CAPITAL MARKET ASSUMPTIONS

FIVE-YEAR OUTLOOK: 2021 EDITION

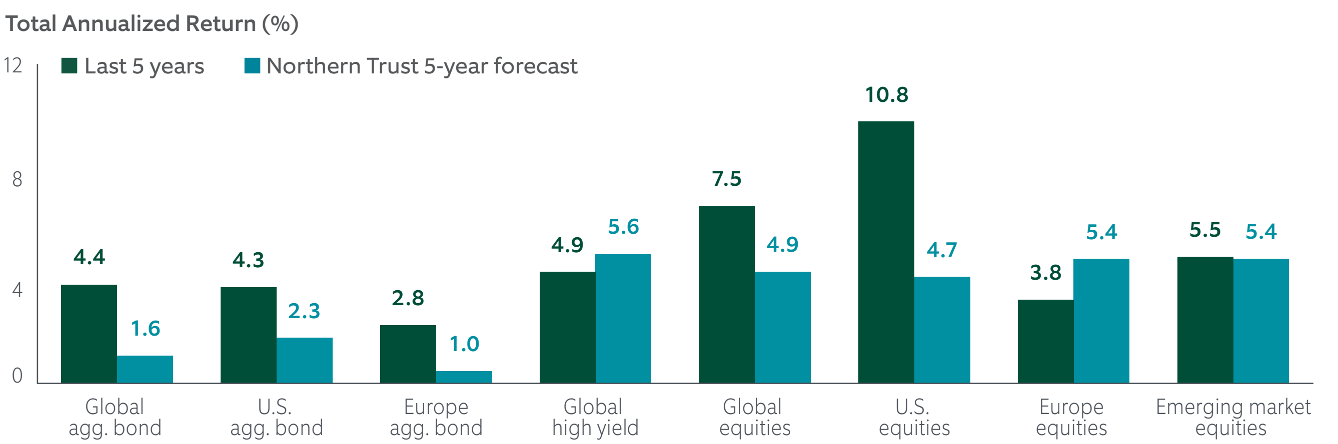
Published August 13, 2020

In recent years, global equities had slightly outpaced market forecasts for lower equity returns. Then the COVID-19 pandemic hit the global economy, putting an end to the 10-year bull market. Equity markets have now started to recover, but the pandemic introduced and exacerbated challenges that we expect to subdue financial market returns over the next five years.

We expect economic actors will be ***Retooling Global Growth*** as they deal with the pandemic fallout amid calls for more resilient business and economic models. Tensions between the U.S. and China will remain high, leading to a less efficient ***One World, Two Systems*** global dynamic. That, combined with central banks' ***Massive Monetary Toolkit***, will lead to ***Stuckflation Tested***. ***Reimagining Capitalism*** and a call to ***Stay Focused on Climate Risk*** round out the key themes we expect to impact financial markets over the next five years.

EXHIBIT 1: FINANCIAL MARKET RETURNS TO BE CHALLENGED

In a low-interest-rate, low-growth and increased-risk environment, high-yield fixed income looks attractive.



Source: Northern Trust Asset Management, Bloomberg. Annualized return data in local currency from 6/30/2015 to 6/30/2020. Past performance does not guarantee future results.

THEMES & ASSET CLASS FORECASTS 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.

Retooling Global Growth

Companies will prioritize stability over profitability by re-routing their supply chains, moving production inside their home countries, and building healthier balance sheets. After the stimulus-induced surge, global growth will settle at low levels.

Massive Monetary Toolkit

The controversial Modern Monetary Theory (MMT) — which advocates for greater coordination between monetary and fiscal policy — is, in reality, already being applied. This evolution has given central banks (recently viewed as ineffective) a big new toolkit.

Stuckflation Tested

Inflation faces a test from many of this year's themes — notably *Retooling Global Growth*; *One World, Two Systems* and *Massive Monetary Toolkit* — but the effects of slow growth, technology and automation will keep inflation at or below central bank targets.

One World, Two Systems

Last year's *Irreconcilable Differences* theme is evolving to where the U.S. and China will learn to live on the same planet with their opposing views on economic policy. Collaboration won't be absent, but won't be optimal either — leading to inefficiencies.

Reimagining Capitalism

For everyone to believe in (some form of) capitalism, rules alleviating the "winner take all" dynamic must evolve. Business leaders, the ultra-wealthy and politicians representing those left behind will find a way to forge a new capitalism that works better for all.

Stay Focused on Climate Risk

The pandemic took focus off climate-related issues, but the risks have not gone away. In some cases, they have intensified. Post-pandemic economic rebuilding will force leaders to re-engage with climate risk — a headwind for some industries but a tailwind for others.

Fixed Income

Low but steady interest rates should translate into low but positive returns over the next five years. High yield stands out as an alternative to global equities with its higher yield, higher expected total return and lower risk profile.

Equities

A mix of elevated valuations, slow global growth, lower profit margins and broader focus on stakeholders versus just shareholders will subdue returns. Emerging markets, carrying attractive valuations but also much uncertainty, will slightly outpace developed markets.

Real Assets

The possible permanent impairment of retail and office properties will hurt global real estate, while natural resources will struggle through subdued global demand. Listed infrastructure will stand out as a higher-yield, lower-risk asset class in a higher-risk world.

Alternatives

Private investments are providing attractive premiums to public market counterparts. But the "average" hedge fund has struggled to provide meaningful alpha. The range of outcomes across alternative strategies will remain wide, making manager selection paramount.

RETOOLING GLOBAL GROWTH

The pandemic has acted as an accelerant for both geopolitical tensions and technological disruption. U.S.-China tensions have resurfaced and technology utilization is increasing by C-suites and consumers alike. Working from home has been embraced and e-commerce delivery has taken another big step forward.

The ramifications will last beyond the pandemic. The accelerated decline of Brick-and-mortar retail caused the loss of millions of jobs — many of which are never coming back. Also, industries must "retool" to stabilize business models by moving production out of China and closer to home. This both reduces dependence on China and ensures access to necessary supplies. Onshoring means increased automation, causing further job losses on a net basis. Finally, the fiscal stimulus designed to numb the economic pain has increased government debt by trillions of dollars. All of this will temper long-term global economic growth.

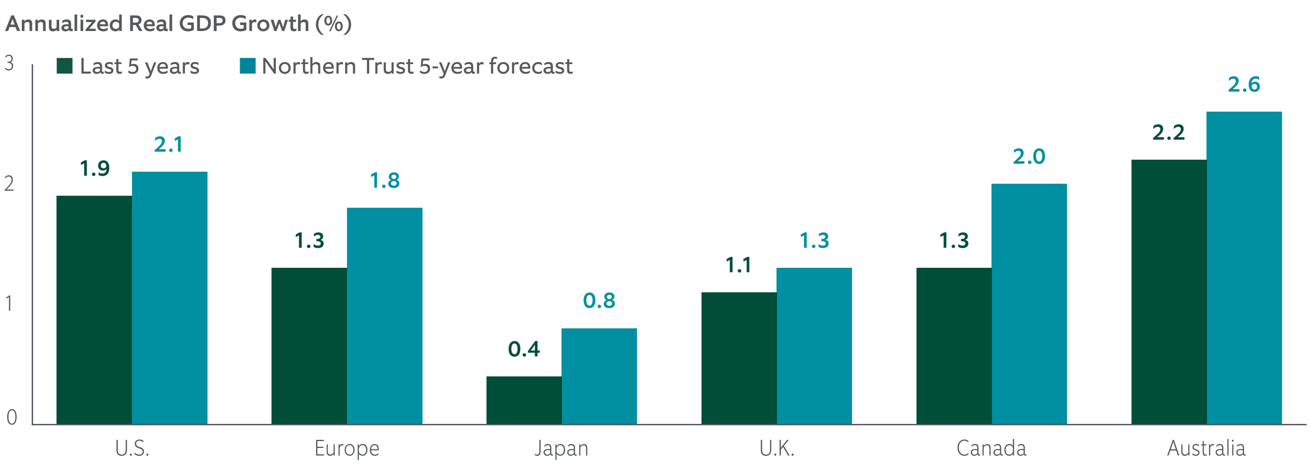
The accelerated decline of Brick-and-mortar retail caused the loss of millions of jobs — many of which are never coming back.

We expect the global economy to experience annualized real growth of 2.6% over the next five years. Exhibit 2 shows growth increasing slightly across regions, but this is only because of the stimulus-driven recovery from pandemic-induced recessions. Past that, the global economy will resume its slow growth trajectory. We expect the U.S., Europe and China (together representing 60% of the global economy) to grow at an annual pace of 2.1%, 1.8% and 3.5%, respectively. We expect Chinese growth to come in below both historical and "official" numbers as growing domestic consumption struggles to offset falling external demand.

The U.S. benefits from having the right industries (technology) but must tweak its economic approach to promote more social stability (see *Reimagining Capitalism* on page 7). Meanwhile, Europe's economic approach is better suited for 21st century challenges given its better income distribution. The pandemic has catalyzed closer fiscal coordination (reducing risks of a eurozone break-up). However, the economic bloc is dependent on outside technology — increasingly vital for economic security.

EXHIBIT 2: AN ECONOMIC BUMP THEN A SLIDE

Economic growth will slow after an upfront bounceback from the pandemic's disruptions.



Source: Northern Trust Asset Management, Bloomberg. Data from 3/31/2015 to 3/31/2020.

MASSIVE MONETARY TOOLKIT

Our long-term expectation for the evolution of monetary policy is also being accelerated by the pandemic. In last year's *Monetary Makeover* theme, we discussed the need for (and eventuality of) a closer link between monetary and fiscal policy in order to deal with ongoing Stuckflation. While not technically coordinated, the simultaneous reduction of interest rates to zero and massive increase in central banks' balance sheets has allowed government deficit financing at massive size and at minimal interest costs. Effectively, the highly debated Modern Monetary Theory (MMT) — the idea that monetary policy should serve as fiscal policy's wallet (through money printing), enabling political leaders to combat recessions — is already at work, whether officials want to call it MMT or not.

Central banks have massive toolkits driven by their ability to purchase securities through newly created money.

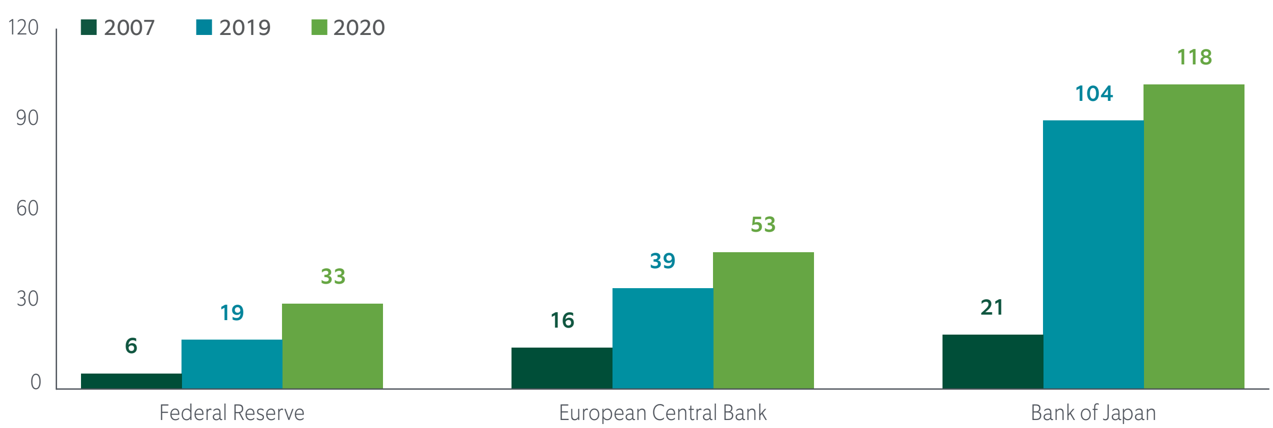
We have a better and more practical use of the MMT acronym: *Massive Monetary Toolkit*. Many were worried that, with interest rates near/at zero, central banks would not have the tools to fend off the next recession. However, when better coordinated with fiscal policy, those fears have proven unfounded. In fact, central banks have massive toolkits driven by their ability to purchase securities through newly created money. As seen in Exhibit 3, the world's leading central banks have taken yet another step up in the size of their balance sheets. Balance sheets are staying big and, in many cases, growing even bigger. Investors anticipating any return to "normal" monetary policy are still *Waiting for Monetary Godot*, a theme from 2017. (For those unfamiliar with the reference, the play *Waiting for Godot* is the tale of the two main characters waiting for the mythical Godot, who ultimately never shows up; the analogy is that investors have been waiting for monetary policy normalization, which we don't believe will occur).

This new monetary policy approach will last as long as inflation remains contained. And given our expectation for inflation to remain at or below the general 2% central bank target over the next five years, the de facto monetary-fiscal policy coordination will prevent exogenous shock-driven recessions from becoming depressions.

EXHIBIT 3: TO INFINITY AND BEYOND?

The pandemic crisis has shown central banks have not run out of firepower.

Balance Sheet Size (as a % of GDP)



Source: Northern Trust Asset Management, Bloomberg. Balance sheet size as of 12/31/2007, 12/31/2019 and 6/30/2020.

STUCKFLATION TESTED

If ever there was a time that we would emerge from *Stuckflation* (first introduced as a long-term theme in 2016), this would be it. Last year, we wrote that we expected "ongoing inflation disappointment to eventually lead to a coordinated policy [fiscal and monetary] response" that could potentially introduce the threat of inflation — but further down the road. We did not anticipate a global pandemic would spur that coordinated policy response in less than a year's time.

In response to the pandemic, trillions of dollars of fiscal and monetary stimulus has been pumped into the system. For now, fiscal stimulus has only partially replaced lost economic demand and monetary stimulus has mostly stayed in the financial markets. However, some fear that, once the economy regains traction, all of this money in the system will push inflation beyond investors' comfort zone. Adding to this concern, we expect companies to prioritize resiliency over efficiency, potentially leading to a higher cost of production. Also, central bankers likely will allow "somewhat higher" inflation to make up for a decade of low inflation.

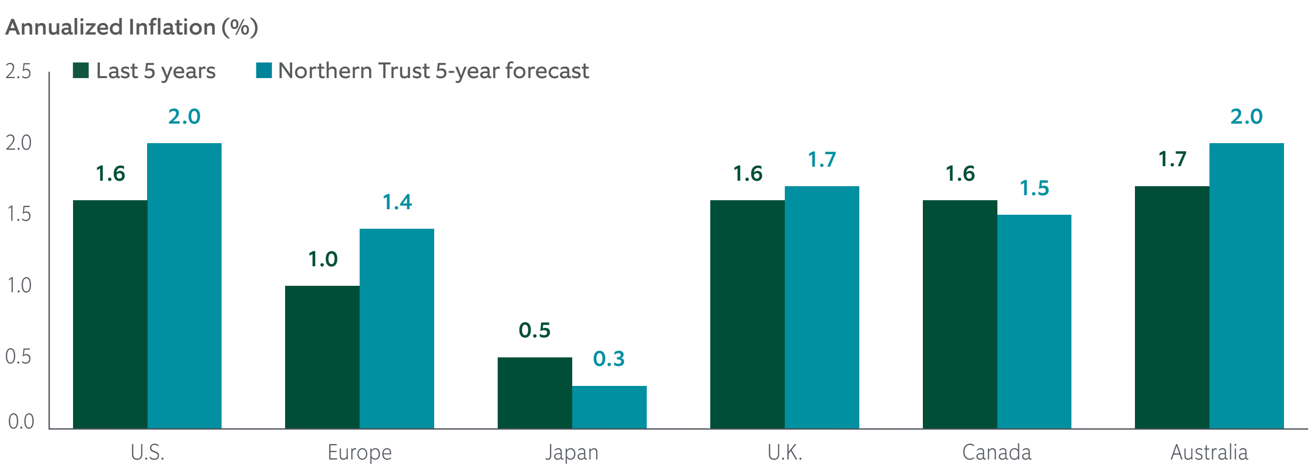
Some fear that, once the economy regains traction, all of this money in the system will push inflation beyond investors' comfort zone.

While we recognize the threat, we believe these inflation drivers will take years to manifest. Low consumer demand will persist for some time as jobs will be slow to return. Further, technology will allow companies to make the shift from a laser focus on efficiency to more stability in their supply chains. However, technology-enabled production has kept prices low, and it will be a while before central banks really understand what they are up against in their fight against Stuckflation.

We expect inflation to remain contained around the world, with five-year annualized inflation expectations ranging from 0.3% for Japan (generally structurally low) to 2.0% for the U.S. and Australia (most likely to reestablish their desired inflation level). All regional inflation forecasts versus previous five-year levels can be found in Exhibit 4. Despite the forces testing the low inflation environment, we believe the continued impact of technology/automation combined with a slow demand outlook will keep inflation stuck over our five-year horizon.

EXHIBIT 4: STILL STRUGGLING TO HIT THE TARGET

A confluence of developments will push inflation higher, but not above central bank targets.



Source: Northern Trust Asset Management, Bloomberg. Data from 3/31/2015 to 3/31/2020. All regions use headline CPI as the inflation metric.

ONE WORLD, TWO SYSTEMS

Last year's *Irreconcilable Differences* theme is largely playing out as distrust between the U.S. and China deepens. It is increasingly apparent that the countries' differences — from economic to political to social — will go unresolved. As a result, it is unlikely we will ever return to the trading relationship that existed prior to the trade war, regardless of leadership. U.S. President Donald Trump's administration has taken a more aggressive and "go-it-alone" approach. Policy under presumptive Democratic presidential nominee Joe Biden would likely be more assertive than aggressive, with more coordination with traditional allies.

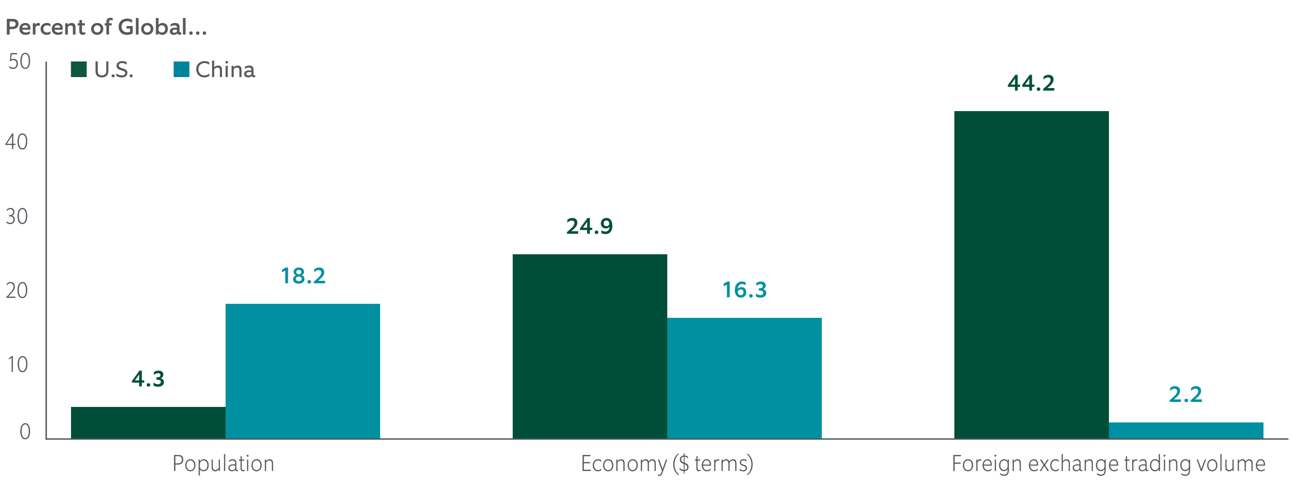
The biggest loser here will be globalization, which will continue to decline.

In either case, the U.S.-China interaction will remain the focus — the prevailing world leader vs. the contender. Exhibit 5 provides a comparison of these two superpowers on different metrics to give a sense of relative strength. China has four times the population of the U.S., which should allow its economy to continue to outpace U.S. growth if productivity gains can continue among its 1.4 billion citizens. But China trails the U.S. in overall economic might and financial market influence. The U.S. dollar will remain the world's primary reserve currency throughout our five-year horizon, giving the U.S. an ongoing advantage.

Tensions between the U.S. and China are as high as they have been in decades. But we do not believe the current feud will move out of the economic realm — the stakes are too high. In fact, we believe tensions will reduce to a constant simmer as an "agree-to-disagree" dynamic takes hold. Both will hold onto their own "systems" and maintain distrust of each other. The biggest loser here will be globalization, which will continue to decline. As we said last year: "While we do not believe globalization is dead, we do believe it has peaked. And a new `one world, two systems' dynamic (U.S. capitalism vs. China's statism) will continue to grow and evolve in a detrimental way." Other countries and multi-national companies will be forced to either pick a side or straddle the middle ground, leading to lost economic opportunity (slowing economic growth) and/or economic inefficiencies (representing another challenge for our low inflation theme, *Stuckflation Tested*).

EXHIBIT 5: A HIGH LEVEL COMPARISON OF THE WORLD'S TWO SUPERPOWERS

China has a big population advantage over the U.S. but lags in economic and financial market metrics.



Source: Northern Trust Asset Management, IMF, U.S. Census Bureau, Bank for International Settlements

REIMAGINING CAPITALISM

The pandemic has not only altered economic growth trajectories, it has also highlighted flaws in the capitalist economic system itself. Specifically, it has called into question capitalism's once sacred maxim (first promoted by economist Milton Friedman) that a company's sole focus should be profit maximization. If companies focus on maximizing profits, other societal aims will take care of themselves. But one societal aim — reducing inequality — has only gotten worse over the past 40 years (see left panel of Exhibit 6).

The pandemic has exacerbated the divide between the higher and lower-income workers. Of the millions of jobs lost to the pandemic (some temporarily, some permanently), many are low-paying. Also, those in higher-paying jobs are more likely to have the ability to work remotely — and, thus, more likely to still be employed. As seen in the right panel of Exhibit 6, it is estimated that only 9% of the bottom quartile of earners can work from home while 62% of top-quartile earners have that ability.

Profit-maximizing capitalism worked well for the time it was created. Investment capital was necessary to start businesses (building factories, etc.), which employed vast amounts of workers. Having several companies in each industry benefitted the consumer in the form of price competition. Today's environment is different. In many cases, no (or very minimal) investment capital is needed to launch companies, which require relatively few employees to keep operations going. For instance, Netflix and Intel have a similar market cap and yet Intel employs over 12 times as many workers — 110,000 vs. 8,600. Meanwhile, the benefit of multiple competitors is less clear. Should Amazon be broken up? Its scale is what enables it to be the low-cost provider. These dynamics create a "winner take all" environment, and certainly do not meet broader societal aims of less income inequality. Investors recognize that more focus on stakeholders over shareholders may mean less profit but also a more sustainable economic system. Shareholder pressure will get C-suites on board, and capitalism will evolve into something that works for all — though possibly at some expense to corporations.

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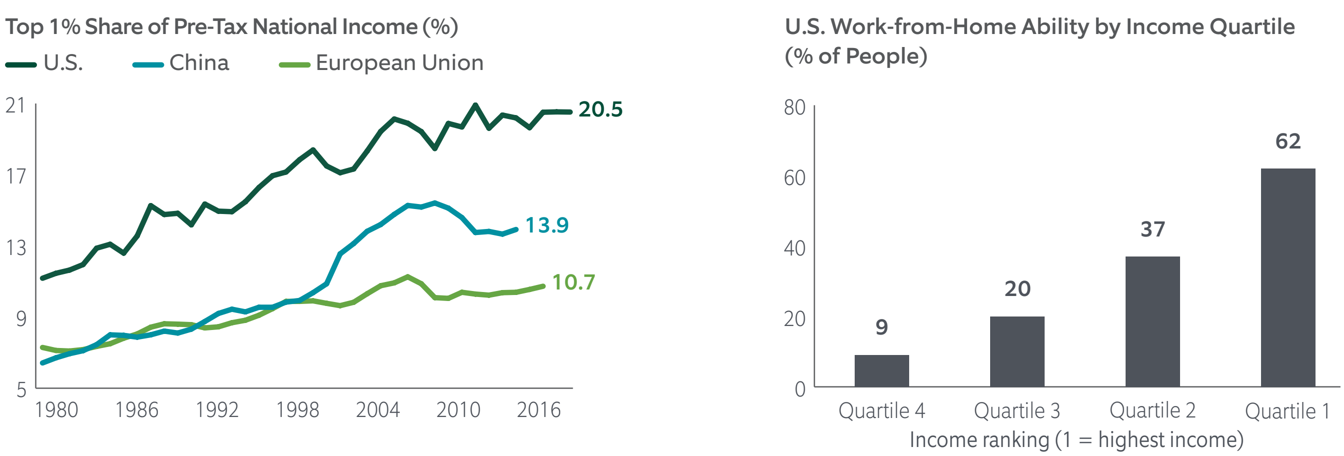
EXHIBIT 6: THE RICH ARE STILL GETTING RICHER

Inequality has been on the rise for decades. The pandemic may accelerate that trend.



Source: Northern Trust Asset Management. Left panel: World Inequality Database. U.S. data through 2019, European Union data through 2017, China data through 2015. Right panel: 2018 U.S. Census Bureau.

STAY FOCUSED ON CLIMATE RISK

Although the pandemic fallout has been the focal point of markets and politicians, climate risk remains in focus. Over the next five years, climate risk will continue to translate into market risk, as policymakers will come under pressure to preserve environmental progress and retool economies in a more sustainable way.

In this context, it is important to recognize that, while the pandemic may have briefly interrupted the rise in global carbon emissions, the upward trend remains intact (see Exhibit 7). In fact, although it feels like a lifetime ago, only six months have passed since the Australian bushfires increased worldwide recognition of the risk of climate change and became a call to action. Governments drafted new regulations to confront the challenge. Even central banks are getting into the discussion. The European Central Bank has started to address how it will include climate risk in its monetary policy, viewing climate risk as integral to the economic outlook.

The biggest threat for financial markets is with equity returns as investors anticipate the future negative impact of climate change. Particularly vulnerable are natural resource and emerging market stocks. Relatively fragile economies could be especially sensitive to climate-related regulation as they are still in early stages of maturation, which generally comes with higher carbon emissions. Investors likely will start to look at climate risk with more urgency as the pandemic has made investors more sensitive to how large non-financial events can hurt returns.

Investors should therefore aim to be ahead of the repricing that is likely to occur. We believe one way to do this is to focus on the portfolio construction process. Using environmental criteria in the evaluation process is one way investors can help mitigate long-term climate risks that are difficult to analyze and quantify. This approach also actively tilts investors away from companies with business models that will be harmed by climate change, while pointing investors towards those that thrive. Preparing in this manner avoids performing what might ultimately be a fruitless task of attempting to map out every global warming scenario and all associated risks.

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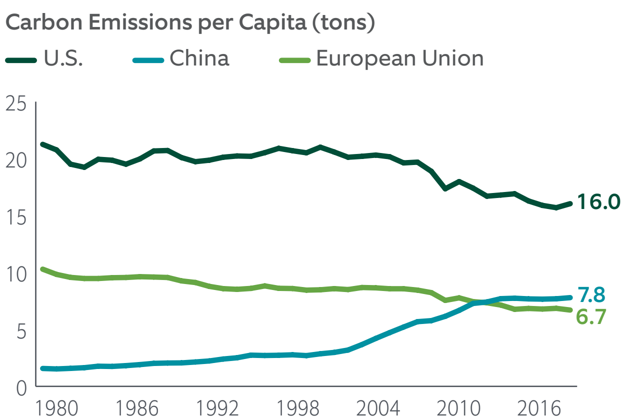
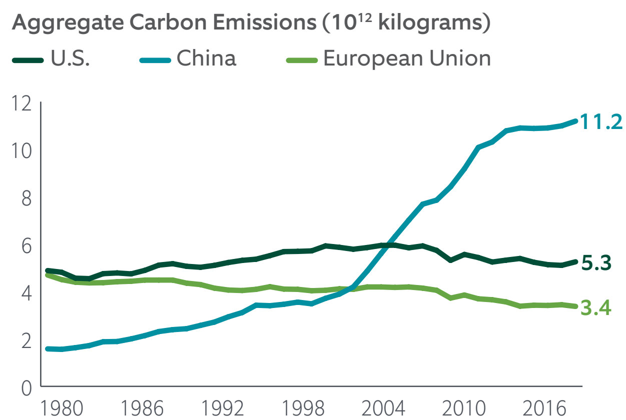
EXHIBIT 7: DEVELOPED MARKETS TAKETH AWAY, EMERGING MARKETS GIVETH

Developed economies are reducing carbon emissions slowly, but emerging market emissions — notably China — are still rising.





Source: Northern Trust Asset Management, PBL Netherlands Environmental Assessment Agency: Trends in Global CO2 and Total Greenhouse Gas Emissions: 2019 Report. Data through 2018.

FIXED INCOME

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

As short-end rates stay low and inflationary problems don't materialize, we anticipate longer-end rates to fall short of five-year market expectations — most notably in the U.S. and Japan.

Interest Rate Expectations

Building on our 2017 *Waiting for Monetary Godot* theme, we believe we are entering the second act of this "lower-for-longer" play (with the pandemic hitting during the intermission). Exhibit 8 shows our five-year interest rate expectations vs. market expectations and current levels for the U.S., Germany (eurozone) and Japan. Slower growth and central bank desire for (but not a realization of) higher inflation will keep short-end rates anchored at zero or below. As short-end rates stay low and inflationary problems don't materialize, we expect longer-end rates to fall short of five-year market expectations — most notably in the U.S. and Japan.

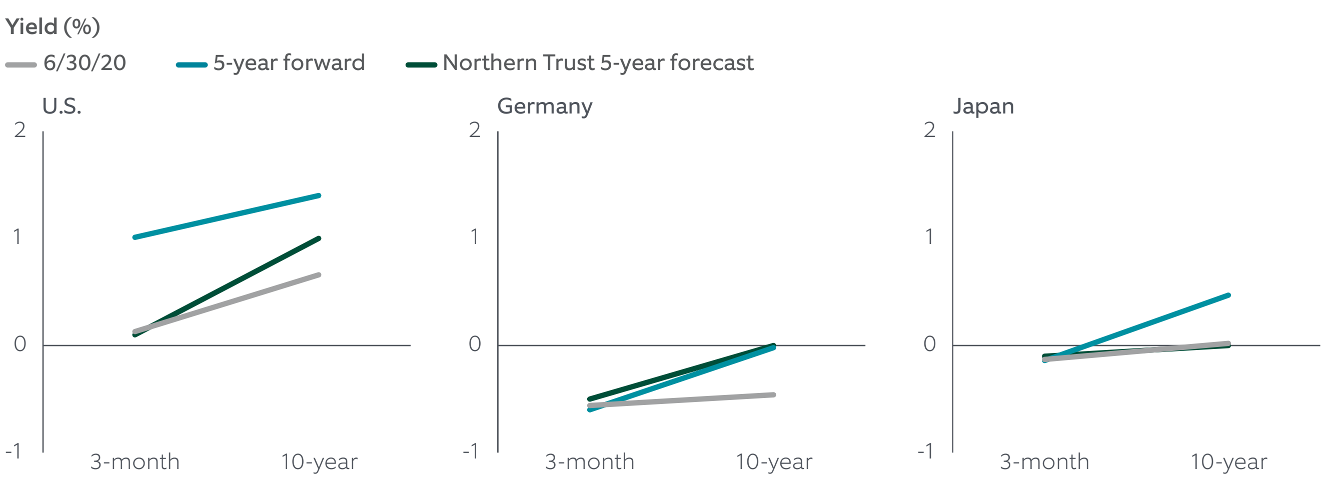
Credit Spread Expectations

Credit spreads should continue to slowly contract from the pandemic-induced spike as central banks continue to deploy *Massive Monetary Toolkit(s)*. Spreads will stay higher than pre-pandemic levels as the new search for yield (pushing spreads down) meets the economic pressures driven by *Retooling Global Growth* (keeping spreads elevated). High-yield spreads will be attractive but overall yields will not go below an absolute level, limiting spread tightening.

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: LOWER-FOR-LONGER (AGAIN)

The ramifications of the pandemic have put us back into a very low-rate environment.



Source: Northern Trust Asset Management, Bloomberg. Data as of 6/30/2020.

Cash Return Forecasts

Continued zero (or below) central bank policy rates over the next five years translate into subdued cash returns. We forecast 0.1% annual returns in the U.S. and the U.K., slightly higher returns in Australia and Canada (0.2%) and continued negative returns in Europe and Japan (-0.5% and -0.1%, respectively).

Inflation-Linked Return Forecasts

Our inflation expectations are slightly above subdued market expectations. Most investors only anticipate U.S. inflation of 1.5% over the next five years versus our 2.0% forecast. Other regions display similar differentials. As such, our inflation-linked bond forecasts are slightly higher than comparable nominal bond forecasts.

Investment-Grade Return Forecasts

Over the past 40 years, the five-year annualized U.S. investment-grade return has been above the starting point yield by around 1%. This "outperformance" has been driven by generally positive yield curves and the perpetual nature of fixed income indexes (higher-yielding newly issued bonds replace lower-yielding maturing bonds). Today, despite low interest rates, yield curves are actually fairly steep. This implies returns can outpace starting point yields, especially given our view that interest rates will stay below market consensus, resulting in price gains.

High-Yield Return Forecasts

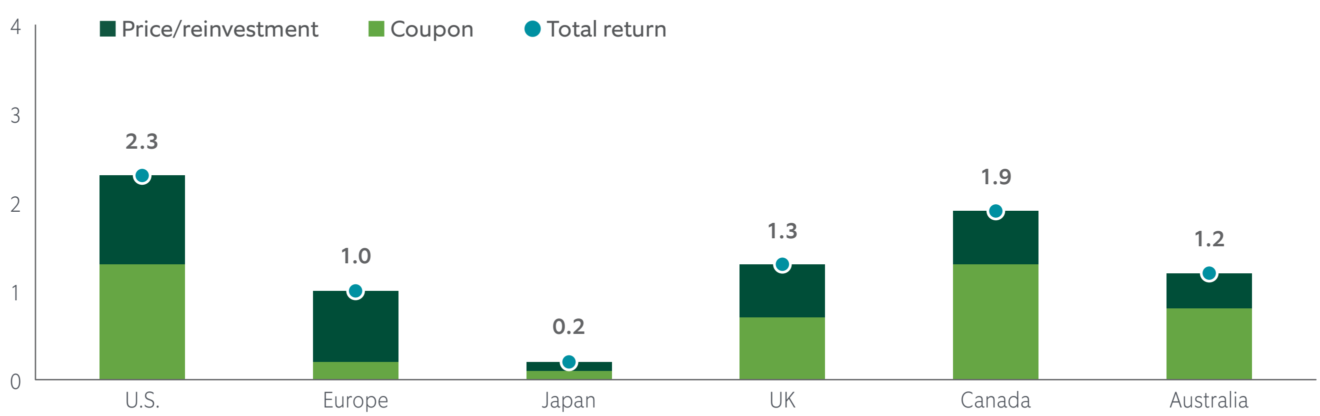
Credit (default) risk is most noticeable in high yield, where five-year returns have historically trailed starting point yields by 1.3% on average. We expect a similar hit over the next five years, reducing the current (6/30/20) 6.8% yield to a 5.6% forecast. Low interest rates will restart the search for yield and make it easier to service and roll over debt, but slow economic growth will still be challenging.

Lower interest rates will drive the ongoing search for yield and support asset class fundamentals, as lower interest rates equate to an easier ability to service and roll over debt.

EXHIBIT 9: LOW RATES MEAN LOW RETURNS

Fixed-income returns will struggle to remain above inflation, but should stay positive.

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 6/30/2020.

EQUITIES

We 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) are the best predictor of future returns. Analyzing developed market equity data going back to 1970, cash flow yields have explained 41% of next-five-year (and 83% of next-10-year) total return variability. Our quantitative process predicts a 6.2% five-year annualized return.

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Quantitatively analyzing emerging market equities is limited by a shorter data set. For the data we do have (starting in 1987), emerging markets have a 0.87 correlation to developed markets with a 2.4% annualized excess return. But this return premium has not been constant. As Exhibit 10 shows, emerging market equities have gone through a number of cycles to arrive at that 2.4% advantage.

This historically based quantitative analysis is subject to our forward-looking thematic views, applied through a building-block approach to equity forecasting.

The Building Blocks of Our Forecasts

The building-block approach involves four primary components:

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).

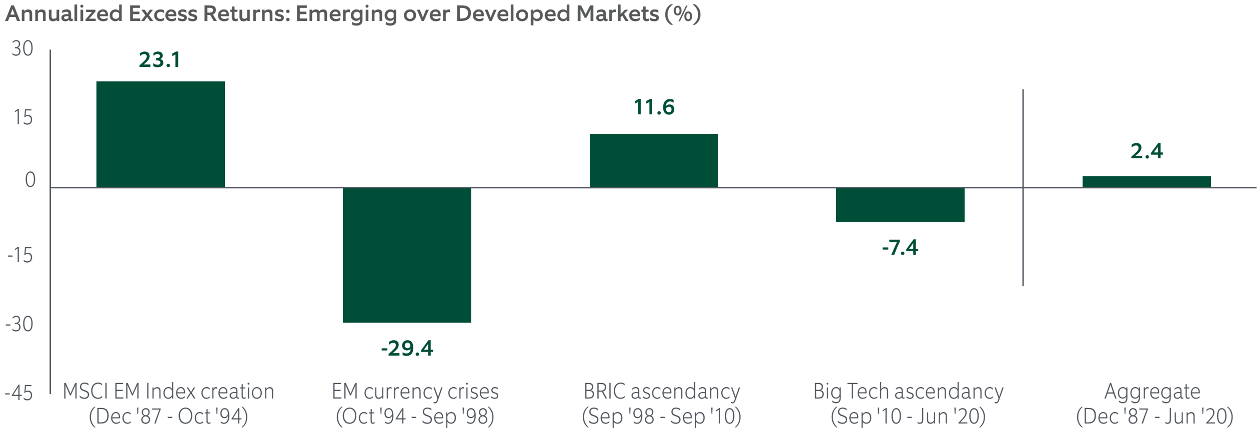
3. **Valuation** impact is based on expected changes in price-to-earnings ratios, which better align with our "building-block" forecasting approach than the cash flow yields we use in our quantitative process (but they are somewhat related).

4. **Dividend yield** estimates are based on current levels as they tend to stay stable over time; we only deviate if our forward-looking views lead us to expect that companies will return more or less cash to shareholders via dividends.

EXHIBIT 10: EMERGING MARKET CYCLES

The aggregate emerging market equity return premium masks major cyclicality.

Annualized Excess Returns: Emerging over Developed Markets (%)



Source: Northern Trust Asset Management, Bloomberg. Premiums are measured off MSCI Emerging Market and MSCI World Indices. Past performance does not guarantee future results. BRIC means Brazil, Russia, India and China.

Developed Market Return Forecasts

We expect developed market equity returns to range from 3.8% (Japan) to 5.8% (Australia) — all below historical averages and the 6.2% forecasted by our quantitative model. We expect *Retooling Global Growth* and *Reimagining Capitalism* to restrain revenues, profit margins and earnings. We expect a slight fall in valuations given the high starting point and counteracting themes of *Massive Monetary Toolkit* (a tailwind) and *Stuckflation Tested* (a headwind).

We have shaved our revenue forecasts in all non-U.S. developed markets, which are less able to capture economic growth given less competitive companies losing market share to foreign competitors. Consistent with *Reimagining Capitalism*, changes in corporate priorities and greater focus on stakeholders (versus shareholders) will lower U.S. share repurchases to half its recent pace. This represents a headwind to returns (more shares outstanding driving lower earnings per share).

Our expectation for lower global valuations is driven by our U.S. forecast, where we believe valuations are elevated beyond even what should be expected in the current low-rate environment. In other regions, we expect some increase in currently cheap valuations (versus historical averages). Expected dividend yields are largely unchanged, as most pandemic-related cuts have already occurred.

Emerging Market Return Forecasts

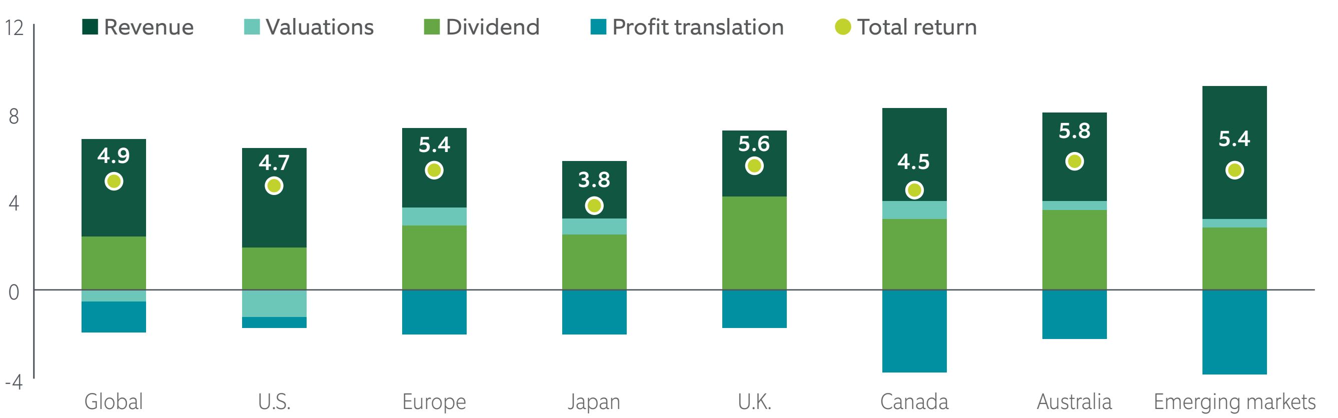
Our 5.4% emerging market equity return forecast is a mere 0.6% return premium to developed markets. China and Asia more broadly represent approximately 40% and 80% of the MSCI Emerging Market Index, respectively, materially driving the emerging markets return forecast as a whole. We expect *Retooling Global Growth* and *One World, Two Systems* to impact the region's return potential negatively. While inexpensive, we don't expect valuations to move materially higher given global political uncertainties and China's shifting economic model.

We have shaved our revenue forecasts in all non-U.S. developed markets, which are less able to capture economic growth given less competitive companies losing market share to U.S. companies.

EXHIBIT 11: MODEST RETURN EXPECTATIONS

Modest revenue growth and pressured margins will lead to mid-single-digit returns.

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



Source: Northern Trust Asset Management

REAL ASSETS

The industry term "real assets" is a bit clumsy. The primary real assets — global natural resources, real estate and listed infrastructure — are financial instruments and, therefore, aren't technically real assets. But they do provide real benefits to the portfolio. Natural resources can provide protection against inflation, while global real estate and listed infrastructure bring a mix of additional risk exposures to the portfolio for additional diversification — along with a higher yield than broad equities.

We start our real asset forecast process with a review of historical relationships in order to identify key drivers of return. 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. They include emerging markets equities, term (interest rate risk), and credit (default risk). The betas in Exhibit 12 denote the return accrued to the asset class for every 1% move in the factor. For instance, on average and with all else equal, global real estate captures 1.2% for every 1% move in the term factor.

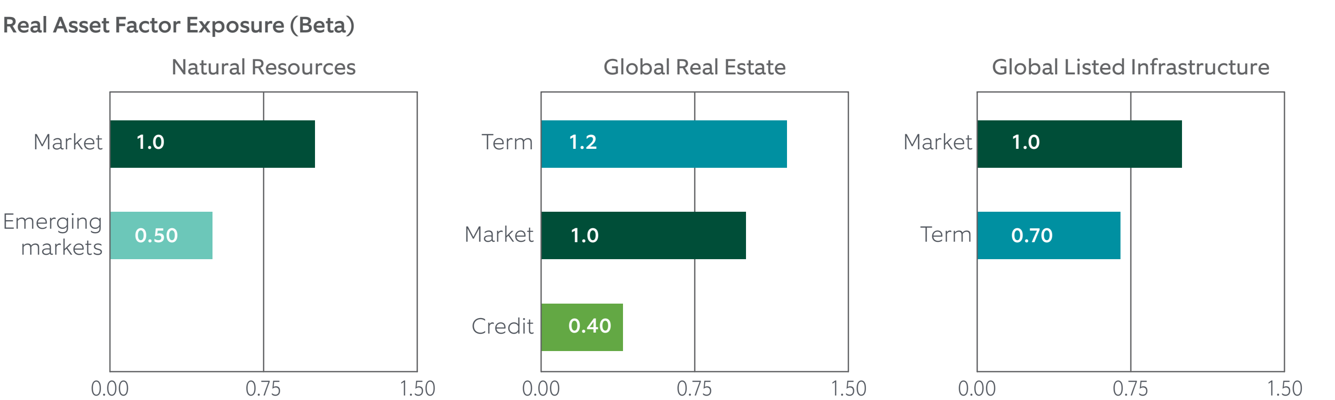
Multiplying the betas (the risk exposures described above) by our return expectations for market, term, emerging markets and credit provides a quantitatively driven baseline forecast to be reviewed in the context of our forward-looking themes. For instance, the 5.8% global listed infrastructure forecast comprises contributions from market (global equity) and term (interest rate) risk exposures of 4.5%, and 1.2%, respectively — plus our expected 0.1% cash return.

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 Exhibit 13).

Natural resources can provide protection against inflation, while global real estate and listed infrastructure bring a mix of additional risk exposures to the portfolio for additional diversification — along with higher yield than broad equities.

EXHIBIT 12: UNDERSTANDING EXPOSURES

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



Source: Northern Trust Asset Management, Bloomberg. Regressions calculating factor exposure (beta) run from 12/31/2002 to 3/31/2020. Term factor exposure is the return premium associated with taking on maturity risk; that is, of investing in longer-term bonds.

Natural Resources

Our equity-based approach to natural resources means returns are largely driven by market risk exposures. But commodity prices, which are not explicitly captured in the quantitative process, also drive returns. Slow growth expectations driven by *Retooling Global Growth* will continue to pressure the supply/demand balance (notably in the energy sector). Meanwhile, the need to *Stay Focused on Climate Risk* also represents a headwind for the asset class. These concerns led to a 1.5% qualitative reduction resulting in a 3.6% annual return forecast. That said, the asset class is inexpensive relative to broader equity markets and should still provide protection against unexpected inflation, which remains a risk (see *Stuckflation Tested*).

Natural resources are inexpensive relative to broader equity markets and should still provide protection against unexpected inflation, which is a real risk.

Global Real Estate

Term and credit risk exposures should be supportive for global real estate given our lower-for-longer interest rate expectations. However, this support will likely be offset by permanent impairment of many property types, notably retail and office spaces that are likely to be in lower demand because of the pandemic. Some properties will be repurposed over time and other sectors (e.g. industrial) may thrive, but we still see an aggregate and continued headwind. Our 2% qualitative reduction leads to a 6.3% annual return forecast.

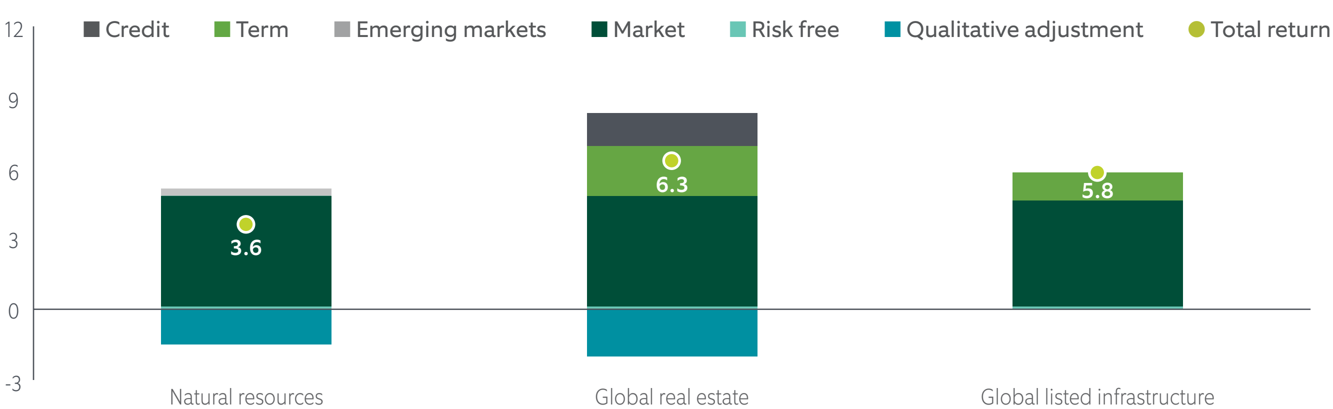
Global Listed Infrastructure

Listed infrastructure's term exposure, yields and historical downside protection properties should make it attractive in the economic and market environment we expect. Pandemic implications — for instance, lost revenue for airports, pipelines and rail/toll roads (which comprise about 50% of the index's revenue generation) — take some shine off the asset class but should not be permanent headwinds. No qualitative adjustments were made to our 5.8% annual return forecast.

EXHIBIT 13: REAL ASSETS FACING REAL ISSUES

Natural resources and global real estate must navigate major headwinds, including supply-demand imbalances and a changing retail environment, respectively.

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 focus on private investments and hedge funds, taking a more quantitative approach to these forecasts. Given the wide range of strategies and resulting performance dispersion, manager selection is extremely important.

Given the wide range of strategies and resulting performance dispersion, manager selection is extremely important.

Private Investments

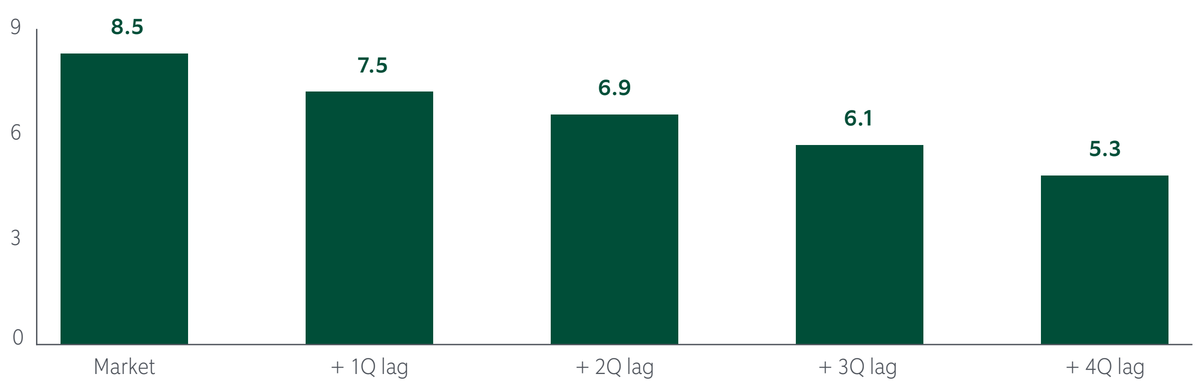
A simple regression of private equity returns on public equity returns results in an impressive 8.5% alpha. However, asset value appraisals on businesses held by private investments often take time to finalize. These delayed appraisals create a mismatch between public and private market returns and cause the regression model to assign alpha to what is really risk exposures (beta). To account for this, we introduce lagged market variables into our regression. Four quarters of lagged market variables are statistically significant (implying appraisals can lag by as much as a full year). The introduction of each lagged market variable better aligns public with private markets, increasing the amount of private equity return explained by the public markets (beta) and decreasing the amount of alpha (see Exhibit 14). With the four lags incorporated, the alpha of private equity falls to 5.3% — still impressive, but not quite as good as it initially appeared.

The market beta in these regressions is not 1.0, or perfectly aligned with the market. Instead, the total market beta in our model equals 0.84. So we need to adjust the market return component of our private equity forecast by multiplying our 4.9% global equity market return forecast by the 0.84 beta to arrive at 4.1%. We then add the 5.3% private equity alpha to arrive at the model's 9.4% private equity forecast, representing a 4.5% premium over our global equity forecast (4.9%). Practicing conservatism, we haircut that 4.5% premium to 3%, resulting in our 7.9% private equity return forecast (4.9% global equity return plus 3%).

EXHIBIT 14: NOT (QUITE) AS GOOD AS IT SEEMS

Private equity alpha is reduced — but still impressive — when incorporating lagged pricing impacts from delayed appraisals of private businesses, which can take about a year to be finalized.

Private Equity Alpha Incorporating Market Lags (%)



Source: Northern Trust Asset Management, Bloomberg. Alpha contributions are calculated on regressions run on quarterly returns of the Cambridge Associates Global Private Equity Index from 3/31/2003 - 12/31/2018.

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.

Our 2.6% hedge fund return forecast equals the combination of expected returns from traditional risk exposures (beta, 2.2%) and expected alpha (0.4%). We use data going back to 2002, the longest available data for all relevant asset classes and risk factors. These traditional risk factors include market, emerging market, term and credit. We also incorporate a market lag factor. By approaching it this way, we are stripping out the risk exposures we can capture (at a much cheaper price) in the traditional portfolio to isolate the alpha provided by the average hedge fund.

Exhibit 15 shows the mix of beta and alpha over time using rolling 10-year time periods. The hedge fund risk (beta) contribution has been fairly steady and has largely tracked a balanced 50/50 portfolio. This makes sense as hedge funds in aggregate are really just one large, multi-asset-class portfolio.

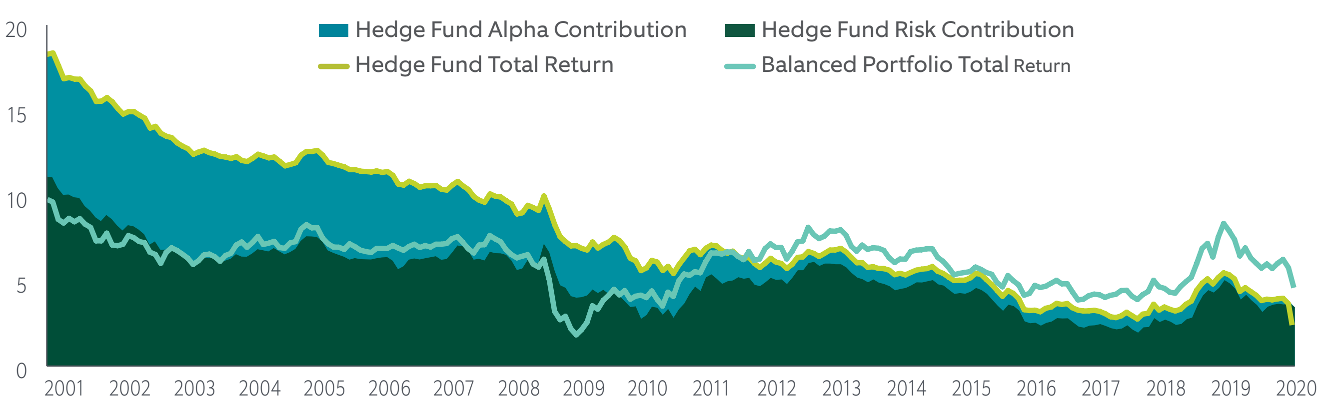
Meanwhile, the alpha generation has been in notable decline — falling from an annualized 7.1% in the 10-year period through 2000, to -0.9% over the past 10 years — due to a combination of better reporting and more efficient markets. It is worth noting that the hedge fund returns analyzed are the average returns. The alpha deterioration increases the importance of hedge fund manager selection. Given the alpha dispersion across hedge fund strategies, a robust selection process could be the difference between a hedge fund allocation that adds value to the overall portfolio and one that introduces a (high-cost) performance drag.

Unfortunately, the alpha generated by the average hedge fund has been steadily deteriorating over time.

EXHIBIT 15: MAKE SURE YOU ARE GETTING YOUR MONEY'S WORTH

The "average" hedge fund has underperformed a simple 50/50 portfolio in recent times due to declining alpha.

Hedge Fund vs. Balanced Portfolio 10-Year Rolling Returns (%)



Source: Northern Trust Asset Management, Bloomberg. Data from 12/31/1990 to 3/31/2020. Balanced portfolio is 50% MSCI ACWI / 50% Bloomberg Barclays Global Aggregate Index. A 50/50 portfolio was chosen because it has a similar risk profile to the HFRI Index (hedge funds). Past performance does not guarantee future results.

HOW HAVE WE DONE?

We are frequently asked about the accuracy and value of our five-year asset class return forecasts. Our analysis of this process highlights another benefit of diversification, as our overall portfolio returns have been close to forecasts despite meaningful variations in some individual asset class returns.

> Individual return forecasts can vary greatly from the actual outcome, but those forecasting errors tend to offset each other, leading to a more accurate forecast for the overall portfolio.

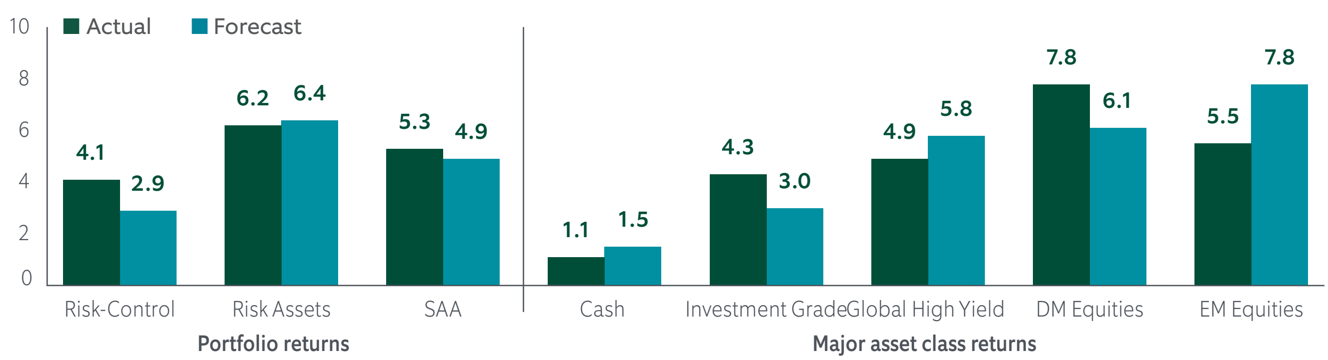
In our asset allocation framework, we use the broad categories of risk-control assets (cash, investment-grade and inflation-linked bonds) and risk assets (high-yield bonds, global equities and real assets) to create a diversified portfolio. That diversification helps to smooth the volatility of the overall portfolio. But it also can help with overall portfolio forecasting accuracy. Individual return forecasts can vary greatly from the actual outcome, but those forecasting errors tend to offset each other, leading to a more accurate forecast for the overall portfolio. As seen in Exhibit 16, five years ago we forecasted 4.9% annual returns in a well-diversified portfolio versus the 5.3% that was realized (a small 0.4% difference). This trend has been fairly consistent, with our five-year forecasted portfolio return being within 0.5% of the actual five-year return in each of the past few years. Exhibit 16 also provides individual asset class actual five-year returns versus our forecasts. We were correct that cash returns would remain low due to easy central bank policy. In fact, zero interest rate policy was in place longer than even we expected. And our "bold" fixed income return predictions — solidly positive forecasts amid investor fears of negative returns — proved too conservative. We were also too conservative on developed market equity forecasts — dramatically helped by the Big Tech ascendancy — and too aggressive on emerging market equity forecasts, as China growth slowed materially.

Some may argue that, by just investing in U.S. equities, investors would have achieved their objectives (and then some). But there will be (and have been) times when U.S. equities underperform our expectations and other asset classes may step in to help make up the difference. Bottom line: ensuring diversification should always be central to the portfolio construction process.

EXHIBIT 16: THE VALUE OF A DIVERSIFIED STRATEGIC PORTFOLIO

Diversification offsets mismatches in individual asset-class forecasts, improving portfolio forecasts.

Five-Year Annualized Returns 2015-2020 (%)



Source: Northern Trust Asset Management, Bloomberg. Actual return data from 6/30/2015 - 6/30/2020. Forecasted returns as of 6/30/2015. 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. Strategic asset allocation comprises a combination of risk-control and risk assets. DM = developed market. EM = emerging market. 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	2021*	2019	2018	2017	2016	2015	
Fixed Income	United States	Cash	3-month U.S. T-bill	0.1	1.1	2.2	1.7	0.5	1.5	1.1
Fixed Income	United States	Inflation linked	BBG BarCap U.S. TIPS	2.4	2.6	2.9	3.0	2.5	2.5	3.7
Fixed Income	United States	Investment grade	BBG BarCap U.S. Aggregate	2.3	3.0	3.6	3.2	3.0	3.0	4.3
Fixed Income	United States	High yield	BBG BarCap U.S. High Yield	5.5	5.0	4.9	4.8	5.3	5.6	4.8
Fixed Income	United States	Municipal	BBG BarCap Municipal	2.6	2.4	3.2	3.2	2.8	3.5	3.9
Fixed Income	Europe	Cash	3-month German Bunds	-0.5	-0.3	-0.3	-0.2	-0.5	0.0	-0.7
Fixed Income	Europe	Inflation linked	BBG BarCap Euro Inflation Linked	1.5	1.0	1.2	1.5	1.4	1.8	2.2
Fixed Income	Europe	Investment grade	BBG BarCap Euro Aggregate	1.0	1.2	1.8	1.5	1.4	2.0	2.8
Fixed Income	Japan	Cash	3-month JGB	-0.1	-0.1	0.0	-0.1	-0.3	0.0	-0.2
Fixed Income	Japan	Inflation linked	BBG BarCap Inflation Linked JGB	0.5	0.2	0.5	0.8	0.8	1.2	-1.2
Fixed Income	Japan	Investment grade	BBG BarCap Japanese Aggregate	0.2	0.2	0.5	0.7	0.5	1.0	1.5
Fixed Income	U.K.	Cash	3-month Gilts	0.1	0.3	0.9	0.5	0.3	1.5	0.5
Fixed Income	U.K.	Inflation linked	BBG BarCap Inflation Linked Gilt	1.3	2.2	1.7	1.6	2.0	2.6	8.6
Fixed Income	U.K.	Investment grade	BBG BarCap Sterling Aggregate	1.3	2.2	2.5	2.5	2.6	3.0	6.0
Fixed Income	Canada	Cash	3-month Canada T-bill	0.2	0.7	1.6	1.3	0.7	1.5	1.0
Fixed Income	Canada	Inflation linked	FTSE Canada Real Return Bond	2.2	2.0	2.3	2.5	2.5	2.5	3.4
Fixed Income	Canada	Investment grade	FTSE Canada Universe	1.9	2.6	2.9	2.5	2.6	2.7	4.2
Fixed Income	Canada	High yield	BofAML Canadian High Yield	5.2	4.5	4.5	4.5	5.0	5.6	6.2
Fixed Income	Aus.	Cash	3-month Australia gov't bond	0.2	0.8	2.5	2.4	2.0	2.2	1.7
Fixed Income	Aus.	Investment grade	BBG BarCap Australian Composite	1.2	2.2	3.5	3.2	3.3	3.5	5.1
Fixed Income	Global	Investment grade	BBG BarCap Global Aggregate	1.6	2.1	2.7	2.2	2.1	2.5	4.4
Fixed Income	Global	High yield	BBG BarCap Global High Yield	5.6	4.8	4.6	4.5	5.3	5.8	4.9
Fixed Income	Global	Emerging market debt	JP Morgan GBI-EM Diversified	4.5	5.0	5.8	5.3	5.5	6.5	7.8
Equities	Developed markets	U.S.	MSCI United States	4.7	5.7	5.8	5.9	4.8	5.6	10.8
Equities	Developed markets	Europe	MSCI Europe ex U.K.	5.4	6.0	6.3	7.2	5.3	6.8	3.8
Equities	Developed markets	Japan	MSCI Japan	3.8	4.5	6.0	6.0	5.6	6.2	1.2
Equities	Developed markets	U.K.	MSCI United Kingdom	5.6	7.4	6.3	6.6	5.9	7.0	2.4
Equities	Developed markets	Canada	MSCI Canada	4.5	4.5	5.5	6.0	6.0	6.9	4.2
Equities	Developed markets	Australia	MSCI Australia	5.8	5.7	7.7	7.7	8.0	8.1	5.5
Equities	Developed markets	Developed markets	MSCI World	4.8	5.7	6.0	6.4	5.4	6.1	7.8
Equities	Emerg. markets	Asia	MSCI EM Asia	4.9	5.5	8.8	8.9	8.0	8.5	5.8
Equities	Emerg. markets	Latin America	MSCI EM Latin America	8.2	8.9	6.5	6.9	5.6	5.7	6.9
Equities	Emerg. markets	EMEA	MSCI EM EMEA	7.1	6.9	7.5	7.3	6.0	6.5	2.7
Equities	Emerg. markets	Emerging markets	MSCI Emerging Markets	5.4	6.1	8.3	8.4	7.3	7.8	5.5
Equities	Global	Global equities	MSCI All Country World	4.9	5.8	6.2	6.9	5.8	6.5	7.5
Real	Global	Natural resources	S&P Global Natural Resources	3.6	6.1	7.2	7.4	6.9	7.0	0.9
Real	Global	Listed real estate	MSCI ACWI IMI Core Real Estate	6.3	6.3	6.0	6.1	6.3	6.9	2.7
Real	Global	Listed infrastructure	S&P Global Infrastructure	5.8	5.8	5.4	5.8	5.6	6.2	2.6
Alts	Global	Private equity	Cambridge Global Private Equity	7.9	7.7	8.0	8.4	7.4	8.6	N/A
Alts	Global	Hedge funds	HFRI Fund Weighted Comp	2.6	3.7	4.3	4.4	3.4	4.4	2.0

*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 6/30/2020.

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 22 locations in Canada, Europe, the Middle East and the Asia-Pacific region. As of June 30, 2020, Northern Trust had assets under custody/administration of US $12.1 trillion, and assets under management of US $1.3 trillion. For more than 130 years, Northern Trust has earned distinction as an industry leader for exceptional service, financial expertise, integrity and innovation.

Recent distinctions include:

- **Top Financial & Banking Company**
  Professional WOMAN'S Magazine, 2020 (10th consecutive year)
- **Gender Equality Index Member**
  Bloomberg, 2020 (3rd consecutive year)
- **100 Most Sustainable Companies in America**
  Barron's, 2020
- **America's Best Banks**
  Forbes, 2020

Contributors

BOB BROWNE, CFA
Northern Trust
Chief Investment Officer

BRAD CAMDEN, CFA
Asset Management
Director, Fixed Income Strategy

MICHAEL DEJUAN, CIM®, CAIA
Asset Management
Director, Portfolio Strategy

PETER FLOOD
Asset Management
Director, ETF Investment Strategy

JIM MCDONALD
Northern Trust
Chief Investment Strategist

PETER MLADINA
Wealth Management
Director, Portfolio Research

KATIE NIXON
Wealth Management
Chief Investment Officer

DAN PERSONETTE, CFA
Asset Management
Director, Interest Rate Strategy

BRAD PETERSON
Wealth Management
Senior Portfolio Manager

DAN PHILLIPS, CFA
Northern Trust
Director, Asset Allocation Strategy

COLIN ROBERTSON
Asset Management
Managing Director, Fixed Income

CHRIS SHIPLEY
Asset Management
Director, Fundamental Equities

WOUTER STURKENBOOM
Asset Management
Chief Investment Strategist, EMEA and APAC

CARL TANNENBAUM
Northern Trust
Chief Economist

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