NORTHERN TRUST

CAPITAL MARKET ASSUMPTIONS

FIVE-YEAR OUTLOOK: 2022 EDITION

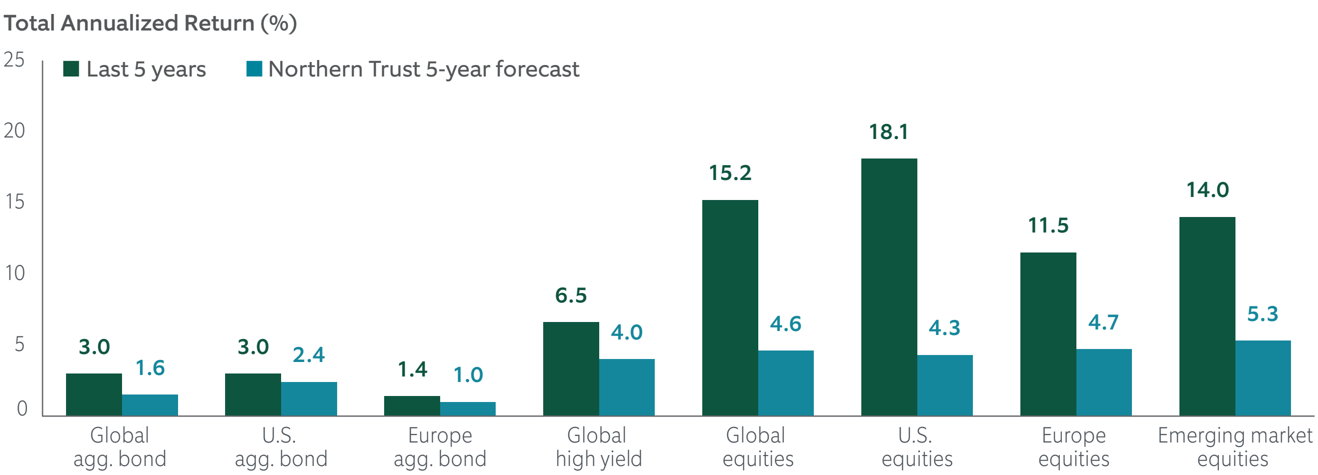
Published August 11, 2021

Equity market returns in the past five years have outpaced even the most optimistic forecasts. Valuations — the best predictor of long-term returns that we know of — forecasted 5% annual equity market returns. We got 15%. And that was with a pandemic in the middle of it all. With this backdrop we ask the perennial question: Where do we go from here?

While the length of economic and financial market cycles vary, history has always shown mean-reversion. We anticipate this reversion, and believe it will be a ***Reversion to Mediocrity*** as the global economy settles back into its low-growth channel. We are ***Sticking to Stuckflation***; technology remains a potent force that will mute any inflation triggered by ***Monetary Activism***. Both the West and China will be ***Seeking Tech Independence*** while the world will be ***Reaching Climate Consensus***. Meanwhile, ***The Evolving Capitalist*** aims for an economy that works better for all.

EXHIBIT 1: TOUGH SHOES TO FILL

Next-five-year financial market returns will be hard-pressed to match those of the past five years.



Source: Northern Trust Asset Management, Bloomberg. Annualized return data in local currency from 6/30/2016 to 6/30/2021. Past performance does not guarantee future results.

2022 THEMES & ASSET CLASS RETURNS OVERVIEW

Six key themes have emerged for our five-year outlook. These broad themes identify the trends we see affecting the markets and economy over the next five years — and provide the foundation for our asset class outlooks.

Reversion to Mediocrity

After a brief breakout, global economic growth will revert to its longer term mean. Debt-fueled demand will subside and automation will contain inflation. This will lead to continued low interest rates, especially as insatiable fixed income demand persists.

Sticking to Stuckflation

Stuckflation is being tested, but we believe it should pass. Investors agree, as they've had patience with recent high inflation. Unless we see a truly coordinated policy response, future inflation will more reflect the past decade than the past year, supporting financial markets.

Monetary Activism

Central banks are finding new callings, such as fighting income inequality and climate change. This expanded mission will become more prominent as inflation fears, once again, subside. We expect central banks globally to stay on the dovish side of market expectations.

Seeking Tech Independence

Technology is the new oil — but with greater economic security impacts. Both sides of the West-China divide appreciate the importance of technological independence and the requisite raw materials to get there. Expect major investment toward this aim — and further economic division.

The Evolving Capitalist

Investors and business leaders recognize that they must evolve from today's "winner-take-all" capitalism. Solutions to address income gaps and the needs of all stakeholders (as opposed to just shareholders) will slowly lead to a more sustainable version of capitalism.

Reaching Climate Consensus

A consensus is emerging on the importance of fighting climate change — increasingly market-driven. Investors are fueling the green transition, driving real corporate action more quickly and forcefully than politicians ever could. But difficult economic tradeoffs loom large.

Fixed Income

The death of the interest rate bull market has been greatly exaggerated — and we think it may survive well into the future. We expect low-but-positive returns as subdued yields stay steady and credit spreads remain tight. Longer dated and lower-credit bonds look relatively attractive.

Equities

Equity markets (notably U.S. stocks) have defied gravity for some time — even a global pandemic could not keep them down for long. Stretched valuations suggest lower long-term returns, but investors have thought that for years. We expect mid-single-digit annualized returns.

Real Assets

Natural resource returns will paradoxically benefit from underinvestment (less supply equals higher prices) and the environmental push (going green requires "dirty" ingredients). New opportunities and low interest rates will buoy global real estate and infrastructure.

Alternatives

Private investments are providing attractive premiums over public market counterparts. Meanwhile, hedge funds recently have shown more potential to provide alpha. But the wide return dispersion among strategies reinforces the importance of manager selection.

REVERSION TO MEDIOCRITY

Reversion to the mean plays a key role in economic modeling. And over the next five years we will be modeling a reversion to mediocrity for both growth (reviewed here) and inflation (next page). The case for growth to revert to pre-pandemic mediocrity starts with the challenging demographic backdrop. Once a distant concern, some regions are now starting to feel the bite — particularly China, where the working age population is set to decline by 35 million over the next five years. Supply impacts can be managed through automation but demand impacts have no easy solution (unless robots start dining out). Meanwhile, global debt has only grown. We do not believe we have a crisis on our hands, nor do we necessarily expect debt levels to fall over the next five years. But we are hard-pressed to envision the same pace of debt growth over the next five years as over the past five — and less debt growth removes a key demand impulse. Policy and *The Evolving Capitalist* (page 7) can help address income inequalities, but this slow "evolution" will take time to materially boost economic demand.

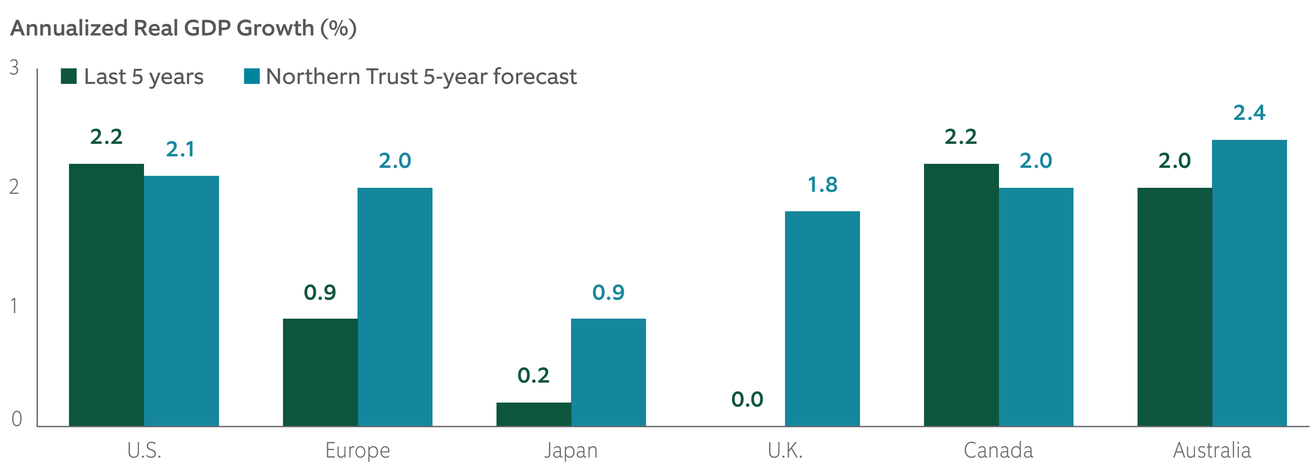
We expect the global economy to experience annualized real growth of 2.9% over the next five years. We expect the U.S., Europe and China (equaling 60% of the global economy) will grow at an annual pace of 2.1%, 2.0% and 4.0%, respectively. The U.S. has seen most of its debt-fueled boost and will return more quickly to its longer term channel. Europe will eventually revert to a lower growth channel than the U.S., but will take longer to get there as it will enjoy a couple years of above-trend growth thanks to a delayed recovery and deployment of fiscal stimulus. Finally, China's secular growth story is nearing its final chapters as low-hanging economic fruit (urban migration) gives way to challenging demographics.

Global economic reversion to mediocrity does not necessarily mean financial market mediocrity. After all, the very mediocre growth backdrop since 2008 (which included a hundred-year financial crisis and pandemic) produced a low interest rate environment and a 7.2% annualized return across global equities. Financial market outlooks start on page 9.

We are hard-pressed to envision the same pace of debt growth over the next five years as over the past five — and less debt growth removes a key demand impulse.

EXHIBIT 2: A RETURN TO SLOW GROWTH FORM

The strong economic growth of the past year will not continue into the next five years.



Source: Northern Trust Asset Management, Bloomberg. Data from 3/31/2016 to 3/31/2021.

STICKING TO STUCKFLATION

While the "demand drivers" witnessed over the past year — importantly the massive infusion of government stimulus — will not persist, the "supply enablers" introduced during the pandemic will. These "supply enablers" include productivity enhancers the pandemic forced upon (and ultimately embraced by) companies and workers. Indeed, one pandemic outcome has been the fuller realization of the power of technology. Many in-person meetings have been replaced by webcasts; labor shortages are addressed by kiosks and other automation efforts. For a sense of the productivity impact, U.S. real economic output eclipsed its pre-pandemic high in the second quarter — achieved with 6.2 million (or 4.1%) fewer workers.

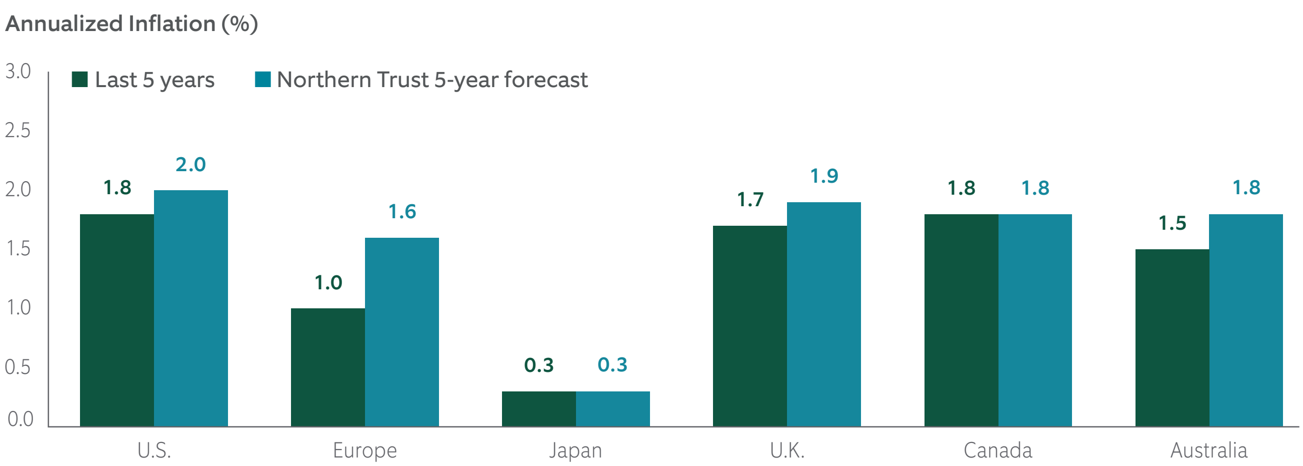
Inflation and central banks are forever locked in a dance, leaving investors to determine the lead.

We expect developed markets, on a weighted-average basis, to experience annualized inflation of 1.7% over the next five years (as compared to the 2% targeted by most central banks). We expect the Federal Reserve will technically clock in right at its target over the next five years, but that masks elevated inflation the next year-plus that falls to disappointing inflation in the back years. Meanwhile, we believe the European Central Bank will fall short of target and expect Europe to realize five-year annualized inflation of 1.6%.

We are sticking to Stuckflation despite very accommodative (and more activist, see next page) central banks. Inflation and central banks are forever locked in a dance, leaving investors to determine the lead. Over the past decade-plus, the lead has been inflation — with central bankers constantly forced back into easy money policy to fend off disinflationary pressures and deflationary fears. We believe this inflation-leading arrangement will continue. That is to say, while we anticipate ongoing uber-accommodative monetary policy, we do not believe that will lead to higher inflation. It is Stuckflation that will continue to lead, and that will not change until we see central bankers coordinate more closely — and more persistently — with fiscal policy. Interestingly, the Fed's inflation test in the second quarter of 2021 has tempered central banker appetite for the bold action necessary to unstick inflation. With the timeline for bold action reset, Stuckflation will live on for now.

EXHIBIT 3: STILL STUCKFLATION

Dislodging the longer term Stuckflation theme will take bolder action than we've seen thus far.



Source: Northern Trust Asset Management, Bloomberg. Data from 3/31/2016 to 3/31/2021. All regions use headline CPI as the inflation metric.

MONETARY ACTIVISM

Monetary policy transformation is entering a new, more "activist" stage. The days of principally being the lender of last resort; conducting "simple" inflation targeting; and overseeing broader business cycle management have passed. With interest rates at or below zero and balance sheets totaling trillions, monetary policy is no longer able to single-handedly combat recessions. Instead, it is increasingly working in unison with fiscal policy, funding the latter's stimulus and keeping borrowing costs low. We anticipate this newfound arrangement will endure — especially given our continued Stuckflation expectations.

This new reality of monetary policy's place in the pecking order has not led to an existential crisis among central banks. Quite the contrary, central banks have embraced their new role and realized that it provides them with a whole new tool kit. In particular, central banks have realized that the funding they provide can be leveraged to target systemic risks to growth and inflation such as climate change and income inequality. The European Central Bank is at the forefront of this change, as evidenced by its change of tone (see chart below) and the outcome of its strategy review. We expect more central banks to likewise broaden their remit. This is important. All else equal, it will mean more monetary stimulus for longer as initiatives such as the green transition become a part of the central bank mandate.

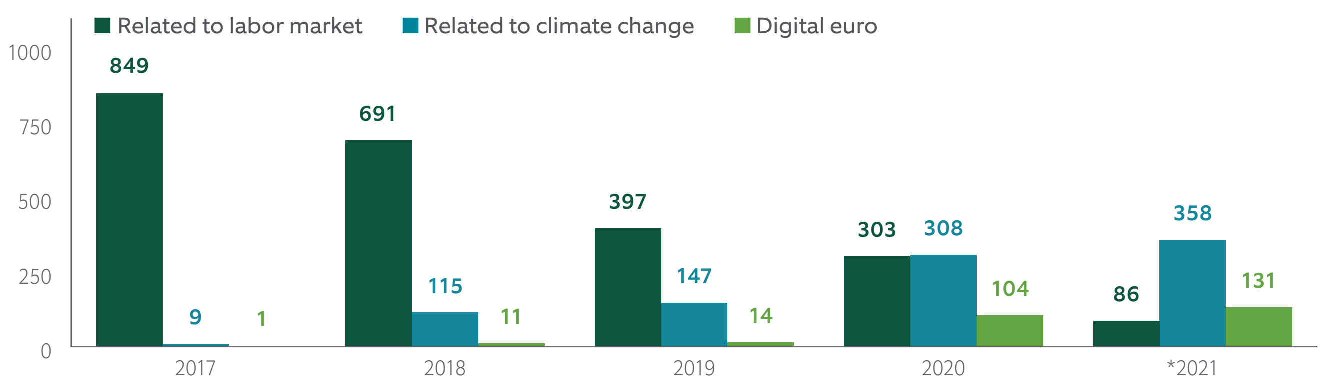
Central banks are also rapidly becoming more "activist" in the development of Central Bank Digital Currencies (CBDCs). In response to the rapid shift towards digital payments, CBDCs will be necessary to make payment systems faster, safer and cheaper — all while preserving the government's natural monopoly of money. Failing to move quickly risks yielding crucial ground to private entities such as big tech companies or even foreign governments. All said, the transformation of monetary policy — across a number of dimensions — will continue unabated. Along with this transformation, we expect continued accommodative policy across all central banks and throughout our five-year horizon.

Central banks have realized that the funding they provide can be leveraged to target systemic risks to growth and inflation such as climate change and income inequality.

EXHIBIT 4: HAWKISH ON CLIMATE, DOVISH ON POLICY

The ECB has become increasingly focused on climate change; other central banks are following.

Mentions in European Central Bank Speeches



Source: Northern Trust Asset Management, Bloomberg. *2021 through 5/31/2021.

SEEKING TECH INDEPENDENCE

Our prior *One World, Two Systems* theme has continued to evolve with tensions between the West and China focusing more on technology, specifically in areas such as semiconductors, batteries and the related supply chains. The pandemic deepened the strategic divide between the West and China. COVID-19 origin questions have strained relations while production disruptions have cast a spotlight on global supply chain dependencies. The rising importance of technology has drawn comparisons to crude oil as the key ingredient to the global economy. But, technology is more embedded across the global economy. Also, China's rise as a strategic competitor makes this a much larger geopolitical issue than merely securing a key economic input, as was the case in seeking energy independence.

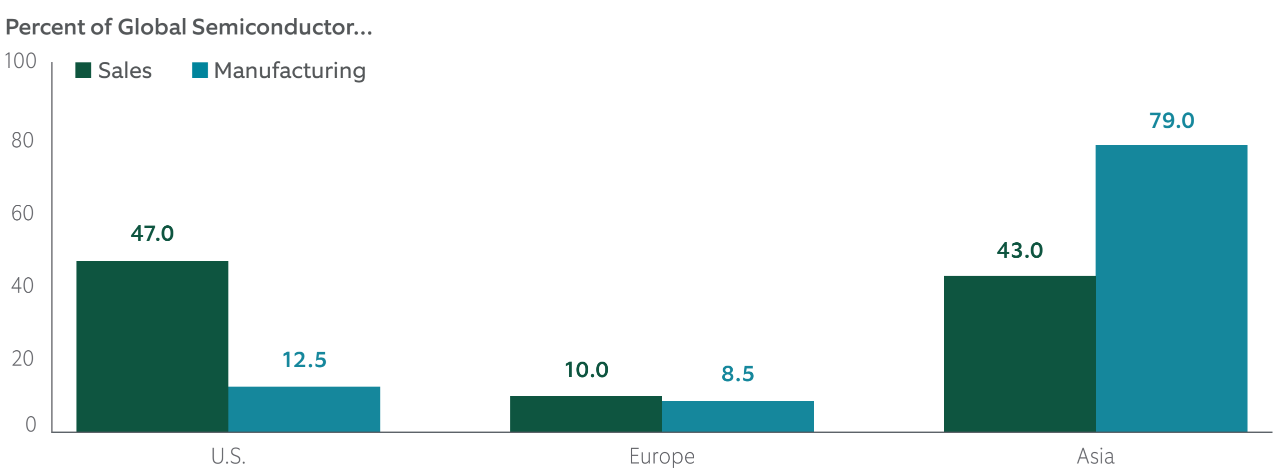
The rising importance of technology has drawn comparisons to crude oil as the key ingredient to the global economy.

Both semiconductor demand and the related supply chain are global in nature (see chart). But key supply chain segments reside in Asia including the most advanced capabilities. This also holds true for rare earth processing capabilities required in battery production. Continued concerns on technology dependence should drive high investment in the space, as both the West and China look to decrease their dependence on one another. Supply chain concentration is unlikely to be quickly resolved. Instead, geopolitical posturing will carry on as countries and companies attempt to reduce reliance on Asia without stoking tensions. Investors should be conscious of the severe economic disruption that could occur from supply chain breakdowns, but the deep economic importance of this issue should also act as a governor to help prevent tensions from spiraling out of control. Also, the fact that China doesn't actually own the underlying technology checks their ambitions.

Globalization's decline is forcing difficult choices on companies and countries as they position around the West-China divide. Companies will look to limit economic damage but some economic inefficiencies from the separation are inevitable. The pressure the Chinese government places on domestic technology companies to support state strategic priorities creates significant risks for China's investors; western technological achievements are more likely to be rewarded financially.

EXHIBIT 5: INTEL STILL INSIDE?

Semiconductor sales have spread more globally — and production is heavily concentrated in Asia.



Source: Northern Trust Asset Management, Semiconductor Industry Association. Data as of 12/31/2019.

THE EVOLVING CAPITALIST

The longer term sustainability of capitalism in its current form remains under scrutiny — including its ability to outpace a more state-driven economic approach. Inequality concerns remain high, sharpened by the pandemic which has highlighted key divisions across the economy. Employment trends throughout the pandemic, as well as the ability to work remotely, clearly favored higher-income workers. The economic reopening has led to some companies paying up to find workers, but this trend is likely more temporary in nature. And any future shifts in the longer term labor/capital profit-sharing arrangement will be slow — an evolution, if you will.

While a comprehensive government policy response is unlikely, business leaders and investors acknowledge the need for adjustments to the capitalist economic system. A proactive approach is needed to avoid government scrutiny and adapt to changing investor preferences. Some action to reduce income inequality and spread out the gains of capitalism across a broader group of stakeholders is a likely path. However, these adjustments will be more incremental in nature rather than widescale changes. Technology — with some help from continued low interest rates — is a key tenet of this evolution as it helps companies manage costs and maintain market share, while offering greater flexibility to address stakeholder concerns (e.g., higher labor costs, more flexible working arrangements).

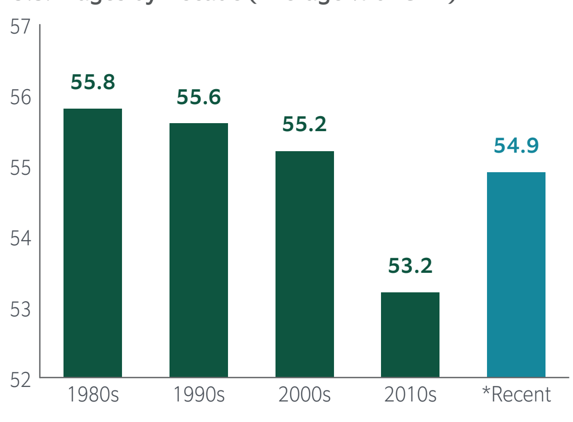
Large companies are well-positioned to manage this transition as they try to balance moving forward in a "winner-take-all" economy while not pushing too hard to the detriment of other stakeholders — possibly prompting government intervention or investor pushback. This also may lead to change materializing in unconventional ways such as the recent shift in climate-focused activist investors influencing energy company behavior through owning the stocks instead of shunning them. Company profits may face some headwinds but investors understand this trade-off should be beneficial longer term as the capitalist system evolves to better suit all stakeholders. More balance and more global coordination (e.g., a global minimum tax) will help capitalism remain viable into the future.

Company profits may face some headwinds but investors understand this trade-off should be beneficial longer term as the capitalist system evolves to better suit all stakeholders.

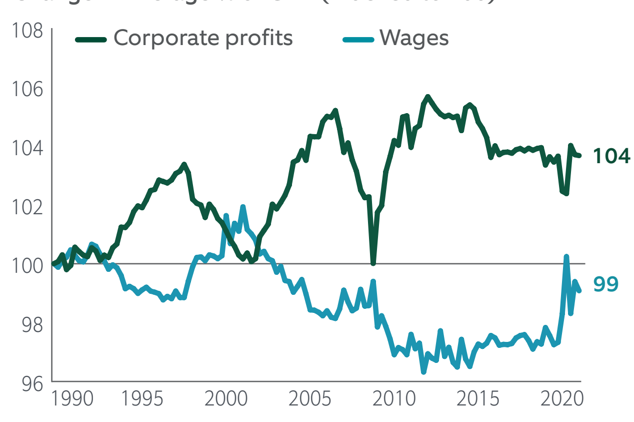
EXHIBIT 6: LABOR UPRISING?

Labor has recently increased its bargaining power; we expect more rebalancing — but slowly.

U.S. Wages by Decade (Average % of GDP)



Change in Average % of GDP (Indexed to 100)



Source: Northern Trust Asset Management, U.S. Bureau of Economic Analysis, U.S. Department of Commerce. *Recent is the latest print for the first quarter of 2021.

REACHING CLIMATE CONSENSUS

In the past couple years the debate regarding climate change has shifted in a very fundamental way. The question of *whether* it is a problem has all but disappeared from the debate and in its place people are debating *how* to address it. This shift signifies a growing consensus on the importance of climate change and the green transition that combating it requires. To policymakers this means the post-pandemic mantra of "building back better" will be sustained and, where possible, accelerated. Regulatory action to hasten the green transition will continue alongside a more formal inclusion of climate change in policy frameworks.

Often overlooked, however, is the increased role of investors in driving the green transition forward. Improved investor scrutiny combined with a willingness to act on the findings has become a powerful force in changing corporate behavior. Even more, investors are pouring money into "green" ventures. We expect the trend to accelerate on both accounts, with investors driving corporate change more quickly than politicians ever could. To wit, and as seen in the below chart, more and more companies have improved their global emissions score, both to do better and lower their risk. But, it won't just be decarbonization that the markets demand. Investors will also increasingly scrutinize social and governance issues. Improved data and scoring on those fronts means the portfolio construction process increasingly encompasses the whole ESG spectrum.

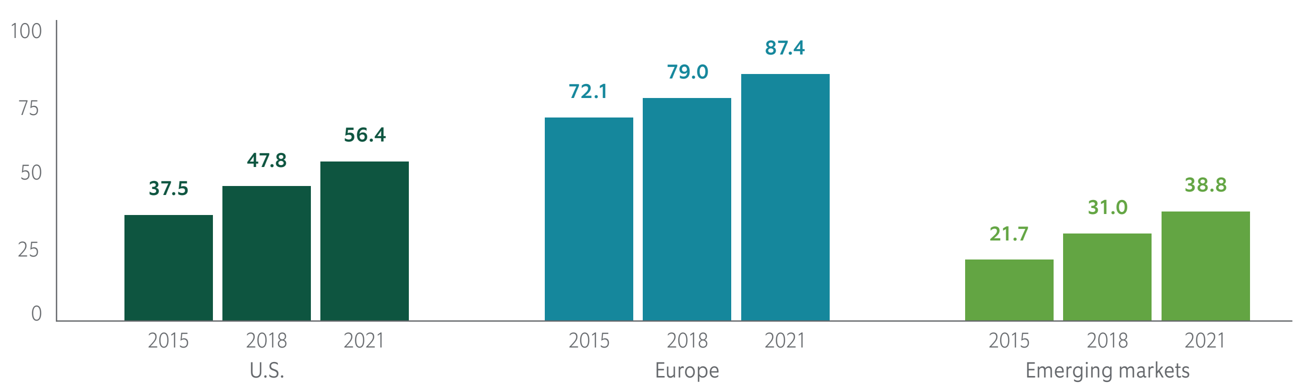
Improved investor scrutiny combined with a willingness to act on the findings has become a powerful force in changing corporate behavior.

While the investor will is there, we must recognize the green transition won't be easy and difficult trade-offs loom large. If investors push too hard on public companies, they might simply seek refuge in the deep pockets of private markets. Meanwhile, the transition itself will require a lot of raw materials that will be hard to extract without an environmental cost. For example, the batteries needed to power our new green world are made with "dirty" rare earths (such as lithium). The *how* question has clearly not been answered yet. This means investors must stay on top of this issue, tilting away from the risky areas (those hurt by climate change and broader ESG issues) and into the thriving ones (those providing solutions).

EXHIBIT 7: JOINING THE CAUSE

Companies globally are increasingly signing up for the fight on climate change.

Percent of Companies with Leading Carbon Emissions Scores



Source: Northern Trust Asset Management, FactSet, MSCI. Carbon emissions scores measure carbon management and efficiency; leading is defined as a score >=7.

FIXED INCOME

Fixed income returns are based on interest rate and credit spread expectations. Interest rate forecasts are made across the duration spectrum — separated into "real" and inflationary components (together representing nominal interest rates). Credit spread expectations are developed across the credit-rating spectrum — grouped by investment-grade and speculative-grade (high yield).

Credit spreads are likely to stay at or below pre-pandemic levels as easy monetary policies from *Monetary Activism* support corporate fundamentals.

Interest Rate Expectations

Given our *Reversion to Mediocrity* and *Sticking to Stuckflation* themes, we find little fundamental case for interest rates to move meaningfully higher. This is especially true as we observe the insatiable and durable demand that pensions and insurance companies (among others) have for longer-dated bonds. Exhibit 8 shows a simplified — 3-month to 10-year — yield curve; our five-year interest rate forecasts are compared against market expectations and current levels for the U.S., Germany (eurozone) and Japan. We expect interest rates to remain very low and — in the case of the U.S. — to fall well short of five-year market expectations.

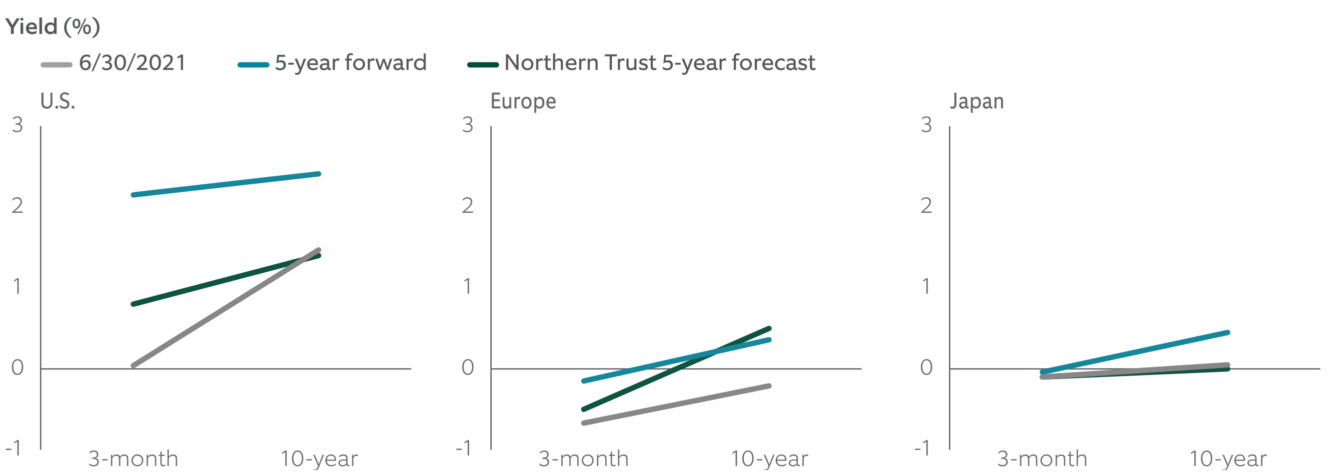
Credit Spread Expectations

Credit spreads are likely to stay at or below pre-pandemic levels as easy monetary policies from *Monetary Activism* support corporate fundamentals. Even with a *Reversion to Mediocrity*, the improved quality mix of high yield indices should keep the high-yield default rate well below the long-run average. Falling default rates will lead to some further reduction in high yield credit spreads, especially as the ongoing low interest rate environment pushes investors further into riskier areas of the fixed income market (which have become less risky).

Depending on the asset class, some of these expectations are more important than others. Cash forecasts are solely based on the expected progression of short-term interest rates over the next five years. Other forecasts are more complex, contemplating a variety of factors, all in the context of what is priced in.

EXHIBIT 8: ONE OF THESE THINGS IS MUCH LIKE THE OTHERS

We fail to see how U.S. interest rates can move much higher than those found in the other major regions.



Source: Northern Trust Asset Management, Bloomberg. Germany used as a proxy for Europe. Data as of 6/30/2021.

Cash Return Forecasts

Since last year's mid-pandemic-published report, our prognosis for central banks' ability to increase policy rates has only seen slight improvement (at most). We forecast a 0.3% return in the U.S.; similarly low returns in Canada, the U.K. and Australia; and continued negative returns in Europe (-0.5%) and Japan (-0.1%).

Low interest rates obscure the fact we actually have decent yield curve steepness.

Inflation-Linked Return Forecasts

Our inflation forecasts are below (what we believe to be over-optimistic) market expectations, most notably in the U.S. (2.0% over the next five years versus the market's 2.5%). As such, our inflation-linked fixed income forecasts are slightly lower than comparable-duration nominal sovereign fixed income forecasts.

Investment Grade Return Forecasts

Over the past 40 years, the five-year annualized U.S. investment grade return has bested the starting-point yield by a 0.6% annual average. This "outperformance" has been driven by generally positive yield curves and the perpetual nature of fixed income indexes (new higher yielding bonds replace lower yielding maturing bonds). Today, low interest rates obscure decent yield curve steepness. As such, returns can outpace starting-point yields — especially if interest rates remain low.

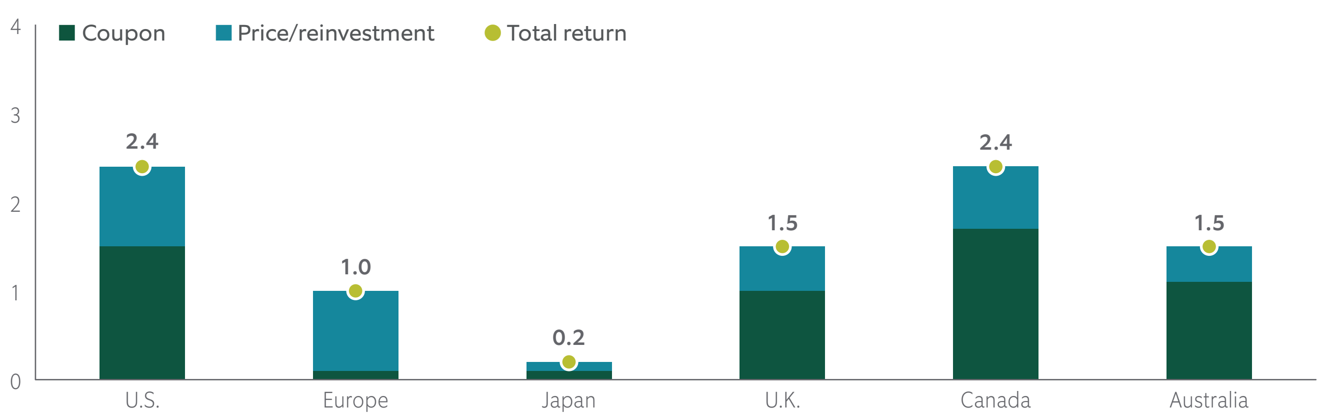
High-Yield Return Forecasts

Credit (default) risk is most noticeable in high yield, where five-year returns have historically trailed starting-point yields by 1.2% on average. We expect this to be much less over the next five years because: 1) the high yield index's credit quality has notably improved; 2) the credit markets are functioning very well; and 3) the search for yield is providing constructive technicals. We forecast a 4.0% return for global high yield, expecting a subdued 0.2% hit to current yields.

EXHIBIT 9: GETTING BY WITH A LITTLE HELP FROM LOW RATES

When it comes to fixed income total returns, low starting-point yields hurt but ongoing low yields help.

Northern Trust Five-Year Annualized Investment-Grade Fixed Income Return Forecast by Country (%)



Source: Northern Trust Asset Management, Bloomberg. Coupon return calculated as yield to worst on 6/30/2021.

EQUITIES

We traditionally begin our equity forecasting process with a quantitative analysis to understand which variables have driven equity returns over time. Of the variables analyzed, cash flow yields (cash flow over share price) best predict future returns. Analyzing developed market equity data going back to 1970, cash flow yields have explained 40% of next-five-year (and 82% of next-10-year) total return variability. This year, our quantitative process predicts a -1.1% annualized return — a dismal outlook likely overinfluenced by the abnormal, pandemic-disrupted backdrop. That is, current equity market valuations are artificially elevated as they reflect the past year's earnings trough. Markets are forward-looking, pricing in the recovery — but how appropriate is current market pricing in the context of the road ahead?

Markets are forward-looking, pricing in the recovery — but how appropriate is current market pricing in the context of the road ahead?

Meanwhile, a shorter data set limits the quantitative analysis of emerging market equities. The data we do have (starting in 1987) shows emerging markets have a 0.86 correlation to developed markets with a 2.1% annualized excess return. But, more recently, this return premium has been negative — will this continue? Our forward-looking thematic views — applied to the key equity forecast building blocks listed below — help us in answering the questions posed above.

Key Forecast Building Blocks

1. **Revenue growth** is based on our nominal economic growth forecasts weighted by each equity index's geographic exposures.

2. **Profit translation** represents companies' ability to turn revenues into per-share earnings through profit margins and share count (repurchases/issuance).

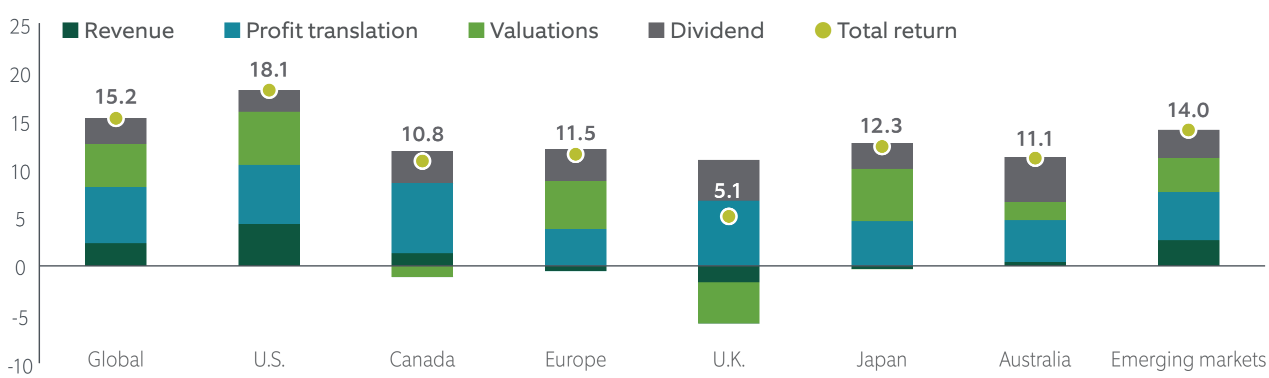
3. **Valuation** impact is based on expected changes in price-to-earnings ratios, which better align with our "building block" forecasting approach than the cash flow yields we use in our quantitative process (the two are highly correlated).

4. **Dividend yield** estimates are based on current levels, adjusted based on any expected changes to the amount of cash companies return to shareholders.

EXHIBIT 10: GETTING AHEAD OF THEMSELVES?

Equity market returns have been robust the past five years, despite modest revenue growth.

Five-Year Annualized Equity Return Contribution by Country (%)



Source: Northern Trust Asset Management, Bloomberg. Data from 6/30/2016 through 6/30/2021.

Developed Market Return Forecasts

Forecasting muted equity market returns has been a losing proposition in recent years. Many over the past decade (candidly, including us) have believed that elevated valuations and a muted growth outlook would, at the very least, constrain future returns. But global (notably U.S.) equity returns have consistently proven prognosticators wrong (see page 17). Our 2017 *Valuation Superstructure* theme has surpassed our expectations — as valuations were not only supported, but pushed higher. Meanwhile, low economic growth forecasts, while accurate, have not held back earnings growth — as increased profit margins and (U.S.) share buybacks overcame a muted sales growth environment (see Exhibit 10). The fact that recent robust returns were more due to margin and valuation expansion — as opposed to sales growth — suggests that our call for a *Reversion to Mediocrity* in global economic growth may (finally) mean mediocre global equity returns ahead.

Nowhere are valuations more elevated than in the U.S. High valuations are mostly justified, but will still weigh on longer term returns. We forecast 4.3% — at the low end of developed market regions. The risk is that the heavily tech-weighted index continues to take more than its fair share of global growth. The U.K. (6.2%) has the highest forecast, as it finds its post-Brexit bearings. Europe (4.7%) should also benefit from increased stability as well as a longer tailed post-pandemic recovery.

Nowhere are valuations more elevated than in the U.S. High valuations are mostly justified, but will still weigh on longer term returns.

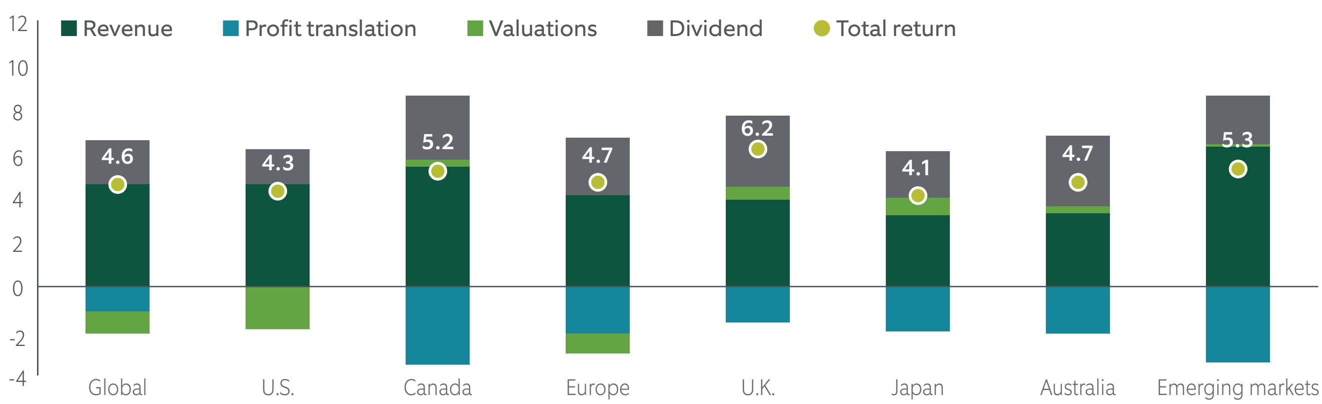
Emerging Market Return Forecasts

Emerging market equity returns will continue to be driven by China, approximately 35% of the index. Superior sales growth means little if Chinese regulations restrict claims to resulting cash flows. This risk has materially depressed valuations as investors demand a greater risk premium. We are forced to assume ongoing regulatory scrutiny — and, even if it reverses, we must also assume investors will be slow to grant trust and push valuations higher. But it is also difficult to not be intrigued by such low valuations in a region with elevated growth potential.

EXHIBIT 11: EQUITY MARKET PUSH AND PULL

Retreating valuations and profit margins will temper ongoing revenue growth, leading to modest equity forecasts.

Northern Trust Five-Year Annualized Equity Return Forecast by Country (%)



Source: Northern Trust Asset Management

REAL ASSETS

The industry term "real assets" is clumsy. The primary real assets (global natural resources, real estate and listed infrastructure) are financial instruments; as such, they aren't technically real assets. But they do play key roles in the investment portfolio. Natural resources can provide protection against unexpected inflation, while real estate and listed infrastructure offer additional risk exposures for additional portfolio diversification — along with higher yields than broad equities.

Our real asset forecast process starts with a review of historical relationships in order to identify key return drivers. Because our real assets are equity-based, they all have statistically significant exposure to the market. But other return drivers are also present, as outlined in Exhibit 12 — including term (interest rate risk), and credit (default risk). The betas in Exhibit 12 indicate the return accrued to the asset class for every 1% move in the factor. For instance, on average and all else equal, global real estate captures 1.1% for every 1% move in the term factor.

Multiplying the factor betas (the risk exposures described above) by our factor return expectations provides a quantitatively driven baseline forecast for review in the context of our forward-looking themes. For instance, the 5.5% global listed infrastructure forecast comprises contributions from market (global equity) and term (interest rate) risk exposures of 3.9% and 1.3%, respectively — plus our 0.3% cash forecast (originally stripped out of the factor return above).

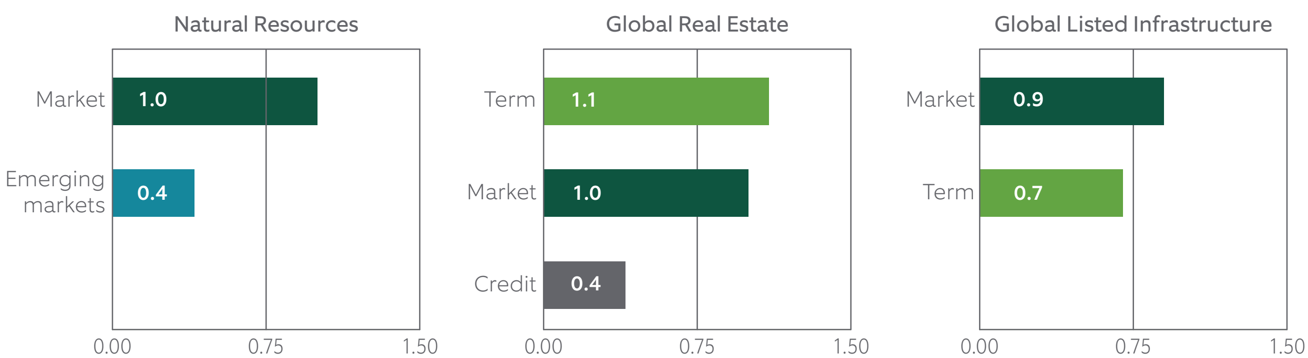
This historically based quantitative analysis is subject to our forward-looking thematic views. The next page focuses on what our themes mean for the asset class relationships to the various risk factors (the betas in Exhibit 12) and ultimate return forecasts. Any modifications to the quantitative model results are captured by a qualitative return adjustment (shown in teal in Exhibit 13). In this year's effort, we applied a qualitative overlay to just one real asset forecast — global real estate.

Natural resources can provide protection against unexpected inflation, while real estate and listed infrastructure offer additional risk exposures for additional portfolio diversification — along with higher yields than broad equities.

EXHIBIT 12: UNDERSTANDING EXPOSURES

All real assets have notable market (equity) exposure, but with a mix of other exposures also present.

Real Asset Factor Exposure (Beta)



Source: Northern Trust Asset Management, Bloomberg. Regressions calculating factor exposure (beta) run from 12/31/2002 to 3/31/2021. Term exposure is defined as the return premium associated with taking on maturity risk; that is, of investing in longer term bonds.

Natural Resources

Reduced commodity complex investment in recent years will pressure supply for years to come, supporting commodity prices. Meanwhile, higher global productivity (*Sticking to Stuckflation*) will dilute the impact of higher commodity prices on inflation — with the resulting monetary accommodation further supporting the asset class. Part of *Reaching Climate Consensus* is appreciating the role natural resources will play in the green transition. Green initiatives — from wind turbines to electric vehicles — require a great deal of industrial metals while severe weather patterns will benefit from agriculture sector innovation. Also, the green transition will take time; peak oil demand will not hit until 2030. Overall, *Reversion to Mediocrity* will not mean a return to the dismal natural resource returns of the past decade.

Listed infrastructure's higher yields and historical downside protection properties make it attractive in a slow growth environment.

Global Real Estate

Global real estate's challenges in the retail and office sectors are well understood. Demand for both types of real estate (per unit of economic output) is certainly lower than before the pandemic. The new equilibrium level is difficult to determine but history suggests a margin of safety from initial investor overreaction. At the same time, favorable financing conditions will assist in the effort to repurpose less-needed office and retail properties into more-demanded distribution centers, healthcare facilities and residential units. Still, lingering uncertainty leads to a -2% adjustment.

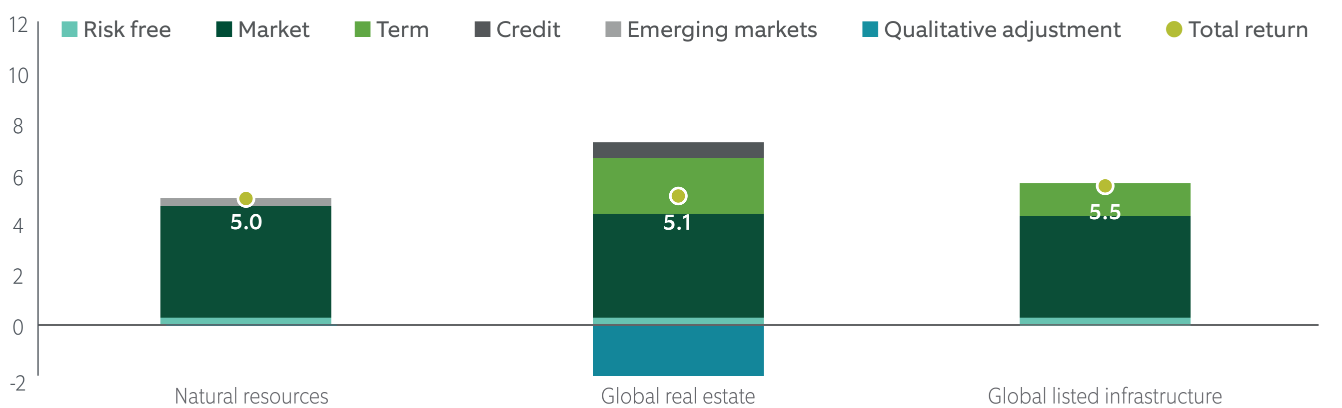
Global Listed Infrastructure

Listed infrastructure's higher yields and historical downside protection properties make it attractive in a slow growth environment. Global utilities represent a viable alternative to persistently low fixed income yields, attracting an investor audience. Pipelines — still the most efficient way to move still-needed oil and gas — have a stable outlook. The air/seaport and rail/highways outlook is less certain — as some global supply chains are rerouted/onshored against a softening economic backdrop.

EXHIBIT 13: LOOKING FOR STABILITY — AND INCOME

A slower growth, lower interest rate environment should support higher yielding listed infrastructure.

Northern Trust Five-Year Annualized Real Assets Return Forecast (%)



Source: Northern Trust Asset Management, Bloomberg.

ALTERNATIVES

Alternatives aim to enhance risk-adjusted portfolio returns through nontraditional risks and greater potential for alpha (returns not explained by risk). We forecast private investments and hedge funds, taking a more quantitative approach to each. Given the wide range of strategies and resulting performance dispersion, manager selection is extremely important.

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Private Investments

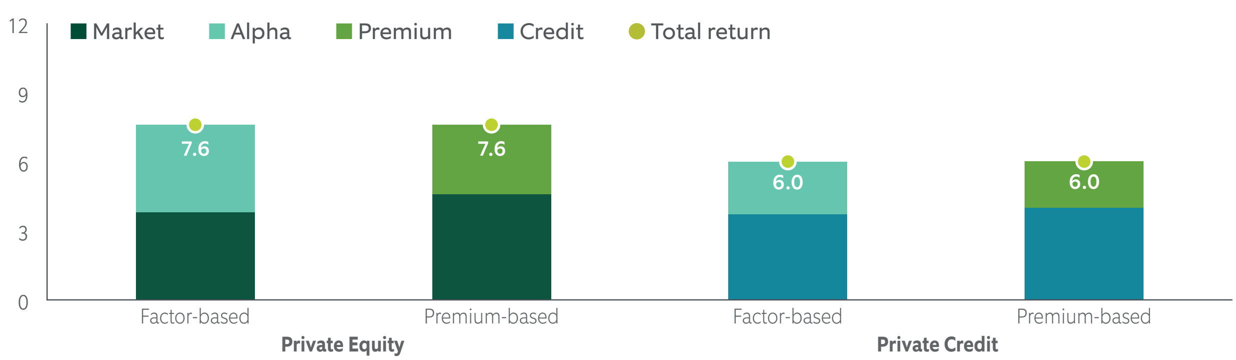
The private investment universe has expanded into private forms of all asset classes. Here we focus on private equity and private credit. Our goal is to understand the return premium private investments provide to their public counterpart. Models regressing private returns on public returns are useful, but must incorporate delayed private appraisals. Unlike public assets — where prices are known in real time thanks to mark-to-market pricing — private assets are valued using a (sometimes lengthy) “mark to model” process. To capture these lags, thus better understanding the true relationship between public and private assets, we introduce lagged market variables into our regression models. Within private equity, four quarters of lagged market variables are statistically significant (implying appraisals can be lagged as much as a full year). Private credit has less of an issue, showing just one statistically significant lagged quarter. Introducing lagged market variables better aligns public with private markets, increasing the amount of private investment return explained by the public markets (beta) and providing more precise alpha estimates. Through our process, the initial private equity alpha of 8.4% falls to 3.8% and the initial private credit alpha of 3.5% falls to 2.3% — both still extremely robust return premiums.

Note that — because the beta terms do not add to 1.0 — the alpha term does not equal the return premium. Our regression-based return forecasts for private equity (7.6%) and private credit (6.0%) represent 3.0% and 2.0% premiums to global equities and global high yield, respectively. This is illustrated in Exhibit 14.

EXHIBIT 14: CLARIFYING ALPHA VS. RETURN PREMIUM

Alpha is the return not explained by beta exposures; return premium is the excess return over the public equivalent.

Northern Trust Five-Year Annualized Private Investments Return Forecast (%)



Source: Northern Trust Asset Management. Alpha contributions are calculated on regressions run on quarterly returns of the Cambridge Associates Global Private Equity Index (private equity) and the Cambridge Associates Global Private Debt Index (private credit) from 3/31/2003 – 12/31/2020.

Hedge Funds

Hedge fund strategies can provide nontraditional and uncorrelated return premiums to the traditional portfolio, by aiming to produce esoteric beta (risk exposures not available to the average investor) or alpha (returns not explained by risk exposures) — both simply grouped as alpha going forward.

We isolate average hedge fund alpha by stripping out the risk exposures captured (more cheaply) in the traditional portfolio. These traditional risk exposures (betas) include market (with a lagged market factor to capture delayed pricing), emerging market, term and credit. We use data going back to 2002, the longest available data for all relevant asset classes and risk factors. Adding the expected returns from beta (2.0%) and expected alpha (0.9%) equals our 2.9% hedge fund forecast.

Exhibit 15 shows the mix of beta and alpha by decade. The alpha generation had been in notable decline, falling from an annualized 7.1% in the 1990s — to 3.0% in the 2000s — to a barely positive 0.4% in the 2010s. But, thus far this decade (admittedly only slightly more than a year), the alpha term has increased to 4.5%. One can speculate on the reason. It could be, after years of a macro-driven "risk-on/ risk-off" environment micro drivers, adding more nuance to individual security returns, have become more important. Or it could simply be a random event — that managers and strategies are currently enjoying more alpha success. But, in any event, the combination of more alpha and subdued betas (at least per our five-year forecasts), has given hedge funds renewed interest and an increased role in the diversified portfolio for those where hedge fund investing is appropriate.

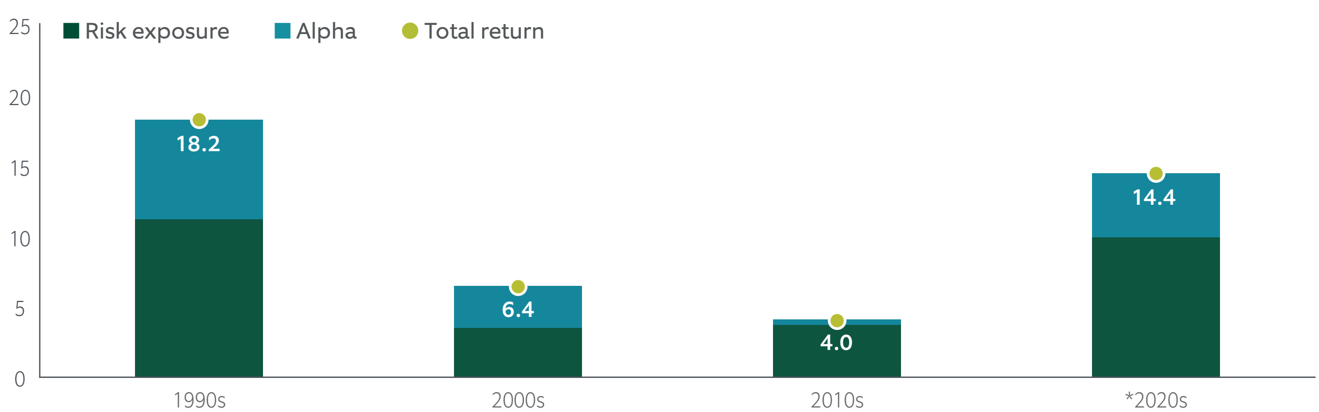
Now for our annual reminder. The hedge fund returns (and private investment returns, for that matter) are the average returns across the manager universe. Given the alpha dispersion across strategies, a robust selection process could be the difference between an alternatives allocation that adds value to the overall portfolio and one that introduces a (high-cost) performance drag.

The combination of more alpha and subdued betas (at least per our five-year forecasts) has given hedge funds renewed interest and an increased role in the diversified portfolio for those where hedge fund investing is appropriate.

EXHIBIT 15: ALPHA REBOUND

The average hedge fund strategy alpha — returns not explained by risk exposures — has been meaningful more recently.

Hedge Fund Return Contribution by Decade (%)



Source: Northern Trust Asset Management, Bloomberg. Data from 12/31/1990 to 3/31/2021. *2020s through 3/31/2021.

HOW HAVE WE DONE?

We are frequently asked about the accuracy of our five-year forecasts. In response, we offer Exhibit 16 to provide a comparison of our five-year forecasts from five years ago versus actual results. We review our accuracy across the major asset classes: cash, fixed income (both investment grade and high yield) and equities (both developed and emerging markets). We then aggregate and review at the portfolio level — including the risk asset portfolio, the risk-control asset portfolio and the strategic asset allocation portfolio (SAA, a balanced mix of the two component portfolios). The appendix supplements our current five-year forecasts across asset classes and regions with our past five years of five-year forecasts and the five-year actual returns to allow for further review.

Our 2016 effort correctly forecasted that interest rates, especially out the yield curve, would remain muted. Our 1.5% 10-year Treasury forecast was just 0.03% off from the June-ending 1.47% yield, allowing our 3.0% investment grade fixed income forecast to be spot on. But we were too pessimistic on the equity outlook, notably in developed market equities (15.3% versus our 5.4% forecast) and especially in U.S. equities (18.1% versus our 4.8% forecast). Interestingly, our 5.4% developed market forecast represented an upward revision to the 4.5% predicted by our quantitative model, which we upgraded — though clearly not enough — to reflect our expectation that elevated valuations would endure. Our high yield forecast was also too conservative, though to a lesser extent.

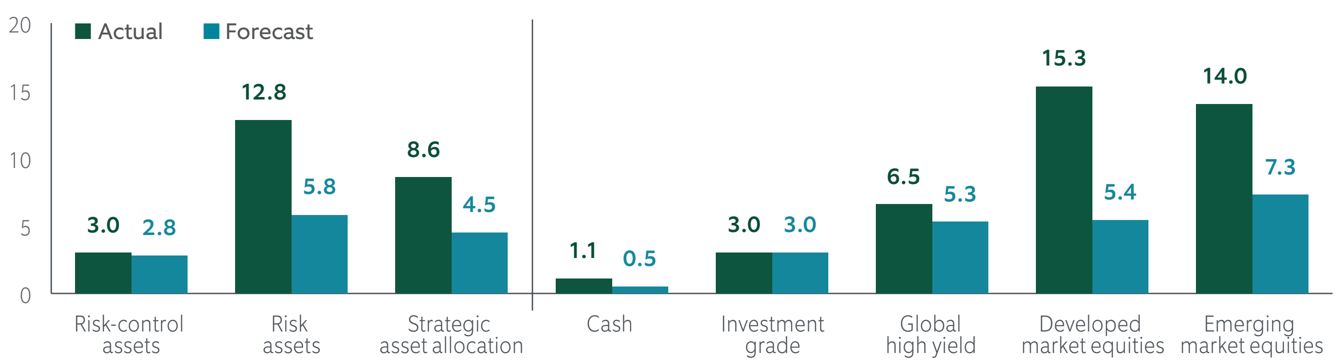
Our resulting SAA undershoot represents our biggest forecast miss in the time we have undergone this exercise. In fact, never before has our SAA forecast been more than 0.5% off the actual result. This speaks to the truly impressive gains equity markets have provided over the past five years, even in the face of elevated valuations and global macro uncertainties. If there is one key lesson to be learned here, it is to understand the path of least resistance for risk assets is higher — and the longer the investment horizon, the better the odds of realizing a return premium by taking on (appropriate levels of) risk. Stay invested.

It is important to understand the path of least resistance for risk assets is higher — and the longer the investment horizon, the better the odds of realizing a return premium by taking on (appropriate levels of) risk.

EXHIBIT 16: WHAT A PERFORMANCE!

Risk asset returns far outpaced even the most optimistic strategist projections over the past five years.

Five-Year Annualized Returns 2016-2021 (%)



Source: Northern Trust Asset Management, Bloomberg. Actual return data from 6/30/2016 – 6/30/2021. Forecasted returns as of 6/30/2016. Risk control assets = cash, investment-grade fixed income and Treasury inflation-protected securities. Risk assets = high yield bonds, U.S. equities, developed ex-U.S. equities, emerging market equities, global natural resources, global real estate and global listed infrastructure. SAA is made up of a combination of risk-control and risk assets. Returns are displayed in local currency. Past performance does not guarantee future results.

DETAILED FIVE-YEAR ASSET CLASS RETURN FORECASTS

All Returns in % Annualized				5-Year Return Forecasts by CMA Year						5-Year Actual Return
		Asset Class	Proxy Index	2022	2021*	2019	2018	2017	2016	
Fixed Income	U.S.	Cash	3-Month U.S. T-Bill	0.3	0.1	1.1	2.2	1.7	0.5	1.1
		Inflation linked	BBG BarCap U.S. TIPS	2.2	2.4	2.6	2.9	3.0	2.5	4.2
		Investment grade	BBG BarCap U.S. Aggregate	2.4	2.3	3.0	3.6	3.2	3.0	3.0
		High yield	BBG BarCap U.S. High Yield	3.5	5.5	5.0	4.9	4.8	5.3	7.5
		Municipal	BBG BarCap Municipal	2.0	2.6	2.4	3.2	3.2	2.8	3.2
	Canada	Cash	3-Month Canada T-Bill	0.2	0.2	0.7	1.6	1.3	0.7	0.9
		Inflation linked	FTSE Canada Real Return Bond	2.0	2.2	2.0	2.3	2.5	2.5	2.8
		Investment grade	FTSE Canada Universe	2.4	1.9	2.6	2.9	2.5	2.6	2.6
		High yield	BofAML Canadian High Yield	3.8	5.2	4.5	4.5	4.5	5.0	8.4
	Europe	Cash	3-Month German Bunds	-0.4	-0.5	-0.3	-0.3	-0.2	-0.5	-0.7
		Inflation linked	BBG BarCap Euro Inf. Linked	1.0	1.5	1.0	1.2	1.5	1.4	2.6
		Investment grade	BBG BarCap Euro Aggregate	1.0	1.0	1.2	1.8	1.5	1.4	1.4
	U.K.	Cash	3-Month Gilts	0.2	0.1	0.3	0.9	0.5	0.3	0.4
		Inflation linked	BBG BarCap Inflation Linked Gilt	1.0	1.3	2.2	1.7	1.6	2.0	4.7
		Investment grade	BBG BarCap Sterling Aggregate	1.5	1.3	2.2	2.5	2.5	2.6	2.6
	Japan	Cash	3-Month JGB	-0.1	-0.1	-0.1	0.0	-0.1	-0.3	-0.2
		Inflation linked	BBG BarCap Inflation Linked JGB	0.2	0.5	0.2	0.5	0.8	0.8	-0.4
		Investment grade	BBG BarCap Japanese Aggregate	0.2	0.2	0.2	0.5	0.7	0.5	-0.3
	Aus.	Cash	3-Month Australia Gov't Bond	0.3	0.2	0.8	2.5	2.4	2.0	1.3
		Investment grade	BBG BarCap Australian Composite	1.5	1.2	2.2	3.5	3.2	3.3	3.1
	Global	Inflation linked	BBG BarCap Global Inflation Linked	1.5	1.8	2.0	2.0	2.2	2.1	4.6
		Investment grade	BBG BarCap Global Aggregate	1.6	1.6	2.1	2.7	2.2	2.1	3.0
		High yield	BBG BarCap Global High Yield	4.0	5.6	4.8	4.6	4.5	5.3	6.5
Equities	Developed markets	U.S.	MSCI United States	4.3	4.7	5.7	5.8	5.9	4.8	18.1
		Canada	MSCI Canada	5.2	4.5	4.5	5.5	6.0	6.0	10.8
		Europe	MSCI Europe ex U.K.	4.7	5.4	6.0	6.3	7.2	5.3	11.5
		U.K.	MSCI United Kingdom	6.2	5.6	7.4	6.3	6.6	5.9	5.1
		Japan	MSCI Japan	4.1	3.8	4.5	6.0	6.0	5.6	12.3
		Australia	MSCI Australia	4.7	5.8	5.7	7.7	7.7	8.0	11.1
	Agg.	Developed markets	MSCI World	4.5	4.8	5.7	6.0	6.4	5.4	15.3
		Emerging markets	MSCI Emerging Markets	5.3	5.4	6.1	8.3	8.4	7.3	14.0
		Global equities	MSCI All Country World	4.6	4.9	5.8	6.2	6.9	5.8	15.2
Real	Global	Natural resources	S&P Global Natural Resources	5.0	3.6	6.1	7.2	7.4	6.9	11.4
		Listed real estate	MSCI ACWI IMI Core Real Estate	5.1	6.3	6.3	6.0	6.1	6.3	6.2
		Listed infrastructure	S&P Global Infrastructure	5.5	5.8	5.8	5.4	5.8	5.6	6.2
Alts		Private equity	Cambridge Global Private Equity	7.6	7.9	7.7	8.0	8.4	7.4	N/A
		Private credit	Cambridge Global Private Credit	6.0	7.6	6.8	6.6	6.5	7.3	N/A
		Hedge funds	HFRI Fund Weighted Comp	2.9	2.6	3.7	4.3	4.4	3.4	7.4

*Naming convention of five-year outlook was changed to the forward year, so the 2021 edition was published in 2020. Forecasts in previous years represent the years they were published, under the previous naming convention. Forecasts listed here represent total return forecasts for primary asset classes, annualized using geometric averages. Forecasted returns are based on estimates and reflect subjective judgments and assumptions. They are not necessarily indicative of future performance, which could differ substantially. Five-year actual returns are listed in local currency (with the exception of real assets, which are in USD) and annualized for the five-year period ending 6/30/2021.

ABOUT THE CMA PROCESS

Every year, Northern Trust's Capital Market Assumptions (CMA) Working Group gathers to develop long-term financial market forecasts. The team adheres to a forward-looking, historically aware approach. This involves understanding historical relationships between asset classes and the drivers of those asset class returns, but also debating how these relationships will evolve in the future. Our forward-looking views are encapsulated in our annual list of CMA themes, which — combined with our quantitative analysis — guides our expectations for five-year asset class returns.

The CMA return forecasts are combined with other portfolio construction tools (standard deviation, correlation, etc.) to annually review and/or update the recommended strategic asset allocations for all Northern Trust managed portfolios and multi-asset class products.

The CMA Working Group is composed of senior professionals from across Northern Trust globally, including top-down investment strategists, bottom-up research analysts and client-facing investment professionals. CMA working group members are listed here.

ABOUT NORTHERN TRUST

Principles that Endure

Through our expertise and dedication, we transform the plans of the world's most successful individuals, families and institutions into action to help our clients reach their most ambitious goals. Spanning decades and generations, our longevity comes from the recognition that we are more than a financial institution. We are active participants in our communities, global leaders in business and philanthropy and thoughtful architects of innovative employee benefit and support programs.

Founded in Chicago in 1889, Northern Trust has a global presence with offices in 22 U.S. states and Washington, D.C., and across 23 locations in Canada, Europe, the Middle East and the Asia-Pacific region. As of June 30, 2021, Northern Trust had assets under custody/administration of US $15.7 trillion, and assets under management of US $1.5 trillion. For more than 130 years, Northern Trust has earned distinction as an industry leader for exceptional service, financial expertise, integrity and innovation.

IN MEMORIAM

We dedicate this edition of the Five-Year Outlook to our colleague and friend, Peter Flood. Peter embodied Northern Trust's core principles of service, expertise and integrity — and he made us all better investors.

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