictive global financial conditions.

Lower Odds of Economic Stimulus Leave us Cautious on Chinese Assets

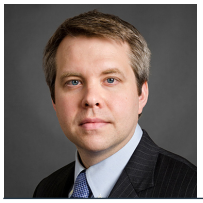
We significantly cut our exposure to the China property market starting in January 2022 across our emerging market sovereign and corporate strategies, and do not see attractive risk-adjusted return opportunities today. In early 2022 we recognized that our 4Q-2021 property thesis, which was predicated on government support allowing stronger developers to muddle through for an extended period and ultimately benefit from industry consolidation, was wrong and that there was still downside risk. The government has prioritized the completion of construction projects, and has let the builders suffer through a multi-year structural decline that has resulted in more than USD115 billion of bond defaults across 2021 and 2022, or more than 70% of the high yield China property bond market.

Select investment-grade issuers may offer opportunities where regulatory risks associated with policymaker objectives are low but yields associated with many of these bonds are not particularly compelling.

China's local government bond market, on an FX-hedged basis, is the more interesting opportunity we see today. Weak economic growth and low inflation leave room for policymakers to further easy monetary policy, while they preach patience and steady step-by-step progress that we believe precludes a significant fiscal stimulus. ■

MEET CHRIS KUSHLIS

An interview with Chris Kushlis
Chief of China and Emerging Markets (EM) Macro Strategy, T. Rowe Price.



Chris Kushlis
Chief of China and Emerging Markets (EM) Macro Strategy, T. Rowe Price.

BIOGRAPHY

Career

Chris Kushlis is Chief of China and Emerging Markets (EM) Macro Strategy at T. Rowe Price. He is a vice president of T. Rowe Price Group, Inc. and T. Rowe Price International Ltd.

Mr. Kushlis has 23 years of investment experience, 16 of which have been at T. Rowe Price. Prior to joining the firm in 2007, he was an advisor to the U.S. executive director at the International Monetary Fund.

2000 – Chris joined the U.S. Treasury as a macro economist, working first on Eastern Europe and later on the Latin American economies.

2007 – Joined T. Rowe Price as a sovereign analyst in the fixed income team, covering the Asian economies.

2017 – Chris was appointed to the newly created role of Chief and Emerging Markets Macro Strategy.

Professional & Education

B.A. International Political Science & Economics, Middlebury College 1998.

M.A. International Relations, Johns Hopkins University 2000.

Chris has also earned the Chartered Financial Analyst designation.

Chris, can you begin by telling us a bit about your background and how you came to pursue a career in asset management. Also, what brought you to T. Rowe Price?

Well, both my parents were in the U.S. foreign service, and they worked in a number of embassies around the world. So I moved every three years or so and lived in five or six different countries when growing up. This experience skewed me towards taking an interest in all things international. In school and later college, I found I had a natural knack for economics, for understanding the economic side of things. I also had a strong interest in how economic policies were being made.

So my first job after graduating was at the U.S. Treasury Department. There I worked on a variety of different emerging market issues, starting with the Russia desk. I later moved to the Western Hemisphere Department just as Argentina was undergoing one of its periodic economic crises. At that point I was seconded to the U.S. Executive Director's office at the International Monetary Fund (IMF).

From the IMF a move into global asset management with T. Rowe Price in 2007 seemed a natural career step for me, as I would be able to marry my strong interest in international economics with the study of financial markets. A job opportunity as a sovereign analyst in the fixed income department came up at T. Rowe Price, which was referred to me by a friend, and I joined the firm in 2007.

What particularly appealed to me is that in asset management you can see a clear line of sight between the macro advice and strategy proposals you are giving and their impact on actual portfolios managed for clients who had entrusted their savings to T. Rowe Price.

As Chief of China and Emerging Markets Strategy, can you tell us about your role at T. Rowe Price?

For the first ten years at T. Rowe Price I worked as a sovereign analyst, covering the rates, credit and foreign exchange markets for Asian economies. When the position of China and Emerging Markets (EM) Macro Strategy was created in 2017 – a new role at T. Rowe Price - I applied, as it appealed to my continued interest in global issues. Also, I had by then a fairly broad experience of the emerging markets, having covered both Eastern Europe and Latin America earlier in my career at the U.S. Treasury, followed by the Asian region at T. Rowe Price. While our EM investment teams had analysts located in each region, the new role was intended to have someone positioned at the center who could compare and analyze key investment themes across the EM regions.

EM strategy at T. Rowe Price had previously been structured more from a bottom-up perspective. In today's fluid markets, EM countries are often strongly impacted by global factors. It was my role to understand how EMs would vary at the macro level in their response to global shocks and trends. In turn, I could then help to provide our asset managers with ideas as to how to they could play these themes within their portfolios.

This is how I see myself as a macro person fitting in and interacting with our bottom-up portfolio managers, helping to generate value for T. Rowe Price's clients. Of course, our EM equity portfolio managers are strongly focused on stock selection, and each has their own strategy and portfolio constraints. As a starting point, we provide them with an overall macro view of EM prospects. They can take it or perhaps do something different with it, as we have always been a bottom-up house. The key question for us is, do they value our EM macro input? Do they find it helpful in their portfolio decision making, even if they don't completely take our view.

As we are currently experiencing in 2023, EM financial markets are often strongly influenced by forces that are happening outside those countries. My job is to bring a top-down macro perspective that can help us better assess how the various EM countries and their financial assets are likely to perform under different scenarios. In particular, we are always looking for things that may have been missed by markets, but which could at some point bubble up enough to become a new investment theme in EM.

As a macro economist how do you approach the Emerging Markets. What are the key drivers that you focus on?

The EM economies are geographically and structurally widely diverse. In 2022 they accounted for around 50% of the global economy and an even higher 2/3 share of global growth over the past decade. As you know, we have highly experienced analysts who cover all the key countries in the EM regions where we invest. So, I think for me, the key to being a successful head of Emerging Markets strategy is not to get bogged down too much in the details for individual countries.

Instead, I need to be able to "triage" the many EM themes as they arise, to have a good analytical framework that enables me to quickly assess, diagnose and prioritize issues and allocate our research resources efficiently. When you choose a career in EM, you know you are signing up for a roller coaster ride, where there will always be risks to the downside. You're signing up for a lot of volatility. At the same time, there have been many EM success stories, with some countries making pretty remarkable comebacks, so there are plenty of opportunities on the upside as well.

We are always looking for key relationships between macro variables that might suggest mis-pricings in inefficient emerging markets. With the important exception of China, many EM countries follow the 'small, open economy' paradigm, under which their outlooks depend strongly on external factors, unlike the large continental-sized economies of the U.S. and Europe. Part of my role is to find frameworks for comparing how important in relative terms these global factors are likely to be for EM economies, including their impact on economies, interest rates and equity markets.

Often, our macro analysis can indicate where tensions are building up within individual EMs, where something ultimately has to give. So we need a strong, consistent macro framework to help us understand these issues.

What is your outlook for EM as we approach 2024?

Firstly, I think we have to say there is still great uncertainty over the path of the global economy next year. There's no clear up trend in the global cycle and you don't have, for example, the U.S., European and Chinese economies all pulling together, supporting global demand in a positive direction. Even though a 'soft landing' seems to be the current consensus for the global economy in 2024, there is still much uncertainty remaining over the issues that have troubled markets this year, such as Fed tightening and the threat of a U.S. recession.

In the U.S., the Fed took a bet initially that inflation was transitory. Because of this they were at first very slow to raise interest rates and remove some of the monetary accommodation that they had introduced during the pandemic. So when the transitory inflation thesis proved to be wrong, the Powell Fed had a lot of catching up to do and needed to rapidly raise rates by 500 basis points within twelve months.

When it comes to EM central banks, I actually think that as a group they have done a pretty good job so far in comparison to the major DM central banks.

EM central banks in this cycle were much quicker to start hiking rates in 2021 at the first signs of inflation pressures. So as a group, the EM monetary authorities have largely behaved responsibly on this occasion.

I think also that historically, EM central banks have had a lot more experience with periods of destabilizing high inflation. They know that inflation expectations can become unanchored relatively easily. Not wishing to lose the gain in credibility since the global financial crisis, they were not willing to take any chances after the pandemic.

This was unlike DM central banks, where I believe the Fed made a conscious bet on transitory inflation that did not work out well for them. Ideally, the Fed should have started to hike rates sooner as insurance, enabling them to begin tapering quantitative easing much earlier. So the implications of even higher U.S. interest rates for EM is something which still worries me as we head into 2024.

Turning to the U.S. economy, eventually there must be another recession. Historically, the unconditional recession probability is 15%. But when it's likely to start is still a big question for investors, who are divided into two camps with a lot of uncertainty. I have some sympathy with the view that what we will see a continuation of slow growth in the U.S. next year. Avoiding a U.S. recession in 2024 will, of course, be positive for emerging markets. Reasons for my relative optimism include the continuing strength in U.S. consumption and the labor market, so much support from fiscal and monetary policy, and credit spreads that remain narrow, indicating a lack of corporate stress.

Among the EMs in 2023 we have seen some real differentiation in terms of growth momentum. In some countries there has been a clear slowing while in others growth momentum has held up quite well. While we are seeing lots of opportunities at the country level, we feel it's not the time to go heavily overweight the EM asset class. The beginnings of a strong global upswing, when historically EM equity markets have performed best, is still some way off.

Some view deglobalization as a growing structural headwind for EM. How much of a threat do you think it really poses?

I think the best thing I could say on this is that international politics, global regulations and world trade patterns are becoming more complicated than in the past, which also makes life more difficult for the EM fund manager. Most EMs will probably have little say in changes that are likely to impact their economies significantly over the coming decade.

If you measure globalization as simply merchandise trade as a share of world GDP, then that's been stagnating for a decade (though after a rapid runup in the preceding ten years). But at the same time, we're not necessarily deglobalizing in the way the more sensationalist financial media has suggested. Moreover, the internet has greatly facilitated the growth of cross-border services. The globalization of the services sector continues apace, deepening economic ties between countries.

In the case of manufacturing, I think governments are finding it very difficult to tell an entire industry supply chain to uproot and move back closer to home for national security reasons. What we're finding is that supply chains are if anything becoming more complicated, with multiple countries and less reliance on a single bilateral dependence, such as U.S.-China. There will be both winners and losers from this adjustment process, which will probably take a decade or more to complete.

That's quite different from deglobalization, where countries deliberately seek to withdraw from international trade in favor of what the Economist newspaper has termed the 'homeland' or self-reliant economy. Diversification of manufacturing supply chains is very different than deglobalization. It's just shifting the locus of where a multinational company is producing, perhaps adding a couple of additional countries to the supply chain in order to build increased resilience.

So, for example, we are seeing increased imports by the U.S. from Mexico, Vietnam, and Southeast Asia, but those countries themselves are still sourcing intermediate and semi-finished goods from China. Such trends had begun well before the Trump tariffs on China and the Covid pandemic, in part reflecting the rapid growth in Chinese wages and unit labor costs relative to other EM economies.

While the current geopolitical tensions may have added a lot of noise and exaggerated deglobalization fears, there are some real factors underlying the nascent reorganization of global supply chains in manufacturing. It will likely be multinational companies taking these decisions, including how much additional resilience to build into their supply chains, although governments will influence the process via incentives and national restrictions.

Finally, Chris, can you please share with us your personal interests and how you usually relax outside of work?

Well, given my strong interest in geopolitics and international relations, I naturally read history, a lot of history. I also like to go on long hikes, to visit museums, and I can also play the drums, though I'm currently a bit out of practice. ■

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