Public pensions, post-pandemic

BlackRock

Adjusting portfolios in seeking to meet return assumptions in an ever-changing world

BlackRock Client Insight Unit analyzed fund-level data for over 85 public pensions to understand the aftermath of the pandemic's market volatility and how plans are positioned to meet return assumptions over the next decade.

Summary

Despite the quick market recovery, the pandemic's long-lasting impact will need to be addressed by future asset allocation decisions.

Persistent liability growth places additional pressure on investment portfolios to outperform.

Illiquid assets' return premiums may help portfolios deliver on expectations.

Regional diversification within public equities has the potential to improve portfolio efficiency.

Climate-aware portfolio design shows potential to boost resilience without sacrificing returns.

A more expansive approach to fixed income can help support total returns in a low-yield world.

After a year of navigating uncharted terrain, public pensions entered 2021 looking ahead to a post-pandemic recovery, but the far-reaching implications of COVID-19 on governments has added additional pressures for plans to generate adequate investment performance.

State and local governments incurred large costs to manage the pandemic and keep communities safe, while some simultaneously experienced decreases in tax revenue.[1] Although tax revenue shortfalls were not as extreme as many initially predicted, budgets could still be squeezed to a point that will impact future pension contributions. Meanwhile, there's evidence that the pandemic caused sharp rises in retirements, potentially adding to the widening gap between benefit payments and contributions.[2]

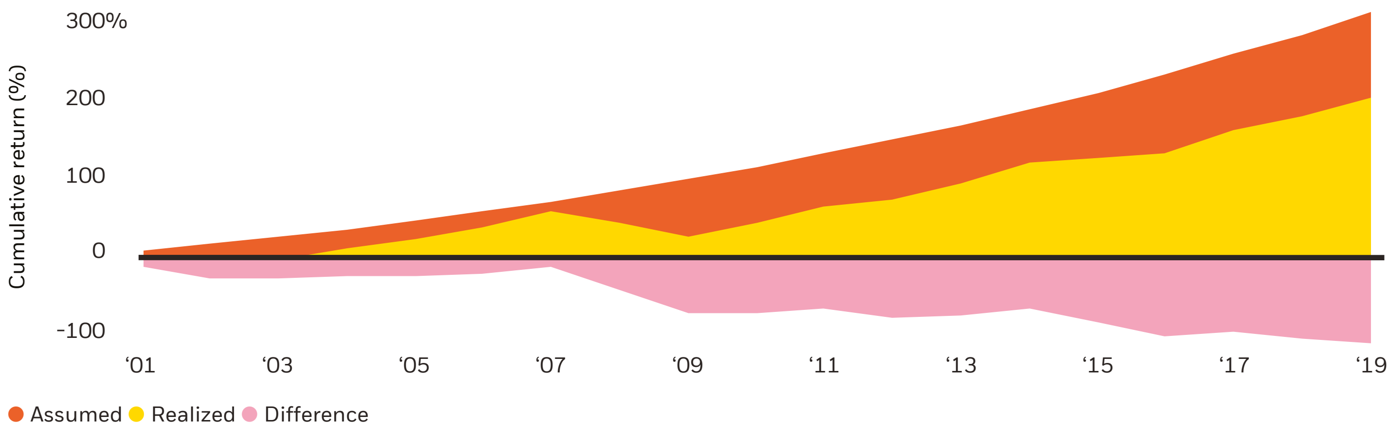
The long-term impact of these trends continues to unfold against a backdrop of challenging funding conditions. Since the Great Financial Crisis, funded status has hovered around the low to mid 70s. Strong performance in public equities has helped, but funded ratios continue to struggle due to other factors, such as sluggish payroll growth and improved life expectancy of retirees.

We believe looking forward many public pension plans have to hit their return assumptions consistently, and may even need to increase performance targets, to meet growing liabilities. Most plans will need to rethink their asset allocations to make up ground. Our analysis estimates that over half the plans may fall short of current assumed returns, based on current asset exposures and BlackRock's May 2021 Capital Market Assumptions (CMAs).

This year we considered these challenges as we completed our annual public peer study to provide a holistic overview of the public pension investment landscape, including asset allocation, expected returns, risk factor decomposition and stress testing. BlackRock partnered with *Pensions & Investments* to collect fund-level asset data for more than 85 U.S. public pensions. Using Aladdin® analytics, we mapped each fund to asset class CMAs to estimate its risk and return characteristics. (Please see Exhibit A.)

The plans we reviewed represent close to over $1.8tn in pensions assets under management. Plans ranged in size from $300mn to $246bn, with average and median assets under management of $20bn and $9.5bn, respectively. The plans have an average funded status of 75.6%.

10 years of strong returns



Source: Public Plan Data, January 2021. Past performance is not indicative of future results.

Running in place

Over the past decade, public pensions surpassed their assumed return expectations, largely due to the strength in public equity markets. However, our research suggests higher than expected investment performance was not enough to recover from the market stresses of the early aughts, and public plans are still experiencing sideways to downward movement in funded ratios.

Following the Global Financial Crisis, public pensions realized average annualized returns of more than 8% over the past 10 years, while the median assumed return targets are now around 7%, after steadily declining over the years. Despite this strong investment performance, actuarial funded status has continued to drop over the past two decades from fully funded in 2001 to about 85% just prior to 2008, then to the low to mid 70s in the aftermath of the Great Financial Crisis, and generally remains in that range today.

Since the turn of the century, market stresses such as the 2001 Tech Bubble and the 2008 Global Financial Crisis caused significant asset erosion and declines in funded ratios, which require larger returns to make up. For example, to recover from a 25% market decline, a portfolio would need to earn over 33%. Our analysis found that despite outperforming assumed returns following these crises, the market declines had lasting impact on the cumulative performance of a theoretical portfolio that consistently met its assumed return expectation and the average realized return of public pensions over the same period.

During longer recoveries the liability would also continue to grow due to factors such as normal and interest costs, making it even more difficult to get back to full funding. Additionally, while benefit payments reduce both the asset and the liability by the same amount, the denominator effect of being underfunded results in a decline in funded status.

The combination of these factors has increased the pressures on the investment performance to make up shortfalls for underfunded plans. We believe building efficient portfolios to diversify risk and improve returns will prove critical for public plans in the post pandemic recovery. We see opportunities across the following themes to help portfolios reach return expectations, while helping to weathering market downturns of the future.

Portfolio resilience demands climate resistance

The historical market declines of the 2000s, including last year's pandemic drop, demonstrated the need for pensions to enhance their portfolio resilience and downside protection. We believe climate risk and the net zero transition represent some of the biggest future market events, and a thorough environmental, social and governance (ESG) analysis can help build more defensive and robust portfolios. Avoiding climate-related damages will help prevent economic deterioration and improve risk-asset returns. Reallocating to sustainable investments preserves the expected return for the average pension portfolio, with slight reduction in risk based on our forward-looking CMAs, which now incorporate the impacts of climate change, reflecting our view that climate risk is investment risk.

Incorporating ESG into portfolio construction also positions portfolios for the post-carbon transition. Our analysis found that swapping the average plan's U.S. equity exposure from the MSCI USA Index to the MSCI USA ESG Enhanced Index not only significantly improved ESG ratings and scores, but also reduced the portfolio's carbon intensity by more than 30%. For every $1 million invested, that reduction is equivalent to eliminating the emissions of 10 passenger vehicles driven in a full year. Investors that account for carbon and climate risk exposures in portfolio design can help mitigate risk likely caused by possible asset re-pricing, increased regulation and costs, and changing consumer preferences.

The impact of incorporating ESG

ESG scorecard

98.8% coverage **average public pension**

99.9% coverage **MSCI USA ESG Enhanced Index**

	Average public pension	MSCI USA ESG Enhanced
ESG quality score	5.36	6.27
MSCI ESG Rating	BBB	A

MSCI ESG pillar scores

Environmental 5.68 vs. 6.23

Social 4.67 vs. 4.98

Governance 4.80 vs. 4.85

139.0 vs. 92.2

MSCI weighted average carbon intensity

98.8 vs. 99.9% coverage

A hypothetical investment of $1 million is equivalent to emissions from:

30.0 vs. 19.9	16.0 vs. 10.6	17.7m vs. 11.7m	5.9k vs. 3.9k
Passenger cars driven for one year	Home energy use for one year	Smart phones charged	Trash bags recycled

Source: BlackRock, with data provided by MSCI ESG Research for individual companies as of May 2021. The Weighted Average Carbon Intensity measures a portfolio's exposure to carbon intensive companies. The figure is the sum of security weight (normalized for corporate positions only) multiplied by the security Carbon Intensity. MSCI rates companies on a 'AAA' to 'CCC' scale according to their exposure to industry specific ESG risks and their ability to manage those risks relative to peers. The portfolio MSCI ESG Rating is based on the weighted average ESG Quality Scores of the underlying companies within the portfolio, and then adjusted based on portfolio exposure to issuers with positive trending ESG scores, issuers with negative trending ESG scores, and ESG Laggards (B and CCC rated issuers). The result is the ESG Quality Score, which can be mapped directly to the letter ESG Rating. The MSCI ESG Pillar Scores are the weighted average of the underlying companies' scores rated on a scale of 0-10. Pillar scores are comparable across all industries because they are not industry-weighted like the overall MSCI ESG Quality Score. 'Coverage' is defined as the percent of the portfolio's underlying holdings that have an MSCI ESG Rating. This material represents an assessment of the market environment at a specific time and is not intended to be a forecast of future events or a guarantee of future results. This information should not be relied upon by the readers as research or investment advice regarding any security in particular. **For a glossary of terms, see Exhibit B.** All figures based on US EPA's calculation for converting greenhouse gas emissions (tCO2e) numbers into different types of equivalent units. Hypothetical example is for illustrative purposes only. Results for actual accounts will vary.

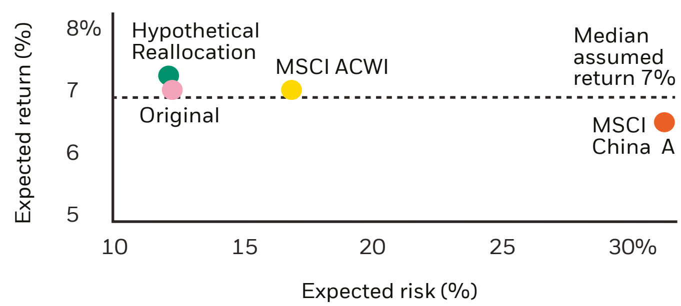
Moreover, the transition to a low-carbon world offers tremendous opportunities[3] for economies and risk assets. Our CMAs reflect our view that the green transition to a low-carbon economy, consistent with the Paris Agreement goals, will deliver an improved outlook for growth and risk assets relative to doing nothing. Globally, we estimate a cumulative loss in economic output of nearly 25% over the next two decades if no climate change mitigation measures were taken. To give another illustration, our expected returns for U.S. equities are 2% higher under a green transition in which the economy embraces the post-carbon future.

Diversification potential of China A-Shares

Shifting assets within public market exposures could also help public pensions increase portfolio efficiency. One area of interest is onshore China exposure, as our research[4] shows the potential to boost returns while providing diversification that has some risk benefits. China has grown to represent almost 20% of global GDP, but it's still not fully reflected in global benchmarks. For example, the MSCI All Country World Index (ACWI) holds a weight of just 4% in China equities (as of April 2021).

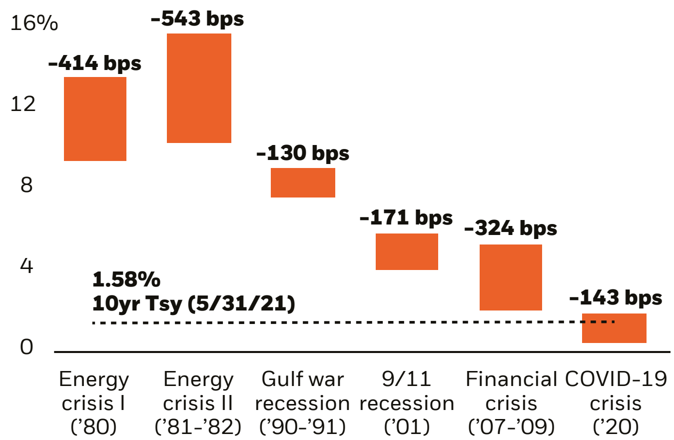
China A-Shares, which trade on the mainland exchanges of Shanghai and Shenzhen, have especially compelling potential to enhance both absolute and risk-adjusted returns. A-Shares have become much more accessible to investors outside of China in recent years. The MSCI China A Index offers relatively high potential returns and low historical correlations to other equity assets, including a correlation of just 0.36 to the MSCI USA Index. In our analysis we decreased MSCI ACWI exposure by 5% and reallocate to MSCI China A Index, which resulted in an average increase in expected return of 23 bps, while decreasing risk by 14 bps. Outcome for specific portfolios will vary depending on the client's constraints and risk appetite.

Expected return and risk



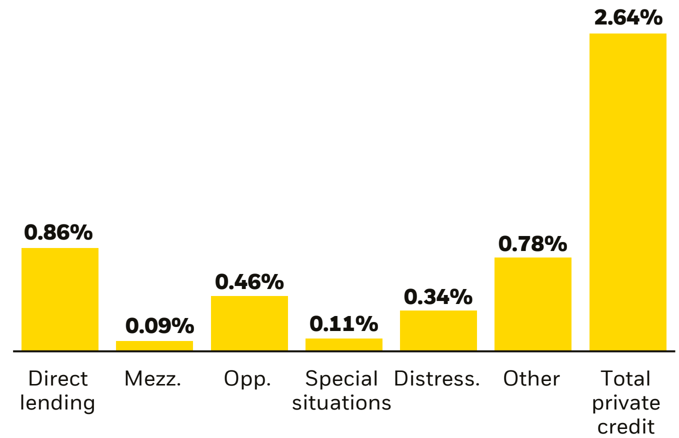
Source: BlackRock as of May 2021. Expected 10-year risk and return calculations based on BlackRock's capital market assumptions (CMA). See section titled "Capital Market and Modeling Assumptions" in Exhibit C at the end of this analysis for additional details. Risk: 84% confidence interval, 246 constant weighted monthly observations; 1yr horizon. For illustrative purposes only. There are no assurances that the hypothetical portfolio's objectives will be met. Additionally, there are frequently sharp differences between a hypothetical performance record and the actual record subsequently achieved. Another inherent limitation of these results is that the allocation decisions reflected in the performance record were not made under actual market conditions and, therefore, cannot completely account for the impact of financial risk in actual portfolio management. The performance shown does not represent any existing portfolio, and as such, is not an investible product. There is no guarantee that the capital market assumptions will be achieved, and actual returns could be significantly higher or lower than those shown.

Yields have little room left to fall



Source: BlackRock, Bloomberg, as of May 2021. U.S. recession periods are defined by National Bureau of Economic Research. Graph displays U.S. 10-year Treasury yield rate changes during recession periods. 10-year Treasury change reflects the biggest move seen from as early as six months before the recession period. Past performance is not indicative of future results.

Opportunistic private credit looks underfunded



Source: BlackRock and P&I. Average Private Credit allocations of all plans is a simple average.

Fixing fixed income

The 2020s have ushered in a new era for persistent low yields across most fixed income markets. Many of our public pension partners are weighing the impact the low yield environment could have on their ability to meet return targets and the diversification advantages of fixed income allocations. We see opportunities for them to reevaluate both the role of fixed income in their portfolio and how they allocate within their income bucket.

On the fiscal side, the U.S. government's response dwarfed the steps it took during and after the Great Financial Crisis. Our analysis[5] estimated that the pandemic had a quarter of the GFC's overall economic impact but received four times the fiscal response. All that spending has important implications for inflation, economic growth and government debt that drives bond performance. Meanwhile, changes in monetary policy pulled down interest rates and bond yields. The rate on the 10-year Treasury note, only about 2% at the beginning of the pandemic, fell rapidly and sharply, dropping almost 1.5 percentage points in just three months.

Although yields creeped higher during the first quarter of 2021, we expect a low-yield environment to persist for some time and to pose several challenges to public pensions. Low yields could diminish bonds' ability to provide the degree of diversification from equities that they have in the past.

The chances of fixed income contributing much to total returns has, in our view, has been greatly diminished. Our estimates project the Bloomberg Barclays U.S. Aggregate Index to return up to 1.8% in our May 2021 CMAs, reflecting a first-quarter rise in interest rates. The average U.S. public pension plan has a 23% allocation to fixed income, with approximately half those assets in domestic core. Such meaningful exposure to an asset with a likely return of less than 2% makes it very difficult for plans to achieve their desired results. It also places considerable pressure on the growth portion of the portfolio to outperform.

For example, consider a hypothetical plan with a 7% assumed return. If the plan were to maintain a 20% allocation to an asset, such as core fixed income, with an expected return below 2%, then that portfolio exposure would generate only about one-twentieth of the target return. The remaining allocations would need to generate at least 8.25% to reach the performance targets. To reach this higher growth target, the portfolio may need to take on greater risk in the growth portfolio.

Introducing judicious exposure to less-liquid assets within the fixed-income allocation could prove crucial to meeting performance targets and maximizing the return generated per unit of risk. Private debt underwriting enables investors to offer lending on their own terms, potentially leading to stronger covenants and better downside mitigation than what is currently available in the public markets. These qualities can improve recoveries and loss ratios in the event of defaults, potentially producing better risk-adjusted yields.

Fixed income can also help provide critical liquidity for pensions to meet their liabilities and we've seen some clients utilize ETFs as another source of liquidity to balance exposure to less liquid asset classes.

Investors with the willingness and capacity to accept greater risk in their fixed income allocations can also benefit from considering opportunistic private credit investments. Opportunistic credit involves lending to issuers that need flexible, bespoke financing solutions. It offers elements of both income and capital appreciation, with the potential for upside participation that can help deliver equity-like returns with a debt-like risk profile. While public pensions have been steadily increasing their allocations to private credit, our data shows that they tend to under-allocate to opportunistic credit.

Gaining ground with illiquid assets

Illiquid assets may help pensions meet these aggressive demands. Public pensions currently have a 23% average allocation to illiquid assets, and our research indicates that many plans could assume greater illiquidity risk in pursuit of return premiums.

Specifically, plans could use private markets as a primary tool to help them meet assumed returns and diversify against risk factor concentration. Our current market assumptions expect 10-year annualized returns of 9.3% for private credit and 19.5% for private equity.

We modeled the potential impact of reallocating 5% of each plan's exposure from public equity to private equity and found expected returns increased by more than 70 basis points, on average, bringing many plans within reach of their assumed return. Risk increased commensurately, but portfolio efficiency — return per unit of risk — increased by an average of 0.03.

Many public pension plans are on this track as allocations to private equity and real assets have increased since 2010 by 2% and more than 4%, respectively. Our research suggests that public pensions have the ability to continue this trend and would benefit from doing so.

Looking ahead

None of these strategies — increasing allocations to illiquid assets, shifting portfolios' geographic weights, incorporate climate considerations, evolving fixed income allocations — are the silver bullet. But we are optimistic on the opportunities of the post-pandemic recovery and possibilities of previously overlooked portions of the market. Public pension plans will need to consider each carefully in the context of their current allocations, return targets, assets, liabilities, stakeholders and other characteristics.

BlackRock has the tools and expertise to help our public pension partners perform this type of analysis to help them reach their goals in an efficient manner.

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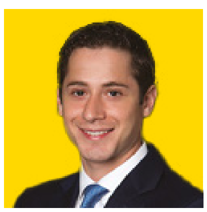

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Exhibit A: Asset class mappings

Asset class	Asset description	Benchmark/Proxy description
Cash	Cash	U.S. cash
Fixed income	Domestic	BBG Barc U.S. Aggregate Index
Fixed income	Long duration	BBG Barc Treasury 10+ Yr Index
Fixed income	TIPs	BBG Barc U.S. TIPS Index
Fixed income	Securitized	BBG Barc Securitized Index
Fixed income	Emerging markets	50% JPM GBI-EM Global Diversified Index | 50% JPM Global EMBI Index
Fixed income	International/Global	BBG Barc Global Aggregate Index
Fixed income	High yield	BBG Barc U.S. Corporate High Yield Index
Fixed income	Bank loans	BlackRock Proxy, based on S&P/LSTA Leveraged Loan Index
Fixed income	Multi-strategy	BBG Barc U.S. Universal Index
Fixed income	Convertibles	BBG Barc U.S. Aggregate Index
Equity	U.S. all-cap	Russell 3000 Index
Equity	U.S. large-cap	Russell 1000 Index
Equity	U.S. mid-cap	Russell Midcap Index
Equity	U.S. SMID-cap	Russell 2500 Index
Equity	U.S. small-cap	Russell 2000 Index
Equity	Developed ex-U.S.	MSCI World ex-U.S.
Equity	International	MSCI All Country World ex-U.S.
Equity	Emerging markets	MSCI Emerging Markets Index
Equity	Global equity	MSCI All Country World Index
Alternatives	HF	BlackRock proxy: Hedge funds (global fund weighted)
Alternatives	Portable alpha	BlackRock proxy: Hedge funds (global fund weighted)
Alternatives	Risk parity	16.25% Long duration, U.S. HY, TIPS, EMD | 20% MSCI ACWI | 15% commodities
Alternatives	Private equity	BlackRock Proxy: U.S. buyout private equity
Alternatives	Real estate: REITs	FTSE EPRA Nareit United States Index
Alternatives	Real estate: Debt	BlackRock Proxy: Real estate mezzanine debt unhedged
Alternatives	Real estate: Core	BlackRock Proxy: U.S. core real estate
Alternatives	Real estate: Core-plus	BlackRock Proxy: U.S. core real estate
Alternatives	Real estate: Value-added	BlackRock Proxy: U.S. value-added real estate
Alternatives	Real estate: Opportunistic	BlackRock Proxy: U.S. value-added real estate
Alternatives	Real estate: Distressed	BlackRock Proxy: U.S. value-added real estate
Alternatives	Real estate: Other	BlackRock Proxy: U.S. core real estate
Alternatives	Real assets: Commodities	BlackRock proxy: Commodities unhedged
Alternatives	Real assets: Energy	BlackRock proxy: Commodities unhedged
Alternatives	Real assets: MLPs	BlackRock proxy: Commodities unhedged
Alternatives	Real assets: Infrastructure	BlackRock Proxy: Global unquoted infrastructure equity
Alternatives	Real assets: Farmland	FTSE Nareit equity diversified
Alternatives	Real assets: Timber	BlackRock proxy: Commodities unhedged
Alternatives	Real assets: Other	BlackRock proxy: Commodities unhedged
Alternatives	Alt credit: Direct lending	BlackRock proxy: Direct lending
Alternatives	Alt credit: Mezzanine	BlackRock proxy: Direct lending
Alternatives	Alt credit: Opportunistic	BlackRock proxy: Direct lending
Alternatives	Alt credit: Distressed debt	BlackRock proxy: Direct lending
Alternatives	Alt credit: Special situations	BlackRock proxy: Direct lending
Alternatives	Alt credit: Other	BlackRock proxy: Direct lending

Exhibit B: Glossary of ESG terms

MSCI ESG quality score: The MSCI ESG Quality Score measures the ability of a company to manage key medium- to long-term risks and opportunities arising from environmental, social, and governance factors. The MSCI ESG Quality Score (0 - 10) for portfolios is calculated using the weighted average of the ESG scores of the underlying companies. The Score also considers ESG Rating trend of underlying companies and the portfolio exposure to companies in the laggard category. MSCI rates underlying companies according to their exposure to industry specific ESG risks and their ability to manage those risks relative to peers. These issuer-level ESG ratings correspond to an issuer-level ESG Score.
MSCI ESG rating: The MSCI ESG Rating is designed to measure the resiliency of portfolios to long-term ESG risks and opportunities. The most highly rated portfolios consist of issuers with leading or improving management of key ESG risks. The ESG Rating is calculated as a direct mapping of ESG Quality Scores to letter rating categories (e.g. AAA = 8.6-10). The ESG Ratings range from leader (AAA, AA), average (A, BBB, BB) to laggard (B, CCC).
ESG coverage (%)*: Percent by weight of a portfolio's securities that have ESG Data.
MSCI ESG environment pillar score*: An Environmental Score measures companies' management of and exposure to key environmental risks and opportunities.
MSCI ESG social pillar score*: A Social Score measures companies' management of and exposure to key social risks and opportunities.
MSCI governance pillar score*: A Governance Score measures companies' management of and exposure to key governance risks and opportunities.
MSCI ESG carbon risk*: The MSCI Weighted Average Carbon Intensity measures a portfolio's exposure to carbon intensive companies. This figure represents the estimated greenhouse gas emissions per $1 million in sales across the holdings. The figure is a sum of the normalized security weight multiplied by the security Carbon Intensity. This allows for comparisons between portfolios of different sizes.
Carbon coverage (%) *: Percent by weight of a portfolio's securities that have MSCI carbon data.
***** Source: MSCI ESG research.

Exhibit C: Capital market and modeling assumptions

Asset class	Asset description	Benchmark	10yr ann. expected return	Expected risk
Cash	Cash	U.S. cash	0.8%	0.0%
Fixed income	Domestic	BBG Barc U.S. Aggregate Index	1.8%	4.6%
Fixed income	Long duration	BBG Barc Treasury 10+ Yr Index	1.8%	14.9%
Fixed income	TIPs	BBG Barc U.S. TIPS Index	2.7%	5.4%
Fixed income	Securitized	BBG Barc Securitized Index	1.7%	3.2%
Fixed income	Emerging markets	50% JPM GBI-EM Global Diversified Index | 50% JPM Global EMBI Index	3.9%	9.0%
Fixed income	International/Global	BBG Barc Global Aggregate Index	2.0%	5.7%
Fixed income	High yield	BBG Barc U.S. Corporate High Yield Index	3.7%	8.4%
Fixed income	Bank loans	BlackRock Proxy, based on S&P/LSTA Leveraged Loan Index	4.3%	8.0%
Fixed income	Multi-strategy	BBG Barc U.S. Universal Index	2.1%	4.5%
Equity	U.S. all-cap	Russell 3000 Index	6.6%	17.8%
Equity	U.S. large-cap	Russell 1000 Index	6.5%	17.5%
Equity	U.S. mid-cap	Russell Midcap Index	6.7%	19.7%
Equity	U.S. SMID-cap	Russell 2500 Index	6.8%	22.2%
Equity	U.S. small-cap	Russell 2000 Index	6.8%	23.4%
Equity	Developed ex-U.S.	MSCI World ex-U.S.	7.4%	16.9%
Equity	International	MSCI All Country World ex-U.S.	7.6%	17.6%
Equity	Emerging markets	MSCI Emerging Markets Index	7.4%	22.1%
Equity	Global equity	MSCI All Country World Index	7.1%	16.9%
Alternatives	HF	BlackRock Proxy: Hedge funds (global fund weighted)	4.8%	7.4%
Alternatives	Private equity	BlackRock Proxy: U.S. buyout private equity	19.5%	32.0%
Alternatives	Real estate: REITs	FTSE EPRA Nareit United States Index	5.7%	22.6%
Alternatives	Real estate: Debt	BlackRock Proxy: Real estate mezzanine debt unhedged	5.5%	10.7%
Alternatives	Real estate: Core	BlackRock Proxy: U.S. core real estate	6.3%	12.3%
Alternatives	Real estate: Value-added	BlackRock Proxy: U.S. value-added real estate	7.6%	18.8%
Alternatives	Real assets: Commodities	BlackRock proxy: Commodities unhedged	6.8%	16.2%
Alternatives	Real assets: Infrastructure	BlackRock Proxy: Global unquoted infrastructure equity	6.8%	16.2%
Alternatives	Real assets: Farmland	FTSE nareit equity diversified	5.9%	27.0%
Alternatives	Alt credit: Direct lending	BlackRock Proxy: Direct lending	9.3%	11.8%
Alternatives	Risk parity	16.25% Long Duration, U.S. HY, TIPS, EMD | 20% MSCI ACWI | 15% commodities	4.5%	7.5%
Equity	Chinese equity	MSCI China A Inclusion Net Index	6.6%	31.3%

The representative indices listed above may differ from those that are publicly available, but the underlying methodology and assumptions are consistent. BlackRock expected market return information is based on BlackRock's long-term capital market assumptions as of May 2021 which are subject to change. Capital market assumptions contain forward-looking information that is not purely historical in nature. They should not be construed as guarantees of future returns. The projections in the chart above are based on BlackRock's proprietary long-term capital markets assumptions (10+ years) for risk and geometric return (above) and correlations between major asset classes. These asset class assumptions are passive only and do not consider the impact of active management. The assumptions are presented for illustrative purposes only and should not be used, or relied upon, to make investment decisions. The assumptions are not meant to be a representation of, nor should they be interpreted as BlackRock's investment recommendations. Allocations, assumptions, and expected returns are not meant to represent BlackRock performance. Long-term capital markets assumptions are subject to high levels of uncertainty regarding future economic and market factors that may affect actual future performance. Ultimately, the value of these assumptions is not in their accuracy as estimates of future returns, but in their ability to capture relevant relationships and changes in those relationships as a function of economic and market influences. Please note all information shown is based on assumptions, therefore, exclusive reliance on these assumptions is incomplete and not advised. The individual asset class assumptions are not a promise of future performance. Indexes are unmanaged and used for illustrative purposes only and are not intended to be indicative of any fund's performance. It is not possible to invest directly in an index.

1 Virus Did Not Bring Financial Rout That Many States Feared, New York Times, March 2021.
2 If COVID-19 Prompts Teacher Retirements, Pensions in Jeopardy, Plan Sponsor, August 2020.
3 Turning climate risk into opportunity, BlackRock, February 2021.
4 The case for Chinese assets, BlackRock, May 2021.
5 Testing debt tolerance, BlackRock, February 2021.

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