FRANKLIN TEMPLETON | Institute

December 2022

Franklin Templeton Investment Solutions

2023 Capital Market Expectations

Brighter times ahead

Contents

About capital market expectations

Every year we review the data that drive capital markets—current valuation measures, historical risk premia, economic growth and inflation prospects—to provide the foundation for our forecasts. We update the models that we use and review their continued appropriateness. Crucially, our models are based on first-principle economic relationships and reflect seasoned practitioner judgment.

We continue to include as part of every capital market forecast a measure of the expected volatility of that asset class, informed by long-term observed standard deviation of returns. Given that changes to global central banks' quantitative easing policies may have repressed both equity and bond market volatility over past years, but increased turbulence more recently, our approach to modeling volatility reduces recency bias and is particularly appropriate at a time when leading central banks are shifting to normalize policy.

Our capital market expectations (CMEs) are designed to provide annualized return expectations over a longer-term horizon, typically viewed as 10 years. Specifically, we calculate geometric mean return expectations over a 10-year period, which both fully captures the average length of a US business cycle and aligns with the strategic planning horizon of many institutional investors.[1]

Our modeling approach is based on a blend of objective inputs, quantitative analysis and fundamental research, consistent with the skill set of our Franklin Templeton Investment Solutions (FTIS) business. Underpinning these inputs are assumptions on the sustained growth rates that developed and emerging economies can expect to achieve and the level of price inflation they will likely experience. This approach is forward looking, rather than being based on historical average returns. This is especially important in an evolving macroeconomic environment.

1. Since 1945, the National Bureau of Economic Research has defined 12 US business cycles, with an average duration of 75 months.

Summary

We believe riskier assets, such as global stocks and corporate bonds, have greater performance potential than global government bonds, despite slightly slower global growth and a marginal increase to global inflation expectations.

- We believe that maintaining a diversified portfolio of risk premia, in addition to the traditional benefits of a balanced portfolio between stocks and bonds, is the most likely path toward stable potential returns.
- Equity returns will likely be driven by earnings growth and yield, supported by some valuation uplift but offset by margin normalization that is likely to occur over our 10-year horizon.
- With global interest rates starting from relatively elevated levels and expected to rise a little further before normalizing, overall return expectations from all fixed income assets have become more attractive than has been the case in recent years, and notably higher than we anticipated in our 2022 CME forecasts.
- The risk premium contained within corporate bond yields appears to be more than adequate compensation for the likely level of default risk across the business cycle.
- Over the 10-year horizon used for our CMEs, we see relatively healthy alternative risk premia and a constructive environment for asset returns.

Our capital market expectations

Our 2023 CMEs are that the prospective returns of global equities and corporate bonds will be more attractive than the anticipated returns of global government debt.

Our geometric mean return expectation over a 10-year period for global equities is higher than last year and broadly in line with the historical annualized return. Overall, we expect global equities to return 8.3% annualized over the 10-year period, with developed markets returning 8.2%.[2]

By comparison, we expect global developed government bonds to return 4.3% in US-dollar terms.[3]

10-Year Annualized Capital Market Expectations (USD) Return Expectations

Equity Expectations

As of September 30, 2022

Asset Class Name	Expected Return (Geometric)	Expected Risk (Std. Dev)	Sharpe Ratio	Past 20-Yr Annualized Return
GLOBAL EQUITY	**8.3%**	**16.3%**	**0.31**	**8.5%**
Developed-Market Equity	**8.2%**	**16.3%**	**0.30**	**8.6%**
US	7.9%	16.0%	0.29	9.9%
Canada	8.4%	19.4%	0.26	9.3%
EAFE	8.9%	16.5%	0.34	6.3%
EMU	8.9%	20.6%	0.27	6.4%
UK	8.4%	17.1%	0.30	5.1%
Japan	9.8%	16.0%	0.41	4.5%
Pacific Ex-Japan	8.7%	19.4%	0.28	9.0%
Australia	8.4%	21.7%	0.24	9.5%
Emerging Market Equity	**9.3%**	**19.8%**	**0.31**	**9.0%**
China	9.8%	23.5%	0.28	10.0%
Specialty Equity				
Global Listed Infrastructure*	7.2%	16.2%	0.24	8.2%
US Listed Infrastructure	6.1%	13.0%	0.22	7.6%
Global REITS	8.0%	19.2%	0.25	6.4%
US REITS	8.0%	21.2%	0.23	7.7%

*Denotes where shorter average is used (20-yr unavailable), periods range from 92 to 237 months.

Source: Franklin Templeton Investment Solutions.

Fixed Income Expectations

As of September 30, 2022

Asset Class Name	Expected Return (Geometric)	Expected Risk (Std. Dev)	Sharpe Ratio	Past 20-Yr Annualized Return
GLOBAL GOVERNMENTS				
Global Governments	**4.3%**	**6.6%**	**0.16**	**2.4%**
US Goverment	3.9%	4.6%	0.14	2.6%
Canadian Goverment*	4.0%	8.6%	0.09	4.0%
Euro Government	4.9%	10.0%	0.16	2.9%
UK Government	5.8%	10.8%	0.24	1.3%
Japanese Government	4.2%	9.3%	0.11	0.4%
Australian Government*	4.9%	10.6%	0.16	–0.3%
China Government*	3.6%	4.5%	0.08	4.8%
Inflation Linked				
Global Inflation Linked	4.5%	8.4%	0.14	3.5%
GLOBAL CREDIT				
Global Investment Grade Credit	**5.9%**	**7.1%**	**0.37**	**3.5%**
US Investment Grade	5.6%	6.4%	0.37	4.1%
EU Investment Grade	6.1%	10.5%	0.28	2.9%
UK Investment Grade	8.0%	12.7%	0.38	1.9%
Global High Yield	**6.9%**	**9.8%**	**0.37**	**7.2%**
US High Yield	6.6%	9.1%	0.37	7.4%
Euro High Yield	7.9%	14.9%	0.31	7.5%
UK High Yield	9.3%	14.6%	0.42	10.0%
US High Yield Loans	6.2%	8.8%	0.34	4.6%
US Securitized				
US MBS	4.5%	3.5%	0.34	2.8%
Municipal Bonds				
US Munis	4.5%	4.6%	0.24	3.4%
Emerging Markets Goverments				
Emerging Market Debt-Corp (Hard)*	5.9%	9.8%	0.27	4.5%
Emerging Market Debt-Gov (Hard)*	6.4%	9.4%	0.33	5.8%
Emerging Market Debt-Gov (Local Fx)*	5.4%	11.6%	0.19	4.4%

Source: Franklin Templeton Investment Solutions.

2. There is no assurance any forecast, projection or estimate will be realized.
3. Ibid.

Other Expectations
As of September 30, 2022

Asset Class Name	Expected Return (Geometric)	Expected Risk (Std. Dev)	Sharpe Ratio	Past 20-Yr Annualized Return
ALTERNATIVES				
US Private Credit	7.7%	14.0%	0.32	8.7%
US Private Real Estate	5.2%	13.5%	0.14	8.5%
US Private Equity	9.3%	22.3%	0.27	11.6%
Commodities	5.3%	16.2%	0.12	1.5%
Global Hedge Funds	5.9%	6.6%	0.36	5.7%
FX vs. USD				
AUD	0.9%	11.7%	—	0.8%
CAD	0.8%	8.5%	—	0.7%
CNY	0.7%	3.9%	—	0.8%
EUR	1.6%	8.6%	—	0.0%
GBP	1.5%	8.6%	—	–1.7%
JPY	3.3%	8.4%	—	–0.9%

Asset Class Name	Expected Return (Geometric)
CASH TREASURY RATES (3-MONTH)	
US Cash	**3.3%**
AUD Cash	3.3%
CAD Cash	2.6%
CNY Cash	2.8%
EUR Cash	1.5%
GBP Cash	2.5%
JPY Cash	0.4%

Source: Franklin Templeton Investment Solutions.

Themes driving long-term global growth

In creating these CMEs, we incorporate the FTIS team's views on longer-term investment themes that impact the global economy. We debate these themes at our Annual Investment Symposium, in collaboration with senior leaders from across Franklin Templeton's wide range of specialist investment managers.

At our fourth annual Investment Symposium in October 2022, we discussed a range of secular themes that ultimately feed into two foundational components of our CMEs—growth and inflation—while incorporating a parallel theme of "future threats to human existence," which combines geopolitical with sustainability issues. We explore our views on these trends below, how they impact our gross domestic product (GDP) and consumer price inflation outlooks, and consequently our CMEs. For a more detailed review of the symposium discussions, please see our *Investment Symposium* paper.

1. Growth

We believe the next decade will look different than the one before, as technology and policy will prove disruptive and bailouts, if they occur, may be of more limited scope. In this age of disruption, will productivity rise or fall? As countries prioritize food and energy security in the next decade, changes will need to occur, and compromises will be made. Is this enough to ensure sufficient economic growth, or will structural headwinds, like aging demographics and global indebtedness, reassert themselves?

The last three years have been a period of enormous disruption. The practical interruption of supply chains because of COVID-19 and the war in Ukraine has had implications for prices of goods and driven the mass migration of people. Additionally, the process of globalization has been interrupted in reaction to geopolitical stress and the desire to ensure

security of supply. There are many other changes on the horizon, including the balance between energy security and progress toward a renewable energy transition. These types of changes seem to suggest that the resilience of global growth going forward may be challenged or, at least, desynchronized by region.

On the flip side, there are ongoing examples of technology firms moving production to other areas around the globe. Zeroing in on technological disruption, are we coming to an age of digital transformation? During the COVID pandemic, companies embraced technology to engage customers and become more efficient. In the years to come, artificial intelligence and machine learning could create new worker capacity and change the way work gets done. Ultimately, technological advancement in other areas such as quantum computing and cloud computing could drive productivity, boost growth and eventually be deflationary. **The positive impact of technology likely offsets the fracturing of global supply chains due to geopolitical stress, but the balance point may continue to shift over time.**

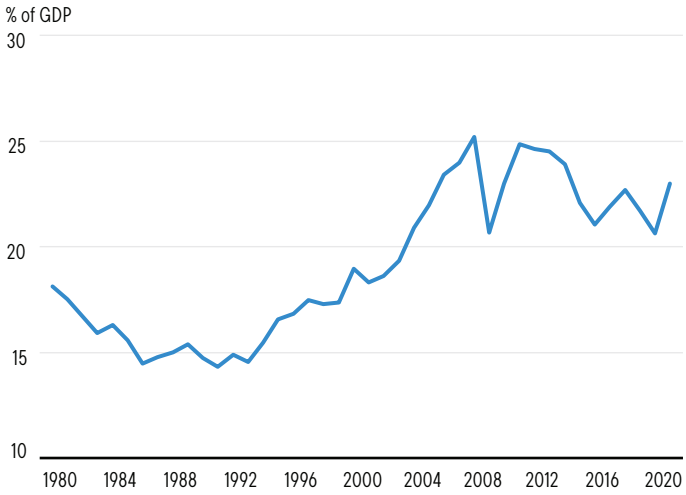
A long-term approach to estimating growth is to measure the number of hours worked in an economy and how productive each hour worked is. Demographics drive the number of hours worked for most economies, and the trend for most of the world's major economies is clear: populations are getting older. The dependency ratio has already doubled in Japan and is heading that way in the eurozone (see Exhibit 2). Immigration policy is unlikely to be sufficient to solve this, as nationalism has increased across most regions, limiting the prospect of immigration. **Our view is that demographics will likely be a small headwind to growth over the next decade.**

Productivity is the other driver of growth and the key to offsetting the weaker demographic outlook. Recent history is not especially encouraging. The business cycle that followed the global financial crisis was marred by weak productivity growth across OECD economies. Looking ahead, our forecast for productivity growth falls in the region of 1.5%, **as we expect productivity growth rates to rise to their long-run average, which is higher than the level seen in the most recent cycle but falls short of what many would hope for.**

Capital investment is a major driver of productivity, and fiscal stimulus is a pillar for sustained above-trend growth. The fiscal stimulus response to the COVID-19 pandemic was staggering, reaching approximately 15% of global GDP in 2020. **We expect fiscal spending, particularly in areas such as green infrastructure, to provide tailwinds for years to come.**

Globalization May Evolve, But We Do Not Expect a Major Retrenchment

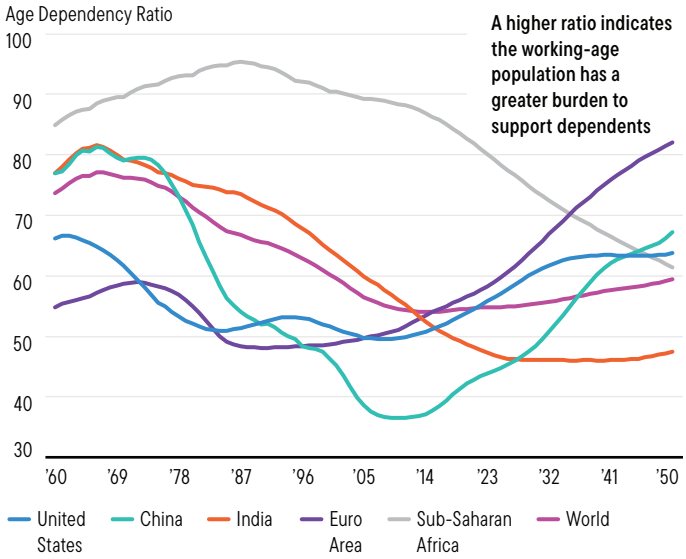
Exhibit 1: Global Goods Export
1980–2021



Sources: WTO, IMF, Macrobond. There is no assurance that any estimate, forecast or projection will be realized. Important data provider notices and terms available at www.franklintempletondatasources.com.

The Ratio of Working-age Population (as a % of the Total Population) Will Shrink Over the Coming Decades

Exhibit 2: World Bank—Age Dependency Ratio Projections
January 1960–January 2050E



Sources: World Bank, Macrobond. There is no assurance that any estimate, forecast or projection will be realized. Important data provider notices and terms available at www.franklintempletondatasources.com.

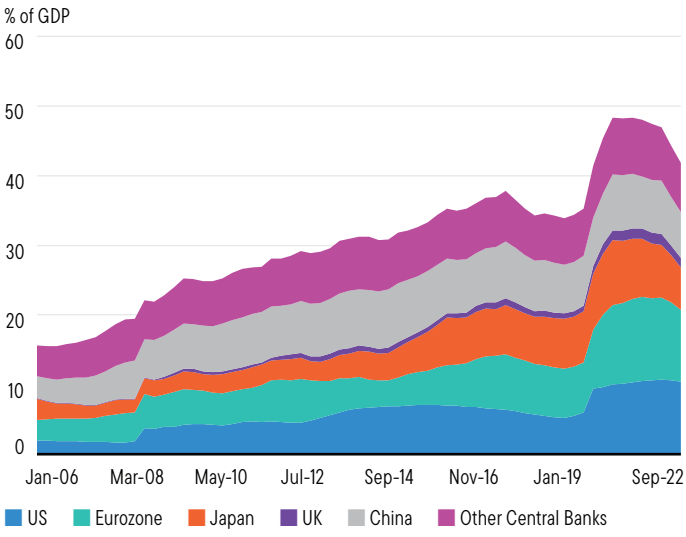
Both the United States and the eurozone, among others, have fiscal agendas that are geared toward decarbonization. In the shorter term, the war in Ukraine may complicate this transition, but it has provided another vivid example of the need for capital investment. The shift in Europe's oil and gas imports from Russia to other sources has highlighted the region's inadequate energy infrastructure. A multi-year investment cycle is required to build this infrastructure.

The war could also accelerate the development and adoption of renewable energy sources. One encouraging point on this front is the passage of the Inflation Reduction Act (IRA) in the United States, which provides material subsidies for green energy investments, including hydrogen production and geological storage. The country could also transition from being an importer of solar modules and wind turbines to an exporter of them, given the incentives and tax credits.

The flip side of proactive fiscal policy is that we are already in a world awash with debt. This is a recurring argument that we discussed in previous symposiums and has only deteriorated in the past 12 months. High debt levels can negatively impact growth while also muting the world's response to the next crisis. For instance, many emerging market countries have seen their credit ratings downgraded, which will make it harder to borrow in the next crisis. Debt levels are also leading to increased uncertainty about whether governments will be able to effectively react when the next calamity hits. The rise of political polarization within countries or regions may also place another hurdle in the path of fiscal support. The extent to which global central banks are willing to halt the early stages of quantitative tightening (i.e., the normalization of their balance sheets) (see Exhibit 3) and again act as a shock- absorber for debt markets remains to be seen. For now, **as monetary policy normalizes and balance sheets contract, debt levels and changes in who holds large chunks of them will be a modest drag on activity levels**.

Central Banks are Beginning to Reduce Their Balance Sheets

Exhibit 3: Central Bank Assets
As of September 30, 2022



Sources: Reserve Bank of Australia, BCB Community Bank, Statistics Canada, People's Bank of China, Central Bank of Denmark, European Central Bank, Central Bank of Ireland, Reserve Bank of India, Bank of Japan, Bank Negara Indonesia. Important data provider notices and terms available at www.franklintempletondatasources.com.

Taking all of this into account, **we expect slightly slower global growth in the decade ahead. We see GDP expanding at a 2.8% annual rate**, with developed markets growing slightly more slowly, over the 10-year horizon used in our CMEs. (See Exhibit 5, on the next page, for a chart of growth expectations across key regions and countries).

2. Inflation

The era of the Great Inflation (1965–1982) was followed by the Great Moderation (mid-1980s to 2007). Since then, we've had the global financial crisis, the COVID pandemic and now near-synchronized rate hikes on the part of global central banks to battle inflation. The big question on everyone's mind is what are inflation expectations going forward? Can we return to the era of sustained economic growth and low inflation around 2%?

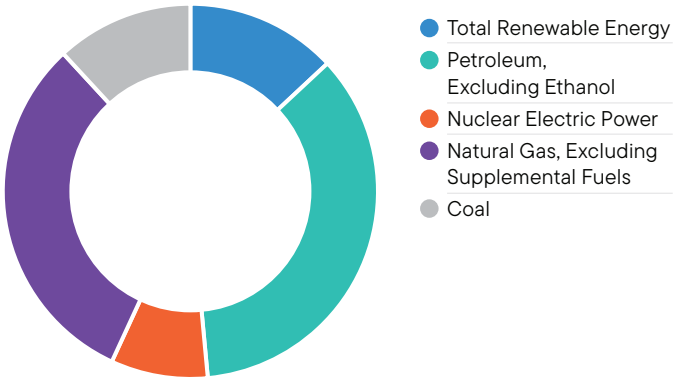
Perhaps the most pressing theme currently impacting consumers, businesses and markets is inflation. It has grown to dominate the discussion in our investment symposium in recent years and did so again this year. Inflation has a direct impact on consumer behavior, and expectations for future price rises are a big driver of central bank actions. We believe global inflation is close to its cyclical peak and will moderate from current levels, but how it will evolve remains uncertain. The key observation about central bank policy objectives is that their resolve to keep inflation expectations anchored appears to have been stiffened by the period of uncomfortably high inflation during the last two years. Previous discussions about targeting average levels of inflation, or incorporating medium-term forecasts into the process, have been downplayed. These factors have not gone away, but they have been overtaken by a singular focus on fighting inflation (often described as US Federal Reserve Chair Jerome Powell channeling one of his predecessors, Paul Volker). This has been accompanied by a willingness to accept the collateral damage caused by higher-than-anticipated interest rates, in the form of slower growth and potentially higher unemployment, in the years ahead. This clarification of objectives has gone some way to moderating market-observed levels of inflation expectations. **We believe medium-term inflation expectations remain well anchored and broadly compatible with central banks' established definitions of price stability.**

While we do not doubt central banks' desire to see inflation return to more normal levels in a timely manner, we view some of the elements of current inflation as somewhat sticky. Notably, wage inflation will remain elevated until labor markets return to a degree of balance. This probably feeds into slightly elevated levels of services inflation, even over the medium term. Similarly, the investment needed to complete a full transition to clean energy may boost demand for certain commodities, such as copper, as well as squeezing out other private sector investment that may have boosted productivity and held back inflation. The investment need to facilitate a green transition should not be underestimated, given the scale of non-renewable energy sources that are still being used in 2022 (see Exhibit 4), and the imperative to speed up their elimination. **Sticky components are likely to be responsible for inflation over-shooting target levels in the medium term.**

As we have discussed in previous years' CME publications, secular deflationary forces which dominated the last four decades are still in place. Even if the geopolitical environment argues for some roll-back of globalization, it has not gone away completely. Globalization remains an effective force for profitability that companies will not easily abandon. Technological innovation, as we discussed under the growth heading, is driving prices down around the world. Today's growth in debt, and the management of accumulated central bank balance sheets (as we showed in Exhibit 3), will limit future demand. **Disinflationary forces have changed, and their role may be diminished today, but they remain powerful factors keeping a lid on inflationary pressures.**

Green Energy is a Major Initiative for Most Developed Markets Over the Long-term

Exhibit 4: Energy Consumption by Source
As of July 31, 2022



Source: Macrobond. Important data provider notices and terms available at www.franklintempletondatasources.com.

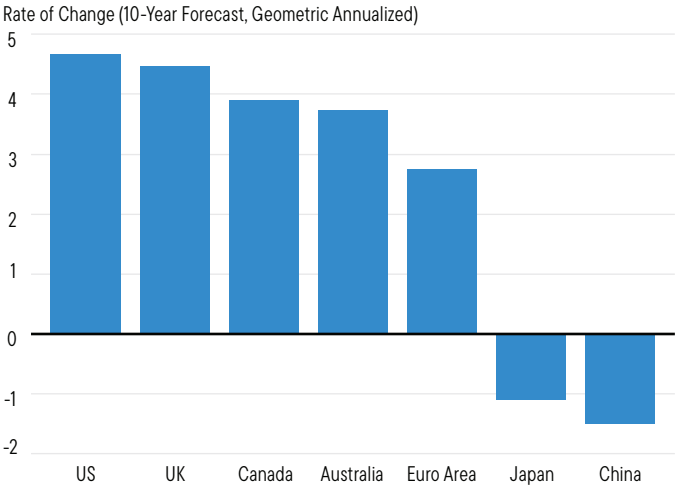
Those who believe inflation may be more persistent argue that demographic trends could prove to be an inflationary force. Additionally, current supply-side constraints and structural changes (some due to COVID-19, others due to the changed perspective on security of supply due to the war in Ukraine) could result in more persistent inflation and continued elevated levels of volatility in this measure. These fears point to higher inflation expectations potentially creating a wage-price spiral, with workers demanding higher wages and companies passing those costs on to consumers.

Monetary policy is the key governor of the relationship between growth and inflation, and with current core inflation remaining well above central bank targets (see Exhibit 5), this will keep policy tight in the near term. **While we see good reason for slightly higher levels of inflation, it seems unlikely that inflation will run far above central bank targets on a sustained basis**. The powerful tool of interest-rate hikes will be used as needed, with the potential consequence of increased growth volatility.

As we look ahead, we anticipate some longer-lasting impact on trend levels of inflation. These effects are likely to be stronger in economies such as the United States. However, with a notably elevated starting point, compared with the last two decades, inflation across the key developed and emerging economies is expected to moderate again in the medium term. Over the 10-year horizon used in our CMEs, **we expect global inflation to average 3.0%, a touch higher from last year's assumption** (see Exhibit 6 on the next page).

High Core Inflation is Affecting Central Bank Policy

Exhibit 5: Core Inflation Minus Central Bank Target
As of September 30, 2022

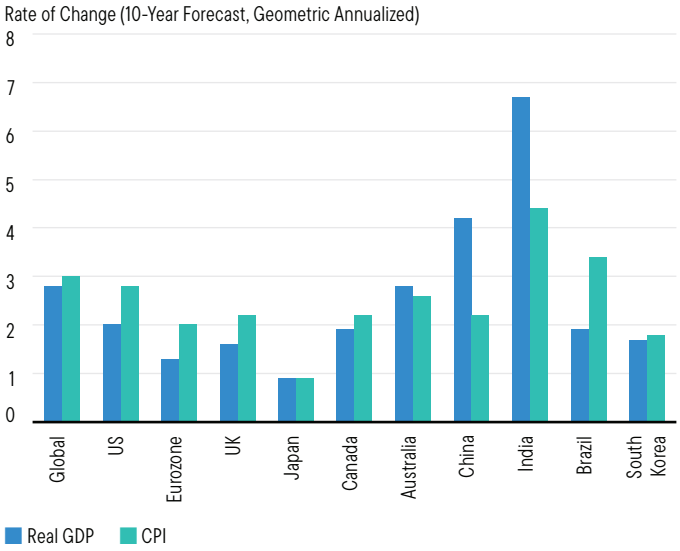


Source: FTIS, Macrobond. Important data provider notices and terms available at www.franklintempletondatasources.com.

Stable Growth Projections While Inflation Forecasts Tick Slightly Higher

Exhibit 6: Growth and Inflation Forecasts

As of September 30, 2022



Source: Macrobond. There is no assurance that any estimate, forecast or projection will be realized. Important data provider notices and terms available at www.franklintempletondatasources.com.

Conclusion

We tackle numerous questions around the longer-term asset implications regarding growth and inflation. Our macroeconomic outlook is only modestly different than that of last year, with global growth slightly lower and a marginal increase in global inflation expectations. As usual, there is some variation across regions, as shown in Exhibit 6 on the next page.

These longer-term expectations are point forecasts that attempt to capture a broader range of different outcomes. We can encapsulate them in the four-quadrant matrix (see Exhibit 7) as been reduced over the past year—we do not place a higher level of confidence in any one particular outcome. At the same time, **we retain a preference toward inflation ultimately being driven by the level of demand, rather than supply constraints, leading us to favor outcomes on the minor diagonal (bottom left to top right)**.

Global Growth and Inflation Scenarios

Exhibit 7: Describing Each Scenario

Goldilocks
High Growth / Low Inflation

- 4th industrial revolution increases productivity as businesses embrace digitization
- Globalization reorients, although largely remains intact, driven by businesses continual search to maintain profitability
- Central banks effectively anchor inflation expectations near target levels

Reflation
High Growth / High Inflation

- Fiscal policy remains proactive and sizeble, aimed at key populist issues like inequality
- Green energy transition creates durable investment impulse
- Globalization evolves, rather than retracts, as businesses' continue their pursuit of profitability

Stagnation
Low Growth / Low Inflation

- Global indebtedness weighs on growth, and increased debt service ratios limit demand
- Monetary and fiscal policy become overly reactive, marred by large balance sheets and increasing polarization between political parties
- Aging demographics and income inequality increase savings relative to investment

Stagflation
Low Growth / High Inflation

- Geopolitical uncertainty rises, leading to a reduction in globalization and increased business uncertainty
- Transition to green energy is volatile and mismanaged, leading to higher commodity prices
- Aging demographics limits supply-side production, proving to be inflationary

Sources: Franklin Templeton Investment Solutions.

Asset class return considerations

Fixed income—government bonds

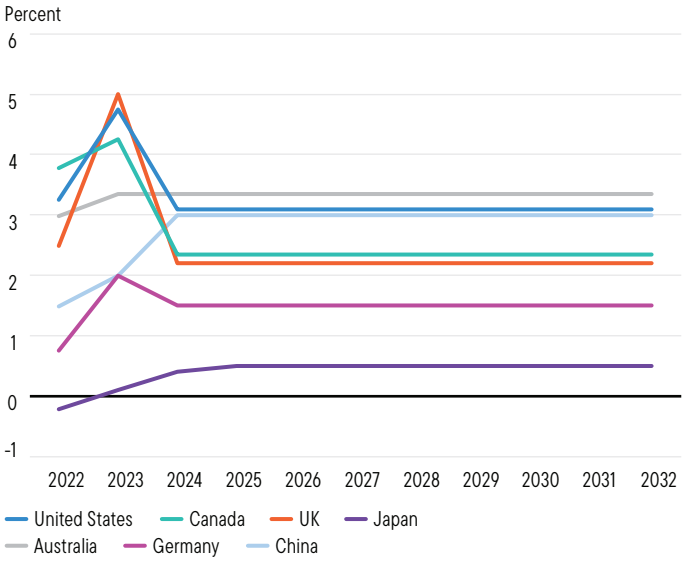
We view the prospective return from low-risk assets as being driven primarily by the starting level of government bond yields, which are themselves driven by anticipated policy rates. The starting yield can explain a large portion of the expected return forecast because any initial movement higher (lower) in bond price is offset by an ensuing lower (higher) yield in the following years of our time period. This yield base provides the first building block of portfolio return potential. On top of this we layer additional elements for asset class risk premia (which we discuss in the next section) and risk premia for illiquidity or complexity. Having seen policy rates rise quite sharply over the past year, the base levels for all our asset forecasts have increased. The total prospective returns from broadly diversified multi-asset portfolios have increased substantially due to this higher base yield, in our opinion.

This combination of slower growth and only slightly elevated inflation will likely drive many central banks to quickly reach a terminal policy rate that is somewhat restrictive, before normalizing official interest rates in the early part of our 10-year forecast horizon (see Exhibit 8). However, a strong desire to support a full economic recovery, through the provision of plentiful liquidity, will persist for a longer time in certain large economies, notably Japan, where inflation has consistently undershot central bank targets. These conflicting forces have pushed government bond yields up sharply from the exceptionally low levels reached in 2020. Real short-term interest rates started from deeply negative levels in most markets, and although they have increased recently, in a longer-term comparison they remain depressed. We anticipate a further increase in real rates to mainly occur through inflation dropping back toward central banks' targets in the coming years.

Policy Rate Expectations

Exhibit 8: Regional Short Rate Forecasts

As of September 30, 2022



Sources: Bloomberg, FTIS Forecasts. There is no assurance that any estimate, forecast or projection will be realized. Important data provider notices and terms available at www.franklintempletondatasources.com.

With global interest rates starting from relatively elevated levels, and expected to rise further before normalizing, overall return expectations from all fixed income assets have become more attractive than has been the case in recent years, in our analysis, and notably higher than we anticipated in our prior forecasts.

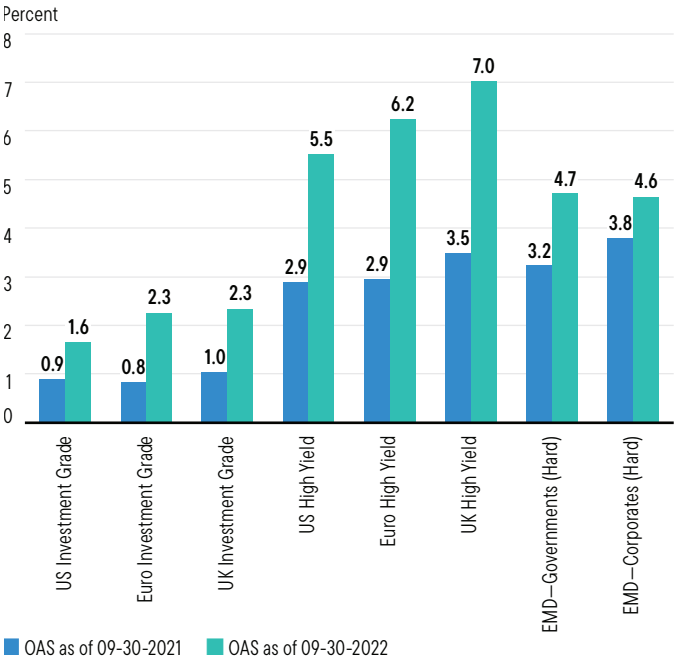
The term premium is a measure of the extra yield that owners of bonds demand, in excess of the anticipated average level of short-term interest rates for the life of the bond, to compensate for making a longer-term investment. This premium reflects supply and demand factors, including central banks' quantitative tightening policies, which recently replaced quantitative easing in some markets. This has seen the term premium oscillate over the past year, giving an ambiguous signal. Although it remains well above its pandemic lows, further increases over the next few years may occur as we expect an eventual normalization in monetary policy, relative to the restrictive levels being reached in many developed markets at this time.

However, demographics and the investment behavior of an aging population continue to weigh on the term premium, as does the re-regulation of financial institutions, which has boosted demand for assets perceived as safe (Basel II). This may result in bond yields remaining lower than our historical experience, through this and the next cycle.

Within the fixed income asset class, the additional yield or spread that developed market corporate bonds provide has generally risen as fears of recession have mounted.

Credit Spreads Offer Adequate Compensation for Default Risk

Exhibit 9: Current Option Adjusted Spread (OAS)
As of September 30, 2022



Sources: Bloomberg. There is no assurance that any estimate, forecast or projection will be realized. Important data provider notices and terms available at www.franklintempletondatasources.com.

A desire to enhance portfolio return potential had seen many investors add to holdings of higher yielding securities, prior to the current rate hiking cycle, boosting demand for riskier fixed income assets. It appears the correlated rise in government bond yields and credit spreads that occurred during 2022 has re-based this "reach for yield" motivation. As a result, the current yield offered by corporate credit, especially lower-rated issues, is high by historical comparisons (see Exhibit 9). And compared with lower-risk government bonds, whose yield we have noted has risen to more appealing levels, the additional spread appears more normal. **Given our outlook for growth, the risk premium contained within corporate bond yields seems to be more than adequate compensation for the likely level of default risk over a full business cycle. The projected Sharpe Ratio is among the more attractive asset classes that we forecast, when we consider the balance of prospective return potential in relation to anticipated levels of volatility.**

Equity

Equity markets have corrected sharply during the past year, following a period of appreciation from pandemic-induced lows in 2020. They joined the correlated move seen in government bond yields and credit spreads, to create a "sell everything" environment. This was driven by the aggressive policy tightening cycle adopted by many developed market central banks in response to multi-decade high levels of inflation. Developed market valuations, based on price-to-earnings (P/E) ratios, have dropped below their historical averages. They are, similarly, less expensive than they were last year when judged on a price-to-book basis. This remains the case even when we smooth out the effect of recent volatility in earnings, such as by using longer-term, cyclically adjusted metrics. Using CAPE (cyclically adjusted P/E) ratios, stocks appear fairly valued, in general. However, they are outright cheap in Japan and China, for example, and these markets may be supported by the valuation factor in the longer term. As a result, **we believe global equities can trade at slightly higher multiples than today, as some normalization is likely to occur over our 10-year horizon**.

This valuation tailwind might be slightly offset by prospective earnings growth that is undermined by an ongoing cyclical slowdown in the early part of our forecast horizon. In addition, corporate margins have expanded since the economic low point in 2020 and remain at elevated levels. We do not believe that margins will remain at such levels throughout our forecast horizon. As a result, a decline in margins may act as a headwind to earnings per share (EPS) growth and overall equity return.

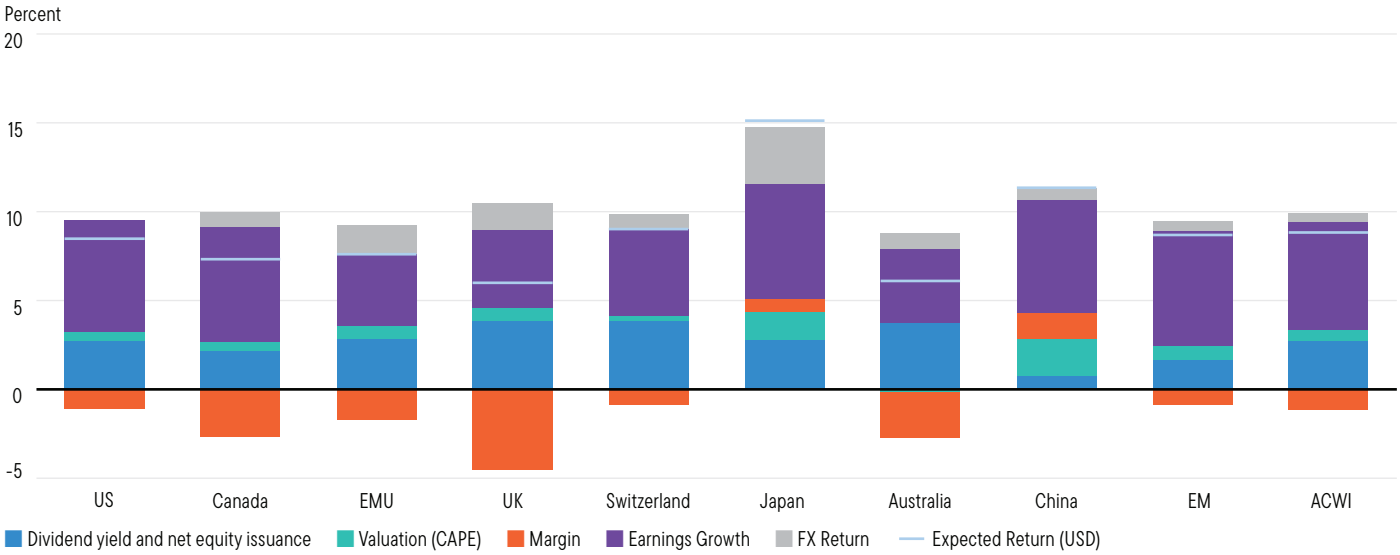
We break down the return potential of various stock markets into their key drivers of return: EPS growth, carving out margin adjustments; dividend yield and net share issuance; valuation normalization (CAPE); and anticipated foreign exchange movements. This is shown graphically (see Exhibit 10 on the next page). This highlights that over ten years, the key driver of returns is the level and growth of earnings and total shareholder yield. **Changes in valuation metrics are no longer a headwind to equity return potential even as margins act to offset this in our expected returns across most regions**.

When we analyze equities relative to lower-risk assets, we believe global stocks have greater risk-adjusted return potential than global bonds in an environment of continued global expansion, thereby earning their equity risk premium. When calculated using several approaches, we arrive at an **equity risk premium for global stocks in the region of 4% over government bonds**.

Valuations Are No Longer a Headwind to Equity Returns, Although We Still Expect Margins to Normalize

Exhibit 10: Building Blocks Model: Equity Return Decomposition

As of September 30, 2022



Sources: FTIS, Bloomberg, Macrobond. Important data provider notices and terms available at www.franklintempletondatasources.com.

Alternatives: private assets

Private assets may be a beneficial addition to multi-asset portfolios from several perspectives: they can offer a higher return potential, may include an illiquidity premium and provide access to a broad array of heterogenous investments. We focus on the three primary private asset classes in the US market: US private real estate, US private credit and US private equity. Private asset expected returns and risk expectations are reflective of broad-based, core, institutional allocations to these asset classes. For instance, our US private real estate expectations are based on the typical exposure profile of an institutional core real estate fund in The National Council of Real Estate Investment Fiduciaries (NCREIF) Open-End Diversified Core Equity (ODCE) Index. Importantly, our estimates include assumptions for leverage and typical fund fees.

We generally estimate private asset return expectations by using both bottom-up and top-down modeling approaches. Bottom-up models use a build-up approach to estimating market implied discount rates based on prevailing fundamental data and forward-looking assumptions. Top-down models identify public asset proxies with common economic risks and growth sensitivities, with necessary adjustments to account for the idiosyncrasies that these private assets may have over their respective proxies, including the impact of their cost of financing.

Our private asset expected returns reflect the impact of asset pricing trends in public markets, most notably a higher risk-free rate environment, as noted above. For example, our US private real estate expected return faces a headwind due to relatively low starting appraisal-based capitalization rates. Unlike its public market counterparts, private real estate has yet to re-price to reflect an environment with negative leverage (financing rates exceeding cap rates) and low transaction activity. We capture this dynamic by assuming an expansion in terminal cap rates. The drag from multiple expansion is largely offset by our expectation for robust cash flow growth due to a favorable supply/demand environment in core real estate sectors such as industrial spaces and single/multi-family homes.

In contrast, our assumptions for private credit and private equity show a meaningful return premium over public markets. We capture several fundamental advantages to direct lending strategies based on attractive yield spreads and modest expected credit losses. And private equity continues to offer returns at least proportional to its higher risk profile relative to public equities. We caution that increasing competition and “dry powder” in the form of an overhang of uninvested capital can be expected to compress the future illiquidity premia in private markets relative to historical norms.

Importantly, our private asset expected returns capture broad-based exposures and are heavily dependent on our assumptions for strategy mix, valuations, leverage, cost of leverage, fees, etc. Investors should consider the exposure profile of their target managers and acknowledge any differences relative to our assumptions. Manager selection is critically important in the private asset space as investors cannot simply "buy the index" to capture unconditional beta returns. In selecting and deciding the size of potential allocations to underlying private asset managers, investors should further assess the potential for managers to add value (alpha) in addition to assessing whether managers can adequately capture the returns we expect at the asset class level.

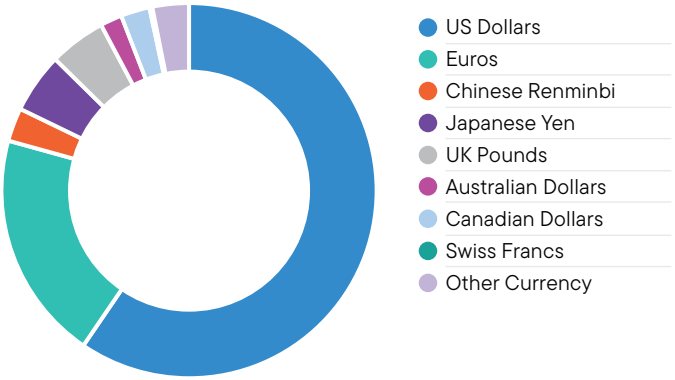
Foreign exchange effects

At the end of a period of unusually easy fiscal policy and with monetary policy tightening well underway, the US dollar's preeminent position remains intact, but its current relative overvaluation has become more extreme in the past year. We believe the US dollar is likely to weaken over our 10-year horizon. We use purchasing power parity (PPP) approaches for developed market currencies, which support this correction of the US dollar's overvaluation, enhancing the return potential for assets denominated in other currencies. **We continue to view the US dollar as the world's reserve currency and see low probability of that changing over even a 10-year horizon. Given its preeminent position in the holdings of other central banks (see Exhibit 11), the US dollar is likely to continue to trade with an appropriate valuation premium embedded within it**. However, the status of the euro and the Chinese renminbi may be somewhat enhanced over such a long view.

US Dollar Remains the Preeminent Reserve Currency

Exhibit 11: Reserve Currency

As of June 30, 2022



Sources: IMF, Macrobond. Important data provider notices and terms available at www.franklintempletondatasources.com.

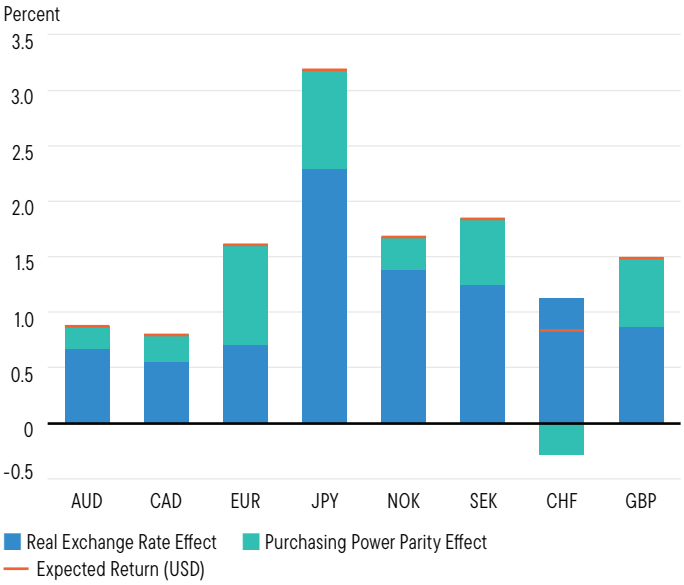
We also consider our relative inflation forecasts. Higher inflation can erode the purchasing power of a currency. Our view of marginally higher inflation in the United States generally acts as a headwind for US-dollar returns (see Exhibit 12). **The combination of high valuations and higher expected inflation results in our expectation that most developed market currencies will appreciate against the US dollar over the next decade**.

For emerging market currencies, we favor a real effective exchange rate (REER) approach. REER compares a nation's currency value against an index of the currencies of its major trading partners, adjusted for inflation. The superior growth prospects of emerging market economies have led to more return potential in emerging market currencies, but this is matched by higher expected volatility. In general, **emerging market countries that have suffered the worst economic recoveries, usually with accompanying currency weakness, now have the brightest prospects**.

US Dollar is Expected to Depreciate vs. All Major Currencies

Exhibit 12: Developed Market FX Decomposition

As of September 30, 2022



Sources: Bloomberg, Macrobond. There is no assurance that any estimate, forecast or projection will be realized. Important data provider notices and terms available at www.franklintempletondatasources.com.

Multi-asset perspective

The expected return for multi-asset portfolios is appreciably higher than last year's projections. Government bond yields have risen and now provide a notably higher return, albeit still the lowest of the mix. Riskier assets are generally forecasted to produce similarly higher returns. Valuations for both equities and corporate credit have corrected and will act as a tailwind to longer-term return potential. Private assets' prospects are mixed but generally offer healthy prospective return premiums. Overall, risk premiums are slightly above average, with our projected equity risk premium estimated to be 4% above global government bonds. Similarly, excess returns in credit are now slightly above long-term averages, with some variation among the sectors.

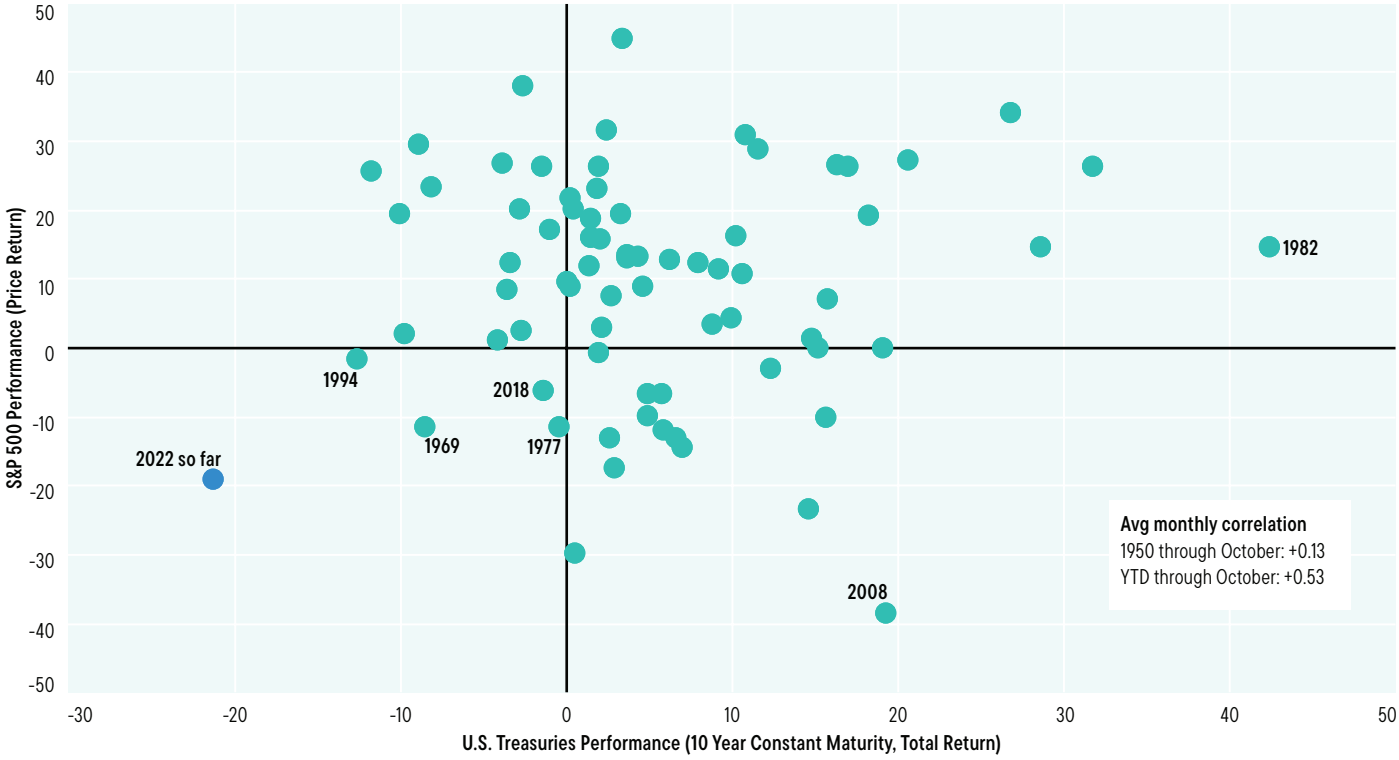
Government bonds may appear more appealing from a return perspective, but this comes at the price of an additional risk: persistent inflation. Stock/bond correlations have been modestly negative for the last 20 years, led by lower-risk government bonds and risky equities. However, in the past year during the "sell everything" market that we described above, short-term correlations have risen sharply, and performance has been negative for both equities and government bonds (see Exhibit 13).

The primary underlying reason has been high inflation, which has dominated growth fluctuations in dictating the performance of both asset classes and thus the related correlations. We still expect growth to be the key macro driver over the next decade, but we are giving greater probability to slightly higher inflation and greater levels of volatility in this measure. This has led many commentators to argue that the role lower-risk government bonds can play in a balanced portfolio could be reduced, which lowers their attractiveness in a multi-asset portfolio. While our forecasts for correlations

Traditional Assets: No Place to Hide During Stagflation

Exhibit 13: US Equities vs. Treasuries, Annual Returns Since 1948

Data as of November 3, 2022



Sources: Standard and Poor's 500, U.S. Department of Treasury, Macrobond. Indexes are unmanaged and one cannot directly invest in them. They do not include fees, expenses or sales charges. **Past performance is not an indicator or a guarantee of future results.** Important data provider notices and terms available at www.franklintempletondatasources.com.

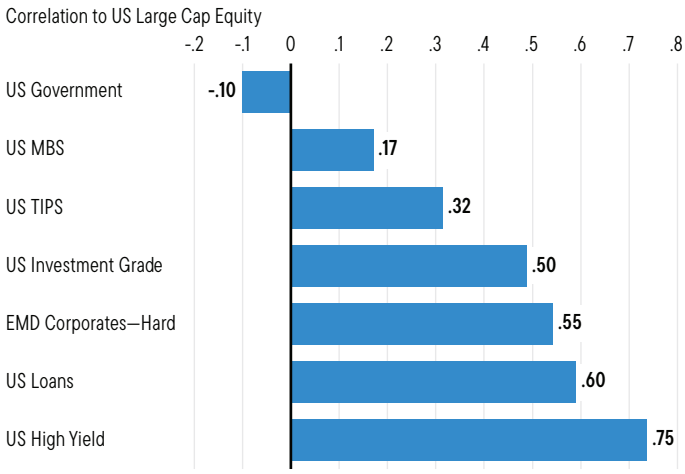
have evolved over the past year, we still believe that government bonds offer attractive diversification benefits. Combined with yields returning to some of the most attractive levels seen over the last 30 years, these assets remain important in multi-asset portfolios (see Exhibit 14).

More broadly, **we believe that maintaining a diversified portfolio of risk premia in addition to the traditional benefits of a balanced portfolio between stocks and bonds is the most likely path toward stable potential returns**. We also believe active management of this asset mix can enhance potential return and manage the level of total portfolio risk that is taken.

Higher Spread Fixed Income has Greater Correlation with Equities

Exhibit 14: Fixed Income Asset Class Correlations to US Equities (Unhedged USD)

As of September 30, 2022



Source: FTIS, Bloomberg. Important data provider notices and terms available at www.franklintempletondatasources.com.

Appendix

Historical Correlation

Long-term correlations between major asset classes, estimated using 20-year historical data. Expected correlations help quantify the relationships among asset classes. Expected correlation is as important as expected return and risk estimates when constructing portfolios.

	Asset Classes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	20	21
1	**Global Equities**	**1.0**																					
2	**Developed Market Equity**	**1.0**	**1.0**																				
3	US Large Cap Equity	1.0	1.0	1.0																			
4	Canada Equity	0.9	0.9	0.8	1.0																		
5	EAFE Equity	1.0	1.0	0.9	0.9	1.0																	
6	EMU Equity	0.9	0.9	0.9	0.8	1.0	1.0																
7	UK Equity	0.9	0.9	0.8	0.9	0.9	0.9	1.0															
8	Japan Equities	0.8	0.8	0.7	0.6	0.8	0.7	0.7	1.0														
9	Pacific ex Japan Equity	0.9	0.9	0.8	0.9	0.9	0.8	0.9	0.7	1.0													
10	Australia Equities	0.9	0.9	0.8	0.8	0.9	0.8	0.8	0.7	1.0	1.0												
11	**Emerging Market Equity**	**0.9**	**0.8**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**0.7**	**0.9**	**0.8**	**1.0**											
12	China Equities	0.6	0.6	0.5	0.6	0.6	0.6	0.5	0.5	0.7	0.6	0.8	1.0										
13	Global Listed Infrastructure	0.9	0.9	0.8	0.8	0.9	0.8	0.9	0.7	0.9	0.9	0.8	0.5	1.0									
14	US Infrastructure	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.4	0.5	0.6	0.4	0.1	0.8	1.0								
15	Global REITs	0.8	0.8	0.8	0.7	0.8	0.7	0.7	0.6	0.8	0.8	0.6	0.4	0.8	0.7	1.0							
16	US REITs	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.7	0.7	0.6	0.3	0.7	0.7	1.0	1.0						
17	Global Treasury	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.4	0.3	0.4	0.3	1.0					
18	US Government Bond	–0.1	–0.1	–0.1	–0.2	–0.2	–0.2	–0.2	–0.1	–0.2	–0.1	–0.2	–0.1	–0.1	0.0	0.0	0.1	0.7	1.0				
19	Canada Government Bond	0.7	0.7	0.6	0.7	0.7	0.6	0.6	0.5	0.7	0.6	0.7	0.5	0.7	0.5	0.6	0.5	0.6	0.3	1.0			
20	Euro Government Bond	0.5	0.5	0.4	0.4	0.5	0.6	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.3	0.4	0.4	0.9	0.4	0.7	1.0		
21	UK Government Bond	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.3	0.5	0.4	0.7	0.5	0.6	0.7	1.0	
22	Japan Government Bond	0.0	0.0	0.0	0.0	0.0	0.0	–0.1	0.0	0.0	0.0	0.0	–0.1	0.1	0.1	0.1	0.1	0.8	0.6	0.3	0.5	0.4	1.0
23	Australia Government Bond	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.8	0.7	0.7	0.5	0.7	0.5	0.7	0.6	0.7	0.2	0.9	0.7	0.6	0.5
24	China Government Bond	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.4	0.2	0.3	0.4	0.4	0.3
25	Global Inflation Linked Bonds	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.3	0.6	0.4	0.6	0.5	0.8	0.5	0.7	0.8	0.8	0.5
26	**Global Investment Grade Bond**	**0.7**	**0.7**	**0.6**	**0.6**	**0.7**	**0.6**	**0.6**	**0.5**	**0.6**	**0.6**	**0.6**	**0.4**	**0.7**	**0.5**	**0.7**	**0.6**	**0.8**	**0.5**	**0.8**	**0.8**	**0.7**	**0.5**
27	US Investment Grade	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.3	0.6	0.5	0.6	0.5	0.7	0.6	0.6	0.6	0.6	0.4
28	Euro Investment Grade	0.7	0.7	0.6	0.6	0.7	0.7	0.6	0.5	0.7	0.6	0.6	0.5	0.7	0.4	0.6	0.5	0.8	0.3	0.7	0.9	0.7	0.4
29	UK Investment Grade	0.7	0.7	0.6	0.6	0.7	0.6	0.7	0.5	0.6	0.6	0.6	0.4	0.7	0.5	0.6	0.5	0.6	0.2	0.7	0.7	0.9	0.3
30	**Global High Yield**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.7**	**0.6**	**0.8**	**0.8**	**0.8**	**0.5**	**0.8**	**0.6**	**0.8**	**0.7**	**0.4**	**0.0**	**0.7**	**0.5**	**0.5**	**0.1**
31	US High Yield	0.8	0.8	0.8	0.7	0.8	0.7	0.7	0.6	0.7	0.7	0.7	0.4	0.8	0.6	0.8	0.7	0.3	0.0	0.6	0.4	0.4	0.1
32	Euro High Yield	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.6	0.8	0.8	0.8	0.5	0.8	0.5	0.7	0.6	0.6	0.0	0.7	0.8	0.5	0.2
33	UK High Yield	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.5	0.7	0.7	0.7	0.5	0.7	0.4	0.6	0.5	0.4	–0.1	0.6	0.5	0.6	0.1
34	US High Yield Loans	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.3	0.7	0.5	0.6	0.6	0.0	–0.3	0.4	0.2	0.2	–0.1
35	**US MBS**	**0.2**	**0.2**	**0.2**	**0.0**	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.1**	**0.2**	**0.2**	**0.2**	**0.7**	**0.8**	**0.5**	**0.5**	**0.6**	**0.6**
36	Munis	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.3	0.3	0.4	0.3	0.6	0.6	0.4	0.4	0.5	0.4
37	EMD—Corporates (Hard)	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.6	0.7	0.5	0.6	0.5	0.6	0.5	0.4	0.2	0.6	0.5	0.4	0.1
38	EMD—Governments (Hard)	0.7	0.7	0.6	0.6	0.7	0.7	0.6	0.5	0.7	0.7	0.7	0.4	0.7	0.6	0.7	0.6	0.6	0.3	0.7	0.6	0.5	0.3
39	EMD—Governments (Local)	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.8	0.5	0.7	0.5	0.6	0.5	0.6	0.1	0.7	0.7	0.5	0.3
40	US Private Credit	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.3	0.6	0.4	0.5	0.5	0.0	–0.3	0.3	0.2	0.2	–0.1
41	US Private Real Estate	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.6	0.6	0.5	0.3	0.6	0.6	0.8	0.9	0.3	0.0	0.5	0.3	0.4	0.1
42	US Private Equity	0.8	0.8	0.9	0.7	0.8	0.7	0.7	0.6	0.7	0.7	0.6	0.4	0.7	0.5	0.7	0.6	0.2	–0.1	0.5	0.4	0.4	0.0
43	**Commodities**	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.5**	**0.6**	**0.4**	**0.6**	**0.6**	**0.6**	**0.5**	**0.5**	**0.3**	**0.4**	**0.4**	**0.2**	**–0.2**	**0.5**	**0.4**	**0.2**	**0.0**
44	Global Hedge Funds	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.6	0.8	0.8	0.7	0.5	0.8	0.5	0.7	0.6	0.1	–0.4	0.5	0.3	0.3	–0.1

Correlations continued

Asset Classes	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
23 Australia Government Bond	1.0																					
24 China Government Bond	0.4	1.0																				
25 Global Inflation Linked Bonds	0.7	0.7	1.0																			
26 Global Investment Grade Bond	**0.8**	**0.3**	**0.7**	**1.0**																		
27 US Investment Grade	0.6	0.2	0.8	0.7	1.0																	
28 Euro Investment Grade	0.8	0.3	0.8	0.9	0.7	1.0																
29 UK Investment Grade	0.7	0.4	0.8	0.8	0.7	0.7	1.0															
30 Global High Yield	**0.7**	**0.2**	**0.7**	**0.8**	**0.7**	**0.7**	**0.7**	**1.0**														
31 US High Yield	0.7	0.1	0.6	0.7	0.7	0.6	0.7	0.7	1.0													
32 Euro High Yield	0.7	0.2	0.7	0.8	0.6	0.9	0.8	0.9	0.7	1.0												
33 UK High Yield	0.6	0.2	0.6	0.7	0.5	0.7	0.8	0.8	0.7	0.7	1.0											
34 US High Yield Loans	0.4	0.0	0.4	0.5	0.5	0.4	0.5	0.8	0.8	0.7	0.7	1.0										
35 US MBS	**0.5**	**0.3**	**0.6**	**0.6**	**0.6**	**0.4**	**0.4**	**0.2**	**0.2**	**0.2**	**0.1**	**0.7**	**1.0**									
36 Munis	0.4	0.2	0.6	0.6	0.7	0.4	0.4	0.5	0.5	0.4	0.3	0.3	0.7	1.0								
37 EMD—Corporates (Hard)	0.7	0.1	0.6	0.7	0.7	0.6	0.6	0.8	0.8	0.7	0.6	0.6	0.3	0.7	1.0							
38 EMD—Governments (Hard)	0.7	0.2	0.7	0.8	0.8	0.7	0.7	0.8	0.8	0.7	0.6	0.6	0.5	0.6	0.7	1.0						
39 EMD—Governments (Local)	0.8	0.3	0.6	0.7	0.6	0.8	0.6	0.7	0.7	0.8	0.6	0.5	0.3	0.4	0.7	0.7	1.0					
40 US Private Credit	0.3	0.0	0.3	0.4	0.4	0.3	0.5	0.7	0.7	0.6	0.6	0.9	0.0	0.3	0.6	0.5	0.7	1.0				
41 US Private Real Estate	0.5	0.2	0.5	0.5	0.5	0.4	0.5	0.6	0.6	0.5	0.4	0.5	0.2	0.3	0.5	0.5	0.5	0.4	1.0			
42 US Private Equity	0.6	0.2	0.4	0.5	0.4	0.5	0.5	0.7	0.7	0.6	0.5	0.5	0.2	0.2	0.5	0.5	0.5	0.5	0.6	1.0		
43 Commodities	**0.5**	**0.1**	**0.4**	**0.4**	**0.3**	**0.5**	**0.4**	**0.6**	**0.5**	**0.6**	**0.5**	**0.5**	**–0.2**	**0.1**	**0.5**	**0.4**	**0.5**	**0.4**	**0.3**	**0.7**	**1.0**	
44 Global Hedge Funds	0.5	0.1	0.5	0.7	0.6	0.6	0.7	0.8	0.8	0.7	0.7	0.8	–0.2	0.3	0.7	0.6	0.6	0.7	0.5	0.7	0.7	1.0

This section provides an overview of the methodology and models we use to develop long-term capital market expectations (CMEs) for various asset classes, including equities, fixed income, commodities and alternatives. In addition, we deliver expectations of three-month cash returns.

Our long-term return expectations are driven by current valuations, analyst expectations, expected growth rates and expected economic environments.

Equities

Our equity CME process generates 10-year forecasts for countries and regions. To develop our CMEs, we use three models: the "building blocks" model, the "residual income" model and the "global beta" model. We average the three models to arrive at expectations for country-level and regional equities.

Building blocks model

Derived from the classical dividend discount model (DDM) approach, the building blocks model is comprised of three components that collectively capture significant drivers of equity returns:

1. Current shareholder yield, which is based on the 12-month trailing dividend yield, adjusted for buybacks and share issuance. This building block represents income return.
2. Earnings growth, which we estimate as a blend of bottom-up and top-down views, adjusted for profit margin change. The bottom-up approach incorporates two-year analyst EPS growth forecasts and historical median EPS growth. The top-down approach derives growth forecasts from nominal GDP forecasts for the next 10 years. This forecast is then adjusted for current operating margin levels.
3. Multiple expansion, which is based on the deviation of current cyclically adjusted price to earnings (CAPE) from its trailing history. CAPE is a valuation method that reduces the volatility of earnings by averaging the previous 10-year earnings growth, adjusted for inflation. We assume that current CAPE levels' convergence to historical median values over the 10-year horizon. Thus a high relative valuation is indicative of lower future returns and vice versa.

Residual income model

The residual income model estimates the value of common stock by discounting the future stream of net income, less all costs of all capital of a company, commonly referred to as residual income. The model analyzes the value of equity as the sum of two components:

1. The current book value of equity
2. The present value of expected future residual income

According to the model, the value of common stock can be inferred from the relation between current book value and projected return on equity (ROE) as follows:

$$V_0 = B_0 + \sum_{t=1}^{\infty} \frac{(RO_t - r) * B_{t-1}}{(1+r)^t}$$

where:

V_0 = current price of a share of stock

B_0 = current per-share book value of equity

B_t = expected per-share book value of equity at time t

ROE_t = return on equity at time t

DPR_t = dividend payout ratio at time t

r = cost of equity or required rate of return

The key drivers of growth of residual income are ROE and growth of book value. For ROE, we assume convergence to a long-run steady state over a 10-year horizon, with steady state being an average of ROE derived from earnings growth (a blend of top-down and bottom—up views also used above in the building blocks model) and historic median ROE. Growth of book value reflects steady state assumptions according to the following:

$$B_t = B_{t-1} + B_{t-1} * ROE_t * (1 - DPR_t)$$

Assuming current equity valuations, current book value and forecasted future residual income, we derive equity return expectations as the required rate of return (cost of capital).

Global beta model

The global beta model assumes that the long-run expected active return of a country equity index is determined by its covariance with the global equity market portfolio, consistent with the classic definition of "beta." We represent the global equity market portfolio by the MSCI All Country World Index (ACWI). Based on historical monthly US-dollar returns, we estimate regressions for each country's equity index excess return against the MSCI ACWI excess return to derive individual country beta to the global equity portfolio. Based on this approach, each country's equity CME is calculated as its beta multiplied by the global equity portfolio CME.

The global equity portfolio CME is calculated as an average of the building block approach and residual income methodology applied at the MSCI ACWI level, expressed in US-dollar terms. To convert resulting CMEs into local currencies, we apply our currency conversion methodology and our 10-year currency forecasts.

Specialty equities

To develop our expectations for real estate investment trusts (REITs) and listed infrastructure, we use a lasso regression[4] approach to help identify relevant factors that drive expected returns of each asset category. As further validation, and to avoid spurious outcomes, we cross check statistical analyses with a curated approach that leans on the underlying economic rationale in selecting factors for each asset category.

For REITs, our statistical analysis strongly supports the intuition that this asset category has both equity and fixed income components. Bond-like features reflect the importance of rental income in the valuation of REITs. With respect to infrastructure equities, we find equities to be the dominant factor, with fixed income being important as well.

Additionally, we also develop a bottom-up building blocks model for REITs using inputs from our private direct real estate. The bottom-up model starts with the unlevered, gross of fee estimate for US private real estate and adjusts for leverage, general and administrative costs ("G&A"), and the prevailing price discount/premium to underlying asset value. We ultimately blend our bottom-up and top-down views to determine our final CME.

Fixed income

Our core fixed income CMEs are based on projections of key interest rates and the assumption for credit spreads to revert to their historical long-term averages. To improve model accuracy, we split each composite index into subindexes based on time to maturity and forecast the returns of each subindex separately. For composite indexes, we aggregate subindex projections using current market structure weights.

To develop government yield curve projections for an individual country, we start with three-month and 10-year yield forecasts and apply a three-factor yield curve model based on level, slope and curvature factors. Our curvature assumptions are based on long-run historical averages. The statistical yield curve model produces forecasts for one-, three-, five-, seven-, 20- and 30-year government bond yields.

Each composite index is divided into subindexes grouped by time to maturity. We assume that current market structure of the composite indexes will remain consistent over the forecast horizon. Return forecasts of each subindex are based on projections of matching by maturity the government yields and the evolution of the subindex spread. The forecast for subindex spread starts from the current spread level and evolves toward its long-term historical average. Based on projected yields, the total return for each subindex is calculated as the sum of price return and the coupon, where price return reflects the evolution of the yield curve, including the roll-down component.

The weighted sum of the subindex returns produces the index total return forecast. For bond indexes with default risk, we make a further adjustment for defaults based on historical averages of losses due to them.

For inflation-linked bonds, we modify our core pricing methodology to account for the difference between our 10-year inflation forecast and the 10-year breakeven inflation rate, an important component of valuation.

Our pricing methodology is extended to US mortgage-backed securities. We make assumptions about prepayments in the context of the interest-rate environment projected by our core government rates process.

Forecasting returns for high-yield loans is based on short rate projections from our core methodology combined with the assumption that discount margins revert to their historical long-term averages.

Commodities

To estimate commodity returns, we apply the building blocks approach to the commodity futures curve. We identify spot return, roll yield and return on collateral as building blocks. The spot return is determined by the change in the value of an individual commodity and is broken down into the real (inflation-adjusted) spot price return and inflation. Our 10-year estimates of the real spot price return are based on the long-term historical average of real spot monthly returns. We add back our 10-year inflation expectation to arrive at the estimate of spot return. Roll yield arises from rolling the commodity futures forward before the contract expires. Roll yield is estimated as the difference between historical excess returns and the historical spot returns. To estimate return on collateral, we assume that cash collateral is invested in three-month US Treasury bills and use our 10-year forecast of the three-month rate.

We also estimate commodity returns using a lasso regression approach that identifies public asset proxies with common return sensitivities, to form a "replicating portfolio" of these public proxies that best represents commodity return drivers. The composition of these replicating portfolios is guided by returns-based regressions, as well as intuition regarding which drivers are important.

We ultimately blend our bottom-up building blocks and top-down lasso regression approach to determine our final CME.

4. A regression method that performs variable selection to improve prediction accuracy and interpretability of the resulting model while mitigating overfitting.

Hedge funds

To estimate hedge fund returns, we use a lasso regression approach that identifies public asset proxies with common return sensitivities, to form a "replicating portfolio" of these public proxies that best represents hedge funds' return drivers. The composition of these replicating portfolios is guided by returns-based regressions, as well as intuition regarding which drivers are important.

Alternatives: private assets

To forecast returns for private assets, we evaluate results from bottom-up and top-down models, respectively. Bottom-up models derive estimates for expected returns based on market fundamentals using a building blocks approach. Similar to the classical DDM building blocks model applied to equities, the private assets bottom-up models generally reflect current yields, growth rate forecasts and expected changes in valuation multiples. The models also capture practicalities of accessing private assets through fund vehicles, such as the use of leverage, cost of financing and manager fees.

Our top-down models identify public asset proxies with common economic risks, sources of yield, and growth sensitivities, and form a "replicating portfolio" of these public proxies that best represents private assets' return drivers. The composition of these replicating portfolios is guided by returns-based regressions. First, to facilitate the comparison to public assets, we address the issue of the artificially low volatility of private asset returns—a well-known phenomenon arising from the lack of regular, mark-to-market pricing for illiquid assets. We "de-smooth" quarterly returns by fitting an autoregression model. In forming a replicating portfolio, we account for the underlying leverage of private assets, scaling regression coefficients and aligning volatilities of the proxy portfolio with its private counterpart.

Further additional considerations include the assessment of a potential illiquidity premium and the cost of financing. Our expected return estimates are net of fees.

Private direct real estate

Key drivers of private direct real estate (DRE) returns are rental income and price appreciation. Income is driven by cash flows from contractual rents and leases, which can provide a partial hedge against inflation over time. Price appreciation, a volatile component of returns, is pro-cyclical, like public equities. Our private DRE expected return and risk reflect an exposure profile typical of US core institutional private real estate funds included in the NCREIF ODCE Index. The estimate includes the use of leverage and is net of typical fund fees.

The bottom-up model starts with the prevailing broad market appraisal-based capitalization rate. We reduce this cash yield metric by expected capital expenditures to estimate the free cash flow yield. We include an expected real cash flow growth estimate to which we add our inflation assumption. Lastly, we assume a change in capitalization rates over the course of the next 10 years. Additional features of the bottom-up model include the assumption of a 10% exposure to value-add real estate activities, leverage and cost of leverage assumptions, and estimated fund fees of 100 basis points on average.

Reflecting the economic characteristics of the real estate sector, a broad DRE index can be viewed as a leveraged portfolio of equities, nominal and inflation-linked bonds, a sector-specific factor and an illiquidity factor. Our top-down framework captures the beta of DRE to the key return drivers. Based on mixed historical evidence on the magnitude of the illiquidity premium, we take a conservative approach and do not include it at the modeling stage.

Private credit

The US private credit (PC) expected return and risk represent a typical US core direct lending strategy comprised of senior secured loans with 80% first lien and 20% second lien loans. In effect, we model a typical "unitranche" loan portfolio. We assume all loans are floating rate.

The building blocks approach starts with our base US-dollar cash rate and adds a blended average expected spread. We further capture extra return in the form of an original issue discount (OID) and estimate average expected unlevered credit losses. To this unlevered expected return, we apply a leverage and cost of leverage assumption. Lastly, we reduce returns by assumptions for typical fund expenses inclusive of assumed incentive fees of 12.5% of the total return. Our replicating public markets portfolio approach yields a proxy portfolio of bank loans. We adjust for leverage, aligning the volatility of the replicating portfolio with the typical industry volatility profile of PC, and add an illiquidity premium prior to deducting fund expenses.

Private equity

For private equities (PE), we rely on the top-down approach to derive an estimate of the net, levered expected return and risk for a broad-based US private equity exposure. Based on the prevailing strategy composition of the PE market, our PE expected return is heavily influenced by data for the buyout sub-strategy. Our public market proxy is a leverage-adjusted US equity index. Based on our analysis of the broad PE market, the leverage ratio of PE is close to 1.4x as measured by differences in debt/enterprise value multiples. This implies a notably higher exposure to the equity risk premium compared to public equities. We add an illiquidity premium and make the broad-based assumption that incremental manager alpha and fund fees offset. Based on these findings, our net-of-fees 10-year expectation tightly tracks the outlook for US equity, adjusted for a premium and leverage differentials.

Our estimates for private asset volatility and correlations entail both art and science. We endeavor to capture the economic risk profile for the private assets such that our views are both statistically accurate and fit for use in common approaches to portfolio optimization. We use a combination of "de-smoothing" autoregressive models, sector and/or leverage adjusted public proxies, and fundamental judgement to correct for the challenges associated with high levels of autocorrelation exhibited by stated private asset index returns.

Currencies

For developed market (DM) countries, we combine forecasts from two models: purchasing power parity (PPP) and real exchange rate (RER). For DMs, we equally weight each of the models to derive our final currency forecast. For emerging market (EM) countries, we equally weight our forecasts from two models: real effective exchange rate (REER) and real exchange rate (RER).

Real exchange rate (all currencies)
Nominal exchange rate return forecasts can be written as a function of real exchange rate return forecasts and inflation differential forecasts.

In practice, we observe that exchange rates tend to mean-revert in the long run, typically after a shock. We use this concept to first compute a variable that measures the deviation of the current real exchange rate from its historical average; we then regress 10-year forward real exchange rate returns on this variable. The predicted result of this regression is our "deviation from fair value" factor and is a proxy for real exchange rate return forecasts.

The deviation from fair value is then added to our inflation differential forecasts, developed internally, for each country to compute the expected return of the currency (forward 10-year return).

Purchasing power parity (DM only)
PPP states that the nominal exchange rate between two currencies should be equal to the ratio of aggregate price levels between the two countries, so that a unit of currency of one country will have the same purchasing power in a foreign country.

The basis for PPP is based on the "law of one price." In the absence of any frictional costs, competitive markets should equalize the price of an identical good in two countries when the prices are expressed in the same currency.

Real effective exchange rate (EM only)
The REER is a weighted average of a country's currency relative to an index of other currencies. The weights are determined by comparing the relative trade balance of a country's currency against that of each country in the index. An increase in a nation's REER is an indication that its exports are becoming more expensive and/or that its imports are becoming cheaper.

We utilize REER by calculating the deviation of REER from a trailing moving average. The larger the difference between current and trailing values, the larger the impact on expected return.

Indexes and proxies

Asset Class	Market Proxy
EQUITY	
Global Equity	MSCI AC World Daily TR Net
Developed-Market Equity	MSCI Daily TR Net World Local
US Large Cap	MSCI Daily TR Net USA Local
Canada	MSCI Daily TR Net Canada
EAFE	MSCI EAFE Net Total Return USD Index
EMU	MSCI Daily TR Net EMU USD
UK	MSCI Daily TR Net UK USD
Pacific ex Japan	MSCI Pacific ex Japan Net Total Return USD Index
Japan	MSCI Japan Net Total Return USD Index
Australia	MSCI Daily TR Net Australia USD Index
Emerging Markets	MSCI Emerging Net Total Return USD Index
China	MSCI China Net Total Return USD Index
Specialty Equity	
US REITS	FTSE NAREIT US Real Estate Index
Global REITS	S&P Global EIT USD Total Return Index
US Listed Infrastructure	MSCI UAS Infrastructure Net Total Return
Global Listed Infrastructure	S&P Global Infrastructure Total Return Index
FIXED INCOME	
Global Developed-Market Government	Bloomberg Global Agg Treasuries Total Return Index Value Unhedged USD
US Government	Bloomberg Barclays US Treasury Total Return Unhedged USD
Euro Government	Bloomberg Euro-Aggregate: Treasury Index
UK Government	Bloomberg Barclays Sterling Gilts Total Return Index Value Unhedged USD
China Government Bonds	Bloomberg China Aggregate Treasury Index
Japan Government	Bloomberg Barclays Global Japan Total Return Index Value Unhedged USD
Australia Government	Bloomberg Barclays Global: Australia Total Return Index Value Unhedged USD
Canada Government	Bloomberg Barclays Capital Global: Canada Total Return Index Value Unhedged USD
GLOBAL CREDIT	
Global Investment-Grade Credit	Bloomberg Barclays Global Agg Corporate Total Return Index Value Unhedged USD
Investment Grade USD	Bloomberg Barclays US Corporate Total Return Value Unhedged USD

Asset Class	Market Proxy
GLOBAL CREDIT continued	
Investment Grade EUR	Bloomberg Barclays Euro Aggregate Corporate Total Return Index Unhedged USD
Investment Grade GBP	Bloomberg Barclays Sterling Aggregate Corporate TR Value Unhedged USD
Global Corporate High Yield	Bloomberg Barclays Global High Yield Total Return Index Value Unhedge
US High Yield	Bloomberg Barclays US Corporate High Yield Total Return Index Value Unhedged USD
Euro High Yield	Bloomberg Barclays Pan-European High Yield Total Return Index Value Unhedged USD
UK High Yield	Bloomberg Pan-European High Yield: Sterling Total Return Index Unhedged GBP
US High Yield Loans	Credit Suisse Leveraged Loan Total Return
US Securitized	
US MBS	Bloomberg Barclays US MBS Index Total Return Value Unhedged USD
Municipal Bonds	
US Munis	Bloomberg Barclays Municipal Bond Index Total Return Index Value Unhedged USD
Inflation Linked	
Global inflation linked	Bloomberg Barclays Global Inflation-Linked Total Return Index Value Unhedged USD
TIPS USD	Bloomberg Barclays US Govt Inflation-Linked All Maturities Total Return Index
Emerging Markets Goverments	
EMD—Hard	Bloomberg Barclays Emerging Markets Sovereign TR Index Value Unhedged USD
EMD—Local	Bloomberg Emerging Markets Local Currency Government Index
EMD—Corporate	Bloomberg Barclays: EM USD Aggregate: Corporate
ALTERNATIVES	
Commodities	
Composite Basket	Bloomberg Commodity Index
Global Hedge Funds	Hedge Fund Research HFRI Fund Weighted Composite Index
Private Assets*	
US Direct Real Estate	NCREIF ODCE
US Private Equity	Burgiss US Private Equity Index
US Private Credit	The Cliffwater Direct Lending Index

*Return assumptions incorporate leverage.

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The hallmark of our approach is a central forum—the Investment Strategy & Research Committee—which generates a top-down view across asset classes and regions, and connects and synthesizes the bottom-up sector and regional insights of the global investment teams at Franklin Templeton.

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