

## Cross-Asset Strategy

# Introducing the US Fixed Income Rotation Model (FIRM)

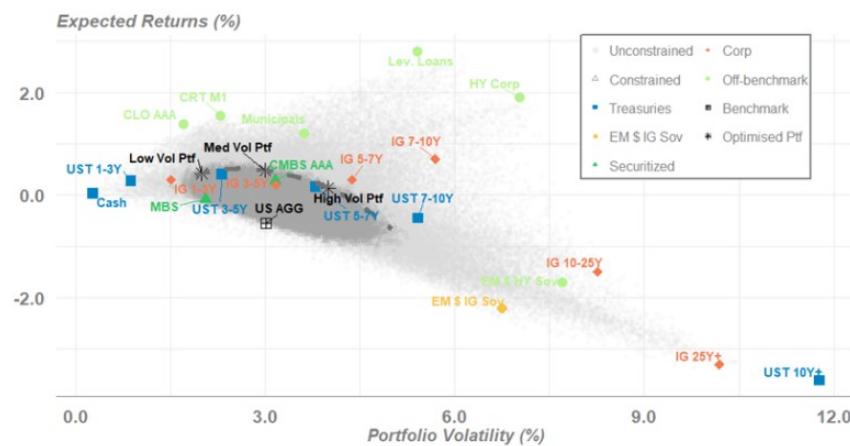
FIRM is a new asset allocation framework based on Morgan Stanley Strategy forecasts. For better return/volatility than the US Aggregate Bond Index, portfolios should be UW MBS and long-dated bonds and allocate to off-benchmark segments which still offer risk premium, like CRT and Leveraged Loans.

**Introducing the US Fixed Income Rotation Model (FIRM):** Leveraging Morgan Stanley fixed income strategists' 12M targets, we introduce a framework that help investors navigate asset allocation decisions with the aim of outperforming the USD Bloomberg Barclays Aggregate Bond benchmark ("US AGG"), covering both on- and off-benchmark assets.

**Expected N12M total returns are low across the board, risk premiums lie in off-benchmark bets:** With better macro progress, our strategists forecast a modest rise in yields, dragging down expected total returns across US fixed income. Positive total returns mostly lie in off-benchmark, low-duration assets, down the quality curve.

**FIRM favors short-duration and low-quality:** The optimal portfolio aiming to maximize total returns while targeting similar volatility as US AGG is EW UST, EW IG EM Sovereigns, UW Securitized, OW Corporate Credit and OW Off-benchmark assets, in particular Loans, HY and CRT. The portfolio also has lower quality, lower duration and lower beta compared to US AGG.

**Exhibit 1:** USD Fixed Income and Components Risk-Reward and Efficient Frontier Based on Morgan Stanley Forecasts



Source: Morgan Stanley Research forecasts, Bloomberg. Note: Optimization seeks to maximize risk-reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of market value of assets. Light grey shows feasible portfolios, darker grey shows portfolios with weight constraints.

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# Executive Summary

## Cross-Asset Strategy

What should a US fixed income portfolio look like if Morgan Stanley's strategists are correct about returns over the next 12 months? How should investors position in terms of duration and quality? In this initial report, **we set out our new framework – the US Fixed Income Rotation Model (FIRM) – which answers the question of what is the optimal asset allocation for an unlevered, total-returns-focused investor aiming to beat the USD Bloomberg Barclays Aggregate Bond benchmark ("US AGG")?** FIRM uses Markowitz mean-variance portfolio optimization approach, with our Fixed Income strategists' forecasts, and historical volatility and covariances as inputs. See [Laying the Groundwork: From Forecasts to Asset Allocation](#) for a walkthrough of the framework.

**The recent changes in some of our fixed income views – in particular our Macro Strategy team raised our US Treasury yield forecasts further above consensus – mean that expected total returns are low across the board, with risk premiums lying mostly in off-benchmark bets.** See [What's Changed in Our Fixed Income Views?](#) for a summary of notable shifts in price targets and views within US fixed income.

**Exhibit 2:** Morgan Stanley's US Fixed Income Yield and Spread Forecasts

Assets	As of Jun 02, 2021	Q2 2022 Forecast			12M Return		
		Bear	Base	Bull	Bear	Base	Bull
<b>Rates (%)</b>							
UST 2Y	0.15	0.45	<b>0.35</b>	0.35	0.3%	<b>0.3%</b>	0.0%
UST 5Y	0.79	1.40	<b>1.10</b>	0.75	-0.7%	<b>0.5%</b>	1.7%
UST 10Y	1.59	2.20	<b>2.00</b>	1.70	-2.9%	<b>-0.7%</b>	2.4%
UST 30Y	2.27	2.60	<b>2.55</b>	2.45	-1.6%	<b>-4.4%</b>	-7.4%
<b>Credit (bp)</b>							
US IG	85	130	<b>105</b>	80	-3.1%	<b>-0.9%</b>	1.2%
US HY	298	500	<b>320</b>	240	-7.5%	<b>1.1%</b>	4.7%
Agency MBS	-2	20	<b>-5</b>	-25	-1.1%	<b>0.1%</b>	1.1%
CMBS AAA	68	95	<b>75</b>	55	-2.0%	<b>0.0%</b>	2.0%
CLO AAA	103	115	<b>100</b>	80	0.9%	<b>1.1%</b>	1.3%
CRT M1	65	80	<b>60</b>	50	0.2%	<b>0.5%</b>	0.7%
US Loans	402	500	<b>410</b>	370	-1.5%	<b>2.7%</b>	3.5%
Muni Index TR	1.02	-1.58%	<b>1.20%</b>	3.02%	-0.7%	<b>1.1%</b>	1.5%
EM \$ IG Sov	122	n/a	<b>140</b>	n/a	n/a	<b>-0.6%</b>	n/a
EM \$ HY Sov	330	525	<b>380</b>	280	-12.2%	<b>-0.5%</b>	7.6%

Source: Bloomberg, The Yield Book, Morgan Stanley Research forecasts

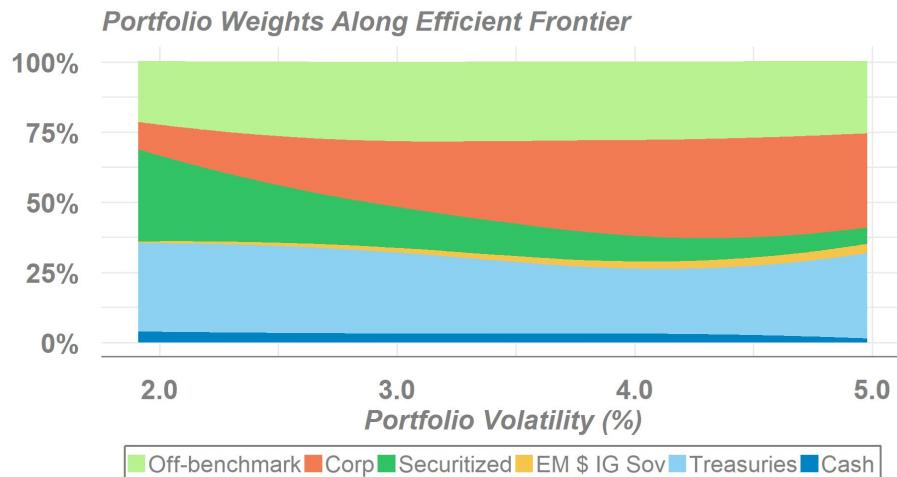
Our FIRM framework suggests that if Morgan Stanley strategists are right about the future, **the optimal portfolio with similar volatility as the US AGG that beats the benchmark in terms of expected risk-reward:**

- has lower duration versus both the benchmark and UST 10Y
- is overweight lower-quality fixed income and off-benchmark bets
- is currently running low beta vs. AGG

**The portfolio recommendations from our new framework dovetails nicely with our**

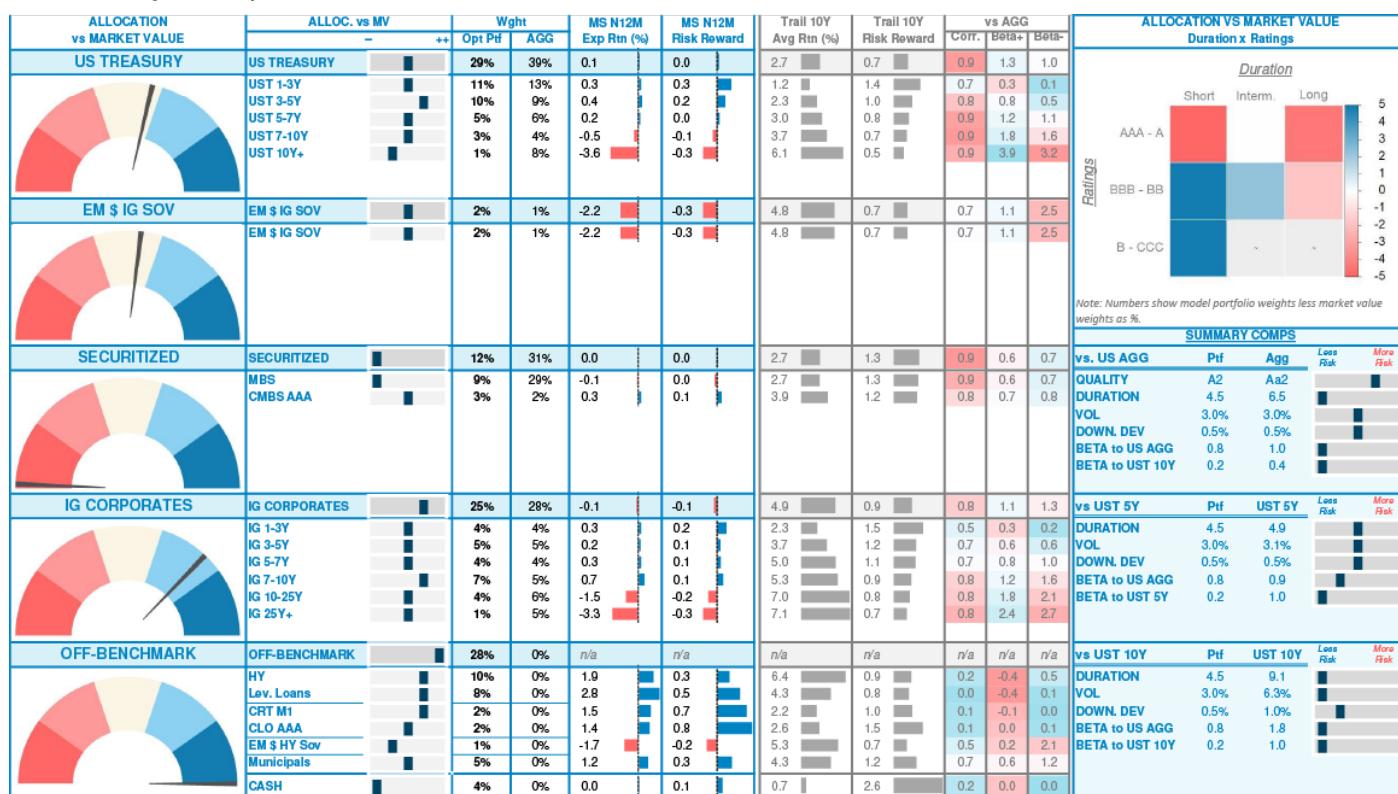
conclusions from our [Mid-Year Outlook](#), where early-cycle timing colliding with mid-cycle conditions and late-cycle valuations. We think these generalized tilts can add value in thinking about strategic asset allocation, even for specialists focused on specific fixed income segments. See [US Fixed Income Strategic Asset Allocation Snapshot](#) for more statistics for the US fixed income optimal portfolio.

**Exhibit 3:** USD Fixed Income Optimal Portfolios Along Efficient Frontier Based on Morgan Stanley Forecast



Source: Morgan Stanley Research forecasts, Bloomberg. Note: Optimization seeks to maximize risk-reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of market value of assets.

**Exhibit 4:** Morgan Stanley US Fixed Income Asset Allocation



Source: Morgan Stanley Research, Bloomberg, S&P LCD. Note: Shows breakdown of portfolio targeting 3.0% annualized vol. Optimization seeks to maximize risk-reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments. For the 'dials', each segment represents 5% allocation, ranging from -12.5% to +12.5% vs. market weight; similarly allocation 'bars' range from -10% to +10% for all assets except Sovereign (EM), EM Sovereign (HY), CRT M1 and CLO AAA, which range from -5% to +5% versus market weight due to smaller market cap.

# Laying the Groundwork: From Forecasts to Asset Allocation

## Cross-Asset Strategy

How should a US fixed income-focused investor be positioned if Morgan Stanley's strategists are correct about the next 12-month outlook? Should they be overweight credit, short duration, decrease beta, add to off-benchmark? **In this initial report, we aim to answer the question of what the optimal asset allocation for an unlevered, total-return-focused investor looks like via Markowitz mean-variance portfolio optimizations.**

Investors' mandates obviously vary, but we think our framework distills what our fixed income views mean for portfolios, and we hope the future addition of other constraints and assumptions that are more tailored to specific market participants create more value for the fixed income investor.

## The Building Blocks

### Expected Returns

**We start with our Morgan Stanley fixed income strategists' forecasts**, updated at least twice a year in our macro strategy outlooks, refreshed in between when market conditions change. [Exhibit 5](#) shows the latest yield and spread forecasts for end of 2Q 2021, which the cross-asset team translate into expected total returns and excess returns, respectively. The returns are generally below-average, a function of low yields which drag down carry, and a more challenging mid-cycle, 'high pressure' environment, which serves as a headwind to price appreciation for fixed income. See [Global Strategy Mid-Year Outlook: Now the Hard Part \(17 May 2021\)](#) for more.

**Exhibit 5:** Morgan Stanley's US Fixed Income Yield and Spread Forecasts

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Source: Bloomberg, The Yieldbook, Morgan Stanley Research forecasts

For **Treasuries**, total returns forecasts for 2Y, 5Y, 10Y and 30Y incorporate our strategists' expectations of yield changes, as well as roll-down, based on our Macro Strategy team's yield targets across the curve. Because we are estimating returns

assuming an investor holds the bond for one year, price appreciation for, say, a 10Y bond is calculated based on that bond's yield today, and the yield and duration of a 9Y bond in one year's time. For example, our Macro Strategy team's current target yield of 1.1% and 2.0% for the UST 5Y and 10Y respectively would imply a target yield of 1.85% for 9Y paper after one year has passed. With the latest UST 10Y yield at 1.6%, an interpolated target yield of 1.85%, and duration of ~9.2, we forecast UST 10Y total returns to be at -0.7% (-2.3% from price appreciation and 1.6% from carry). Forecasts for Treasury US AGG sub-indices (e.g., 1-3Y, 3-5Y buckets) are then estimated on a duration-matched basis.

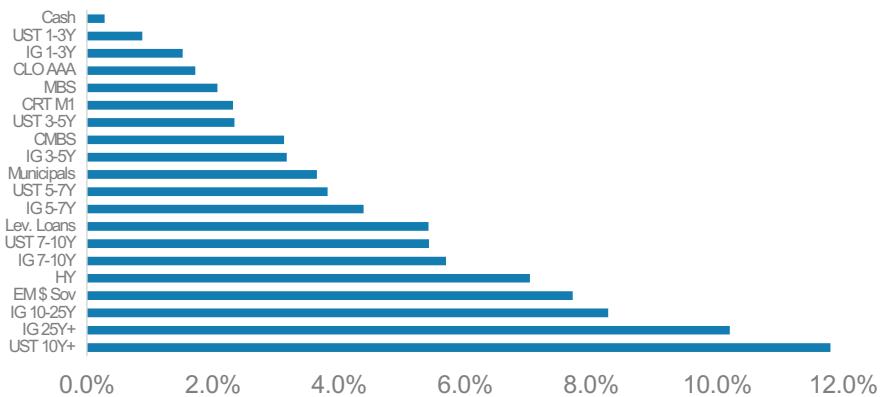
For **Credit**, we estimate excess returns by summing the carry (i.e., the current spread) and the price appreciation (i.e., the change from the current to target spread multiplied by the index spread duration), subtracting an expected loss where relevant, based on our credit strategists' assumptions about the recovery rate and probability of default of the index constituents. For example, with a spread target of 105bp, and spread duration of 8.6, we forecast US IG excess returns to be -0.9%. Total returns are then estimated by adding duration-/maturity-matched Treasury total returns.

Given the reliance on Morgan Stanley strategists' forecasts, our universe of investable assets is admittedly limited to where we have coverage. Specifically, we assume a USD fixed income portfolio that can invest in US Treasuries, Securitized Products (including MBS, CMBS, CRT, CLOs), Corporate Credit (spanning IG, HY, Leveraged Loans), EM \$ Sovereign Credit (IG and HY) and Municipals. Should market circumstances change, or we initiate on new areas, the 'investable universe' may change for this exercise in the future.

## Volatility

**Returns make up the 'reward' part of risk-reward, volatility represents the 'risk' part in our framework, and we estimate it by calculating the standard deviation of trailing 10Y monthly returns, annualized.** Intuitively, volatility indicates possible variability around our mean expected returns; an asset may have, say, a 10% expected return, but if its volatility is 20%, realised returns actually being down 10% or up 30% would still be moderately probable events. Traditionally, under normal circumstances, assets with higher volatility also have higher mean returns – investors require more compensation for additional risk taken on, after all! – but this doesn't hold all the time.

There are also other popular measures of risks that are considered when constructing portfolios – downside deviation, duration, beta, etc. – which we will show and reference throughout the report, but the main framework for now will focus on volatility, with our optimization process solving for the asset allocation which would give the highest return, given a volatility target.

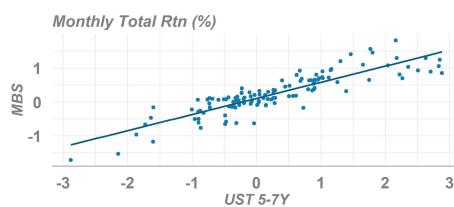
**Exhibit 6: Volatility Across Fixed Income****Annualized Volatility (T10Y)**

Source: Bloomberg, Morgan Stanley Research, S&P LCD. Based on monthly nominal total returns.

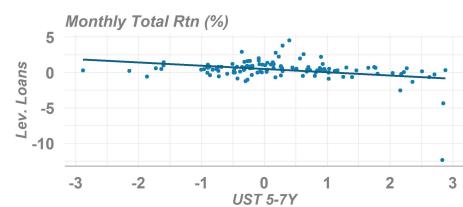
**Covariance and correlations**

**Covariance and its standardized cousin, correlation, tell us how two assets move versus each other, and is another key piece we consider in building our portfolios; our optimisation framework uses covariance matrix calculated based on trailing 10Y monthly returns.**

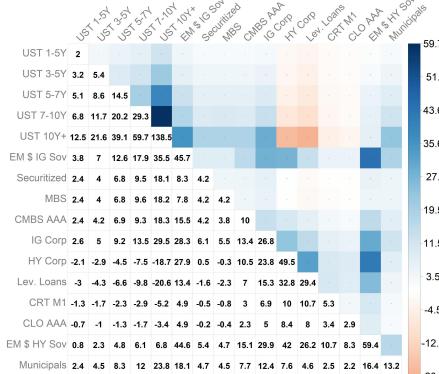
As we can see in [Exhibit 7](#) and [Exhibit 8](#), even within fixed income, relationships between various assets and Treasuries vary – MBS returns are positively correlated with Treasuries, while Leveraged Loans look to be negatively correlated to Treasuries. An investor would ideally want a combination of assets which have low or negative correlation with each other – if a riskier part of the portfolio such as HY sells off, other assets such as UST may have positive returns which can offset the loss, lowering overall volatility – the key idea behind diversification.

**Exhibit 7: Correlation between UST 5-7Y and MBS**

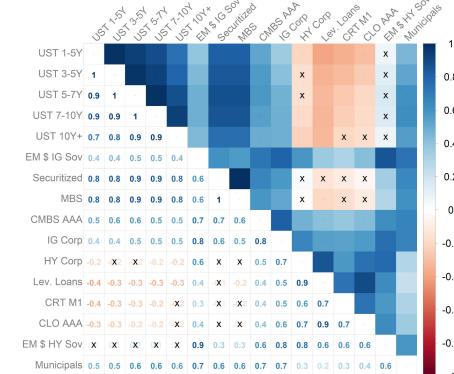
Source: Bloomberg, Morgan Stanley Research; Note: Based on monthly total returns over the last 10Y.

**Exhibit 8: Correlation between UST 5-7Y and Leveraged Loans**

Source: Bloomberg, Morgan Stanley Research; Note: Based on monthly total returns over the last 10Y.

**Exhibit 9: Covariance Matrix - Trailing 10 Years**

Source: Morgan Stanley Research, Bloomberg, S&P LCD. Note: Based on monthly total returns over the last 10Y; covariance is annualized.

**Exhibit 10: Correlation Matrix - Trailing 10 Years**

Source: Morgan Stanley Research, Bloomberg, S&P LCD. Note: Based on monthly total returns over the last 10Y; covariance is annualized. "x" marks correlations which are not significant.

## Defining Diversification

'Diversification' is best represented as the result of one or more of three different effects: buffering, decorrelation and hedging.

### 1. Buffering: Low relative volatility creates 'cushion'

Adding less volatile assets to a combination reduces overall volatility by lowering the weighted average. This is what our colleague Martin Leibowitz [originally described](#) as the "buffering effect", and in practice is the minimum amount of diversification impact that inclusion of an asset would have on a portfolio. This is represented by (a) in [Exhibit 11](#).

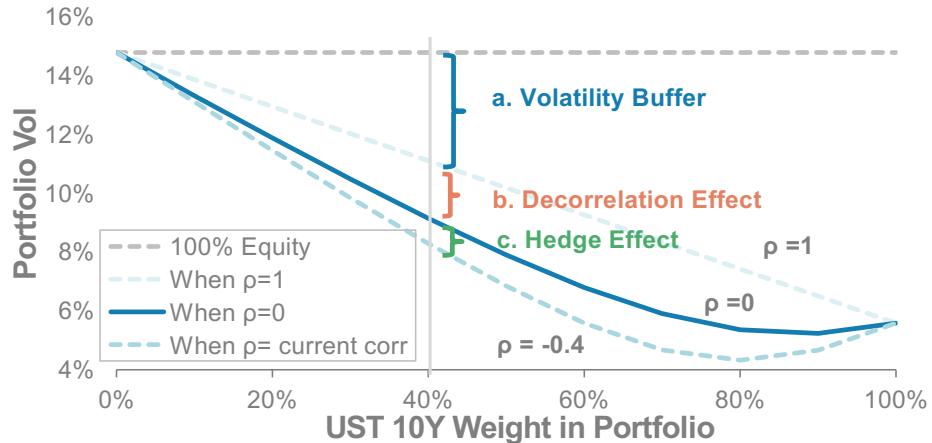
### 2. Decorrelation: Low but positive correlation boosts diversification further

An asset with low – but still positive – correlation with other assets in the portfolio would lower overall volatility beyond buffering. The lower the correlation, the more likely the assets will move out of sync, reducing overall movement and increasing the impact of this effect. This is illustrated by (b) in [Exhibit 11](#).

### 3. Hedging: Negative correlation reduces portfolio volatility

When correlation is negative, an asset diversifies not just by being out of sync, but also by actively moving in the opposite direction of other assets. It zigs when all else zags, and we show the incremental benefit of this as (c) in [Exhibit 11](#). While investors often like to find assets that are negatively correlated, the importance of this hedging effect on lowering portfolio volatility is easily overstated, and typically dwarfed by the benefits from buffering and decorrelation.

Exhibit 11: Decomposing Diversification Effects: An Illustration



Source: Morgan Stanley Research; Note: Based on S&P 500 and UST 10Y realised volatility and correlation since 2010, as illustration.

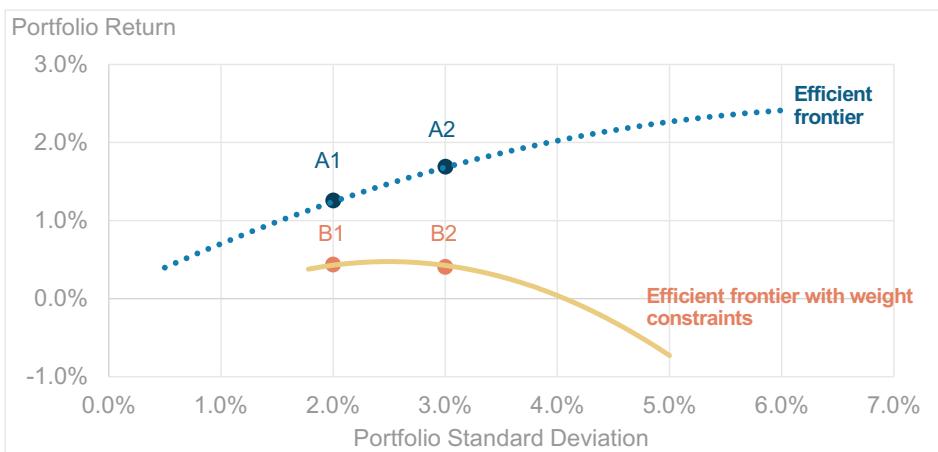
The benefits of diversification as described above means that, when constructing portfolios, there will often be value in including assets that may have very low (or even negative) expected returns – as long as those assets' volatility and covariance profiles enhance a portfolio's risk-reward by lowering risk.

## On the Frontier

With our Morgan Stanley expected returns forecasts, volatility and covariance assumptions, we can construct the efficient frontier, which shows the sets of portfolios with the highest expected returns for a specified level of risk (or conversely, the lowest risk for a given level of expected return).

**Exhibit 12** shows a generalized depiction of the risk-return space, with the blue dotted line the efficient frontier for a long-only, unlevered USD fixed income investor with no other constraints. The portfolio A1 represents the combination of assets that would yield the highest expected returns for an investor targeting 2% volatility, assuming future volatility and covariances will be similar to historical experience; no other combinations yield a higher return AND achieve a 2% volatility, and any portfolios below this point would have worse risk-reward with lower returns, but still the same level of risk. Investors who want to achieve a higher expected return may move up and out on the frontier to, say, portfolio A2, which will likely have a higher allocation to riskier assets, but the higher returns come at the expense of having to accept higher volatility. Importantly, the relationship is not linear, although A2 has 1.5x the volatility of A1, it doesn't have twice the expected return, illustrating the diminishing marginal return to risk – beyond a certain point of the frontier, accepting more volatility in a portfolio only worsens risk-reward. Throughout our exercise, we present optimal portfolios that are 'low-risk', 'medium-risk' (similar to US AGG) and 'high-risk', for investors who may have different levels of risk tolerance.

**Exhibit 12:** Generalized Efficient Frontier - Moving Up and Out of the Frontier Increases Expected Returns, but also Risk



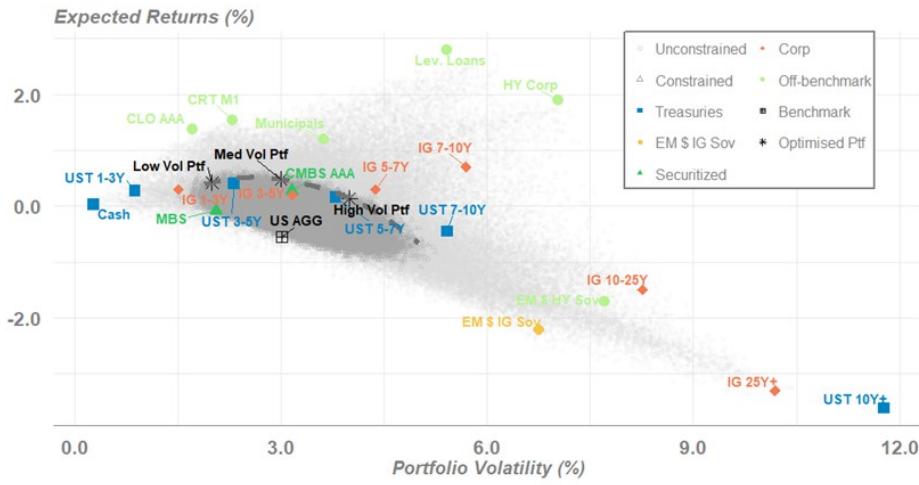
Source: Morgan Stanley Research

In practice, the blue efficient frontier in [Exhibit 12](#) is not achievable for investors with mandates that limit concentration or, say, have strict rules on how much – if any – one can allocate off-benchmark. Accounting for some constraints around size and liquidity – in our case, 1) capping segments to the maximum of 5% or 3x current market weight and 2) capping the total off-benchmark allocation to 30% – shifts the efficient frontier to the yellow line in [Exhibit 12](#), shorter and lower than the unconstrained frontier as the feasible universe of portfolios shrink and, in this particular example, no longer upward-sloping. Notably, the optimal portfolios B1 and B2 on the constrained frontier have lower returns than their unconstrained counterparts with the same levels of volatility, meaning risk-reward deteriorates as conditions are added.

## Putting It All Together

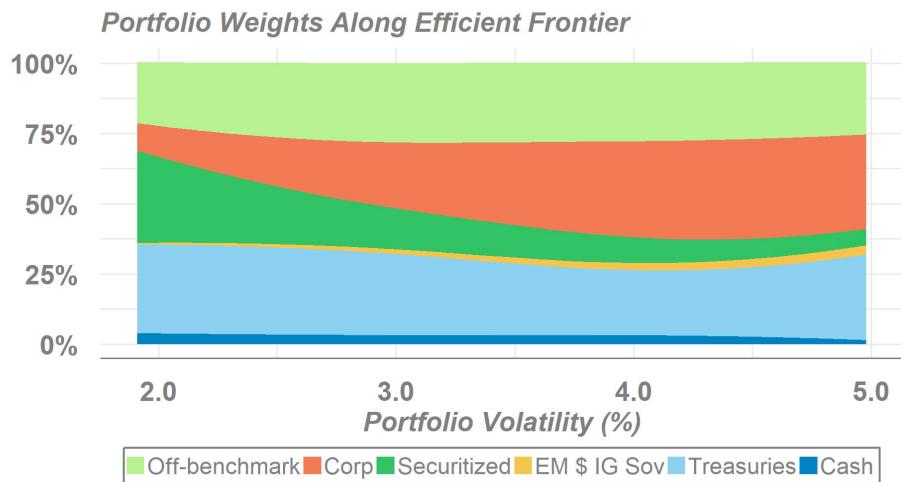
[Exhibit 12](#) above is actually a simplified representation of the risk-reward space and efficient frontier for US fixed income based on Morgan Stanley strategists' expected returns forecast; we show the 'real' thing in [Exhibit 13](#). The light grey dots represent the feasible, long-only, unlevered portfolios with no constraints, while the darker grey dots show the combination of portfolios where allocation cannot go above 3x of assets' market value share; the dotted line on the outer top edge of the dark grey cluster is the constrained efficient frontier. It is *this* frontier that we are interested in, and along which we find our optimal portfolios with combinations of US fixed income assets which maximise expected returns at given volatility targets ([Exhibit 14](#)). It's worth noting that even though the constrained frontier is flatter and shorter than the unconstrained one, it still lies *above* the US AGG market-weight portfolio, meaning expected risk-reward for the optimal portfolio beats the benchmark – exactly what we are aiming to do. There are of course other optimisation processes such as the Black-Litterman model, which takes degree of confidence around expected returns into account, but for this first iteration, we aim to keep things simple. For those interested in a more formal specification of the Markowitz mean-variance optimisation process, please see [Appendix III - Methodology Notes and Assumptions](#).

**Exhibit 13:** US AGG and Components Risk-Reward and Efficient Frontier Based on Morgan Stanley Forecasts



Source: Morgan Stanley Research forecasts, Bloomberg, S&P LCD. Note: Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of market value of assets. Light grey shows feasible portfolios, darker grey shows portfolios with weight constraints.

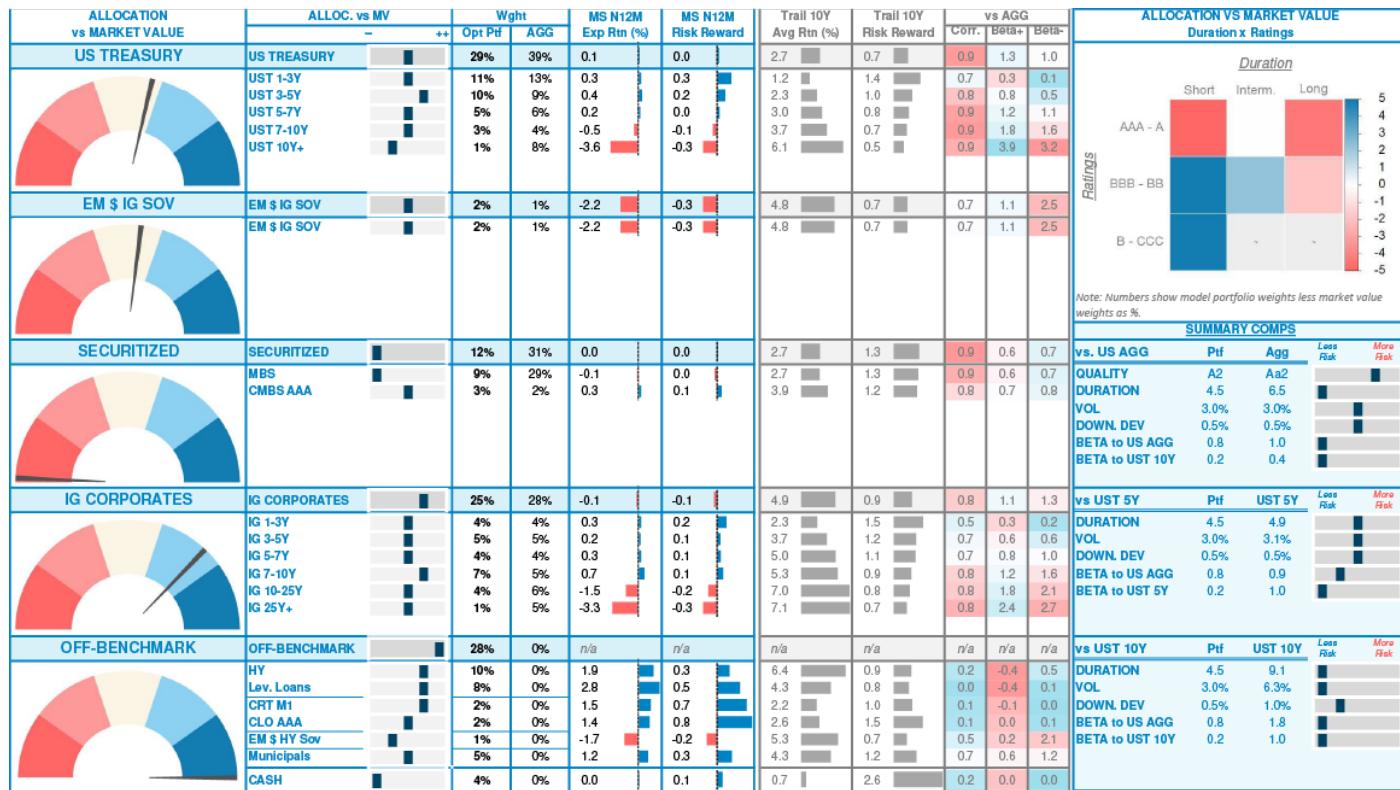
**Exhibit 14:** USD Fixed Income Optimal Portfolios Along Efficient Frontier Based on Morgan Stanley Forecasts



Source: Morgan Stanley Research forecasts. Note: Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of market value of assets.

Exhibit 15 shows what a portfolio on the constrained efficient frontier targeting similar level of volatility as US AGG looks like compared to the market value of these assets. If Morgan Stanley strategists are right about the future, the optimal portfolio with similar volatility as US AGG that beats the benchmark in terms of expected risk-reward has **lower duration versus both the benchmark and UST 10Y, is overweight lower-quality fixed income and off-benchmark bets, and is currently running low beta versus AGG.** We think these generalized tilts can add value for in thinking about strategic asset allocation, even for specialists focused on specific fixed income segments.

Exhibit 15: Morgan Stanley US Fixed Income Asset Allocation



Source: Morgan Stanley Research, Bloomberg, S&P LCD. Note: Shows breakdown of portfolio targeting 3.0% annualized vol. Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments. For the 'dials', each segment represents 5% allocation, ranging from -12.5% to +12.5% vs. market weight; similarly allocation 'bars' range from -10% to +10% for all assets except Sovereign (EM), EM Sovereign (HY), CRT M1 and CLO AAA, which range from -5% to +5% versus market weight due to smaller market cap.

# What's Changed in Our Fixed Income Views?

## Cross-Asset Strategy

### Changes in Strategy Views

Notable recent changes in Morgan Stanley Macro and Fixed Income Research views include:

- **In our latest mid-year Strategy Outlook, we downgraded credit** from previous overweight as rich valuations after a strong rally, higher-than-expected supply and a more challenging mid-cycle environment weight on outlook. See [Global Strategy Mid-Year Outlook: Now the Hard Part \(18 May 2021\)](#) and [US Credit Strategy Mid-Year Outlook: The Mid-cycle Grind \(24 May 2021\)](#) for more.
- **Our Macro Strategy team forecast US yields to rise in line with forwards with curves steepening modestly**, and now see 10y yields ending 2021 at 1.8%, and 2Q22 at 2.0%, on the back better growth balanced by ample liquidity. See [Global Macro Strategy Mid-Year Outlook: The Risks That Aren't Priced In \(24 May 2021\)](#) for more.
- **The Agency MBS team recommends a long-term structural underweight in MBS**, given valuations are at all-time tights. See [Global Securitized Products Mid-Year Outlook: What to Do When Everything Looks Rich \(18 May 2021\)](#) for more.
- **Risks skew to wider spreads for EM credit**. We expect EM credit to face headwinds in higher UST yields, wider credit spreads and modestly stronger USD. Our EM Strategy team expects spreads to overshoot 360bp in 2H21. See [Global EM Strategy Mid-Year Outlook: A Recovery without Returns \(21 May 2021\)](#) for more.

**Exhibit 16:** New US Treasury 5Y yields  
Bull/Base/Bear Forecast

Quarter	US Treasury 5Y Yields		
	Base	Bull	Bear
3Q21	0.80	0.50	0.90
4Q21	0.85	0.60	1.15
1Q22	0.95	0.65	1.20
2Q22	1.10	0.75	1.40

Source: Morgan Stanley Research forecasts

**Exhibit 17:** New US Treasury 10Y yields  
Bull/Base/Bear Forecast

Quarter	US Treasury 10Y Yields		
	Base	Bull	Bear
3Q21	1.70	1.35	1.80
4Q21	1.80	1.45	1.95
1Q22	1.90	1.60	2.05
2Q22	2.00	1.70	2.20

Source: Morgan Stanley Research forecasts

### Impact on Fixed Income Asset Allocation Views

Our strategist colleagues' refreshed forecasts suggest more limited upside across most assets compared to just 6 months ago, which leads us to an optimal portfolio that's relatively close to home within core AGG segments, with most of the expected returns coming from off-benchmark bets. In greater detail:

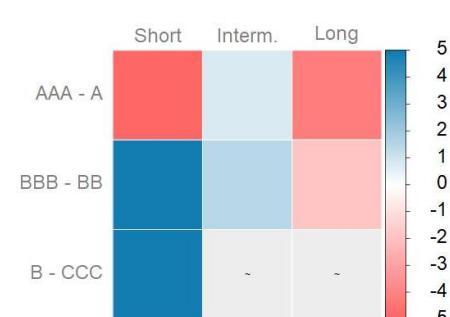
- **Asset allocation:** The optimal USD fixed income portfolio aiming to maximize total returns while targeting same volatility as US AGG (~3%) is EW USTs, UW Securitized, OW Corporate Credit and OW Off-benchmark assets. In particular, it holds a large UW in MBS and large OW in HY and Leveraged Loans.

- **Duration:** The optimal portfolio is short duration versus US AGG and versus UST 10Y, mainly via its off-benchmark bets that aren't as sensitive to rates. The portfolio is also UW in longer-maturity buckets across the rating spectrum.

- **Quality:** Given that risk premium lie mostly in non-IG fixed income, the optimal USD fixed income portfolio is lower quality than AGG, with a weighted rating of ~A2, versus the benchmark's Aa2.

**Exhibit 18: Framework Asset Allocation**

Source: Morgan Stanley Research forecasts

**Exhibit 19: Framework allocation vs US AGG - by Maturity and Ratings**

Source: Morgan Stanley Research; Note: Numbers show model portfolio weights less market value weights as %

**Exhibit 20: Fixed Income Asset Allocation and Change**

vs. US AGG	Ptf	Agg	Less Risk	More Risk
QUALITY	A2	Aa2		+
DURATION	4.5	6.5	+	
VOL	3.0%	3.0%		+
DOWN. DEV	0.5%	0.5%	+	
BETA to US AGG	0.8	1.0	+	
BETA to UST 10Y	0.2	0.4	+	

Source: Bloomberg, Morgan Stanley Research forecasts

**Exhibit 21: Optimal Portfolios Duration and Quality vs. US AGG**

vs UST 10Y	Ptf	UST 10Y	Less Risk	More Risk
DURATION	4.5	9.1		+
VOL	3.0%	6.3%	+	
DOWN. DEV	0.5%	1.0%	+	
BETA to US AGG	0.8	1.8		+
BETA to UST 10Y	0.2	1.0	+	

Source: Bloomberg, Morgan Stanley Research forecasts.

# Fixed Income Strategy Latest Views

## US Treasury

Matt Hornbach, Guneet Dhingra

- Macro outlook that's priced in:** Our economists expect a red-hot capex cycle, additional fiscal stimulus, and a dovish central bank policy to take global GDP growth and inflation well above consensus estimates. This outlook is mostly in the price already, leaving rates and currency markets exposed to risks not yet priced in.
- Watch timing and pace of hikes:** A key theme for the coming months is the tension between the market pricing and the Fed's dovish stance, specifically defined in terms of the timing and pace of hikes. On timing, our analysis suggests that the skew is quite clearly towards a delay in the timing of the first hike, rather than an earlier than currently priced timing.
- Base case calls for higher yields, steeper curves:** We see 10y yields at 1.80% by the end of 2021 in our base case. We see the risks skewed to lower yields in our forecast, reflecting the fact that Treasury yields price outcomes closer to our economists' bull case for the economy. We see the 5s30s curve steeper than the forwards over our forecast horizon.
- Best idea:** We recommend going short beta-weighted 10y breakevens as a medium-term trade as we expect real yields to rise more than nominal yields at the expense of a slight decline in breakevens over 2021.
- Recent notable reports:**
  - [Global Macro Strategy Mid-Year Outlook: The Risks That Aren't Priced In \(24 May 2021\)](#)
  - [Podcast: Strong Views on Global Macro | Ep. 27 \(25 May 2021\)](#)

**Exhibit 25: US Treasury Index Yield**



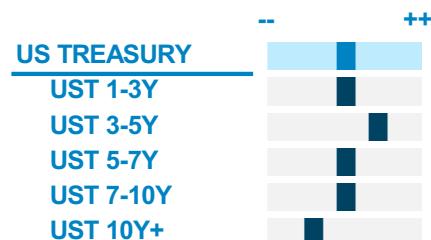
Source: Bloomberg, Morgan Stanley Research

**Exhibit 22: Morgan Stanley UST Forecasts**

2Q22 Target	Yld (%)	Nom. Rtn
UST 2Y	0.35	0.3%
UST 5Y	1.10	0.5%
UST 10Y	2.00	-0.7%
UST 30Y	2.55	-4.4%

Source: Morgan Stanley Research forecasts

**Exhibit 23: Framework UST Allocation**



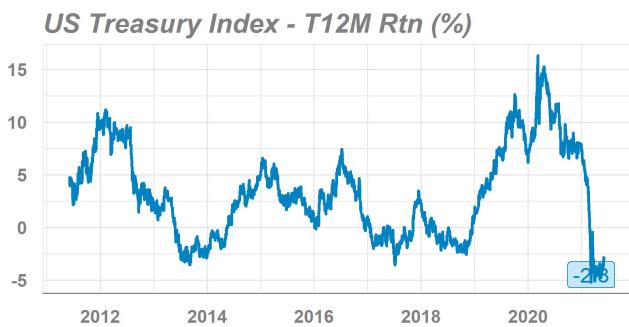
Source: Morgan Stanley Research; Note: Shows allocation versus market weights for USD fixed income optimized portfolio targeting similar volatility as broad market, based on Morgan Stanley N12M expected returns and historical volatility. Allocation 'bars' range from -10% to +10%.

**Exhibit 24: UST vs US AGG - Quality and Duration**



Source: Bloomberg, Morgan Stanley Research

**Exhibit 26:** US Treasury Index T12M Return



Source: Bloomberg, Morgan Stanley Research

**Exhibit 28:** US Treasury Index T12M Volatility



Source: Bloomberg, Morgan Stanley Research

**Exhibit 27:** US Treasury Index T12M Risk-Reward



Source: Bloomberg, Morgan Stanley Research

**Exhibit 29:** US Treasury Index T12M Correlation vs AGG



Source: Bloomberg, Morgan Stanley Research

## Securitized Products

Jay Bacow & Jim Egan

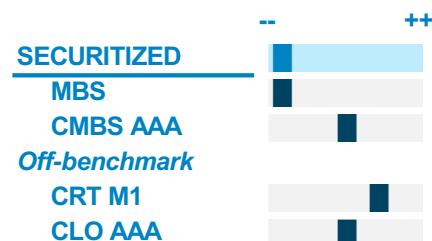
- We are underweight agency MBS vs. the benchmark, particularly Ginnies, given valuations close to all-time tights, heavy supply, and continued prepay concerns, with risks towards further widening if bank demand dissipates.
- The commercial real estate outlook has brightened significantly, but valuations reflect that, and we recommend neutral positioning in the sector vs. the benchmark
- We recommend an overweight to the out-of-benchmark structured credit opportunities, preferring to take default risk given strong fundamentals and valuations that leave some opportunity for further spread tightening. Our favorite expression of this is CLO equity, but this is outside the scope of most US AGG accounts
- Best idea:** CLO AAAs represent high-quality carry that screen cheap to IG corporates, and CRT M1s are a high-quality play on the continued strength of the housing market.
- Recent notable reports:**
  - What To Do When Everything Look Rich
  - Don't Bank On It
  - MTMLTV and CRT

**Exhibit 30:** Morgan Stanley Securitized Forecasts

2Q22 Target	Sprd (bps)	XS. Rtn
MBS	-5	-0.5%
CMBS	75	-0.1%
CRT M1	60	0.5%
CLO AAA	100	1.1%

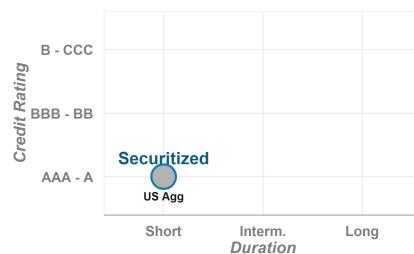
Source: Morgan Stanley Research forecasts

**Exhibit 31:** Framework Securitized Allocation



Source: Morgan Stanley Research; Note: Shows allocation versus market weights for USD fixed income optimized portfolio targeting similar volatility as broad market, based on Morgan Stanley N12M expected returns and historical volatility. Allocation 'bars' range from -10% to +10% for MBS and CMBS, -5% to +5% for CRT M1 and CLO AAA.

**Exhibit 32:** Securitized vs US AGG - Quality and Duration



Source: Bloomberg, Morgan Stanley Research

**Exhibit 33:** Securitized Index Yield



Source: Bloomberg, Morgan Stanley Research

**Exhibit 34:** Securitized Index Yield



Source: Bloomberg, Morgan Stanley Research

**Exhibit 35:** Securitized Index T12M Return



Source: Bloomberg, Morgan Stanley Research

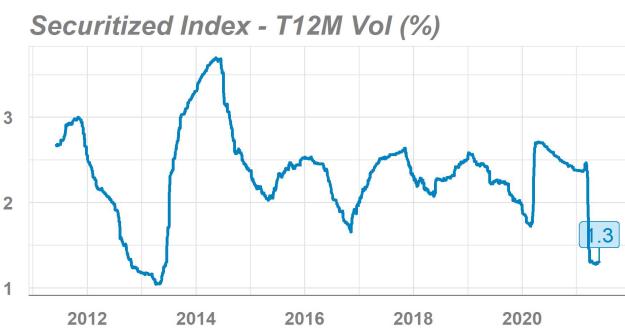
**Exhibit 36:** Securitized Index T12M Risk-Reward

**Exhibit 36: Securitized Index T12M Risk-Reward**



Source: Bloomberg, Morgan Stanley Research

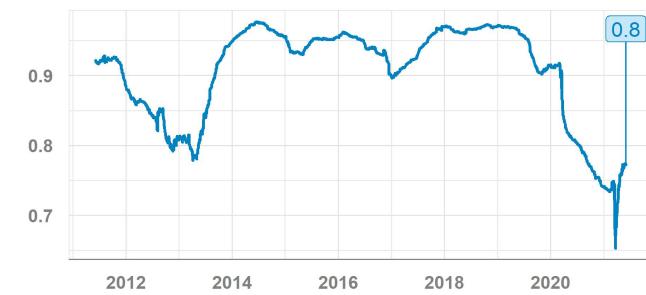
**Exhibit 37:** Securitized Index T12M Volatility



Source: Bloomberg, Morgan Stanley Research

**Exhibit 38:** Securitized Index T12M Correlation vs AGG

**Exhibit 38: Securitized Index T12M Correlation vs AGG**



Source: Bloomberg, Morgan Stanley Research

## Corporate Credit

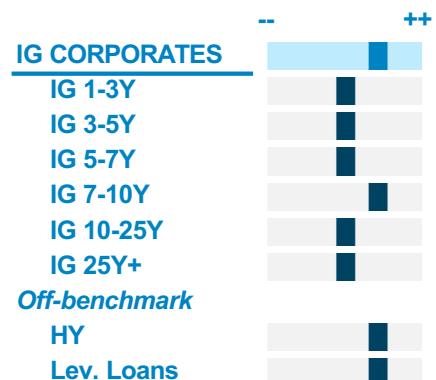
Srikanth Sankaran, Vishwas Patkar

- We downgraded credit to a neutral stance in our mid-year outlook, with valuations now rich across the board, and technicals expected to turn less supportive.
- We maintain a down-in-quality bias, with a preference for Loans > HY > IG. Valuations are less extreme in leveraged credit, and it remains a bigger beneficiary of a reflationary environment than IG credit.
- Within IG, we have a preference for BBBs over As. Within HY, we turn more defensive in our quality allocation and recommend taking profits on CCCs. Across the maturity curve, we have a preference for the belly given better carry and roll-down
- Best idea:** Preference for Loans over HY and IG. Cautious on the long end of the IG market
- Recent notable reports:**
  - US Credit Strategy Mid-Year Outlook: The Mid-cycle Grind
  - Taking Some CCChips Off The Table
  - Curve Conundrum

**Exhibit 39:** Morgan Stanley Corporate Credit Forecasts

2Q22 Target	Sprd (bps)	Nom. Rtn
IG 1-3Y	44	0.3%
IG 3-5Y	68	0.2%
IG 5-7Y	87	0.3%
IG 7-10Y	107	0.7%
IG 10-25Y	151	-1.5%
IG 25Y+	144	-3.3%
<b>HY</b>	320	1.9%
<b>Lev. Loans</b>	410	2.8%

Source: Morgan Stanley Research forecasts

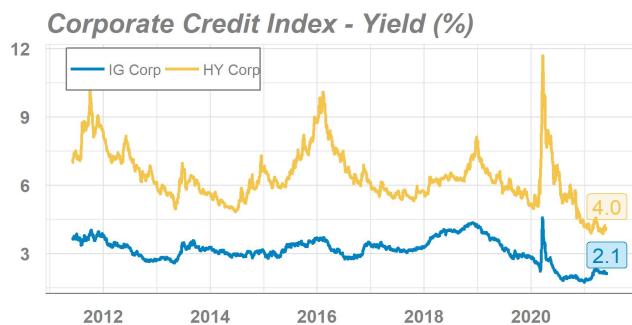
**Exhibit 40:** Framework Corporate Credit Allocation

Source: Morgan Stanley Research; Note: Shows allocation versus market weights for USD fixed income optimized portfolio targeting similar volatility as broad market, based on Morgan Stanley N12M expected returns and historical volatility. Allocation 'bars' range from -10% to +10%.

**Exhibit 41:** IG vs. US AGG - Quality and Duration

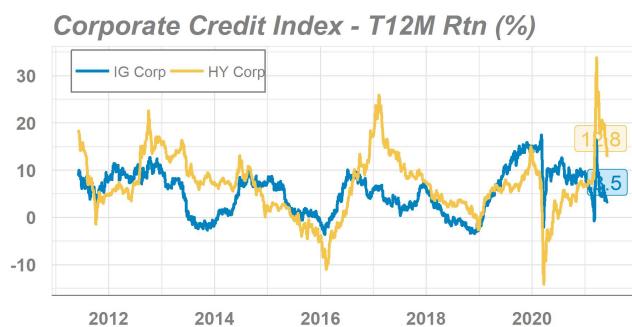
Source: Bloomberg, Morgan Stanley Research

**Exhibit 42: IG & HY Corporate Indices Yield**



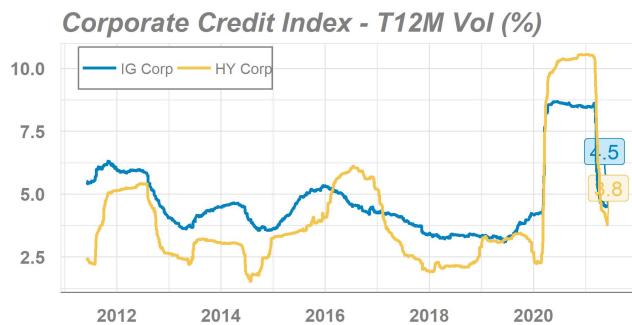
Source: Bloomberg, Morgan Stanley Research

**Exhibit 44: IG & HY Corporate Indices T12M Return**



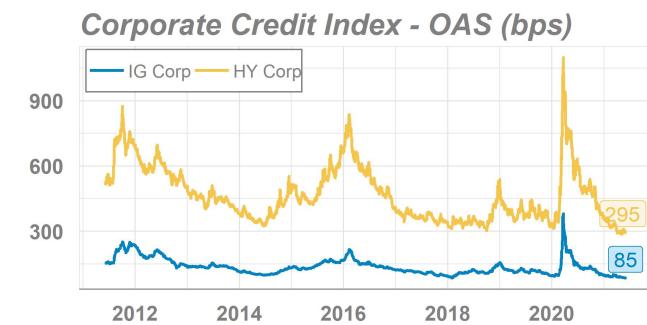
Source: Bloomberg, Morgan Stanley Research

**Exhibit 46: IG & HY Corporate Indices T12M Volatility**



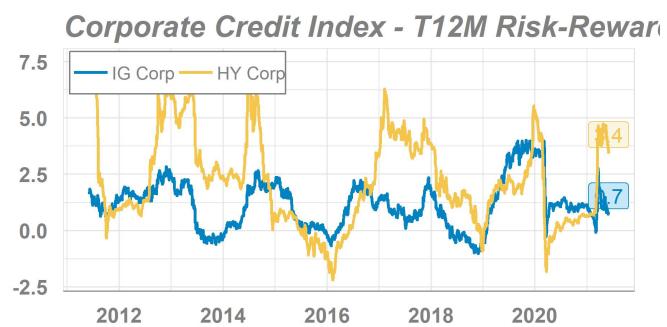
Source: Bloomberg, Morgan Stanley Research

**Exhibit 43: IG & HY Corporate Indices OAS**



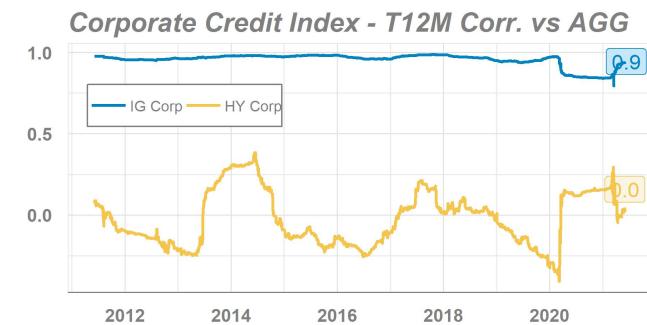
Source: Bloomberg, Morgan Stanley Research

**Exhibit 45: IG & HY Corporate Indices T12M Risk-Reward**



Source: Bloomberg, Morgan Stanley Research

**Exhibit 47: IG & HY Corporate Indices T12M Correlation vs. AGG**



Source: Bloomberg, Morgan Stanley Research

## EM Sovereigns

Simon Waever, Jaiparan Khurana

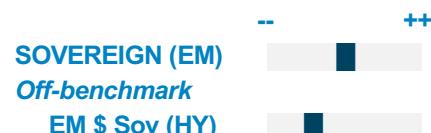
- Wider spreads in line with global credit spreads:** MS expectations of wider global credit spreads, higher UST yields, a stronger dollar, and EM growth lagging DM growth are important headwinds. Credit metrics have also worsened, with fiscals set to remain very wide versus history. We see the US Aggregate sovereign subindex widen to 140bp by 2Q22 from current levels of 123bp.
- Yet skew towards LatAm should allow spreads to outperform US IG:** Given the index only includes SEC-registered securities, 60% of the index is LatAm. While different than broader EM indices, it currently skews the sovereign subindex towards the cheapest EM region, which should see the index outperform US IG over the next year despite fiscal concerns.
- Benchmark allocations:** We suggest OW Mexico (21% of the index) and Peru (8% of the index). We suggest UW Colombia, which is likely to drop out of the index this year, in addition to the Philippines and Panama.
- Off-benchmark suggestions:** In IG, we suggest adding Abu Dhabi and Saudi Arabia, both issuers that benefit from higher oil prices. We also suggest moving into quasi-sovereigns to pick up additional spread, including ADGLXY (Abu Dhabi), PERTIJ (Indonesia) and even PEMEX (Mexico) despite being HY.
- Best idea:** Add Mexico USD bonds
- Recent notable reports:**

- Mexico: High Uncertainty But Not High Yield (23 April 2021)
- UAE: Finding Value in Abu Dhabi Quasi-Sovereigns (13 May 2021)
- Colombia: One Down, Another to Follow (20 May 2021)

**Exhibit 48:** Morgan Stanley EM \$ Credit Forecasts

2Q22 Target	Sprd (bps)	Nom. Rtn
AGG Sov	140	-2.0%
EM \$ Sov	380	-1.7%

Source: Morgan Stanley Research forecasts

**Exhibit 49:** Framework EM \$ Credit Allocation

Source: Morgan Stanley Research; Note: Shows allocation versus market weights for USD fixed income optimized portfolio targeting similar volatility as broad market, based on Morgan Stanley N12M expected returns and historical volatility. Allocation 'bars' range from -5% to +5%.

**Exhibit 50:** EM \$ Credit vs. US AGG - Quality and Duration

Source: Bloomberg, Morgan Stanley Research

**Exhibit 51:** EM \$ Credit Index Yield

Source: Bloomberg, Morgan Stanley Research

**Exhibit 52:** EM \$ Credit Index OAS

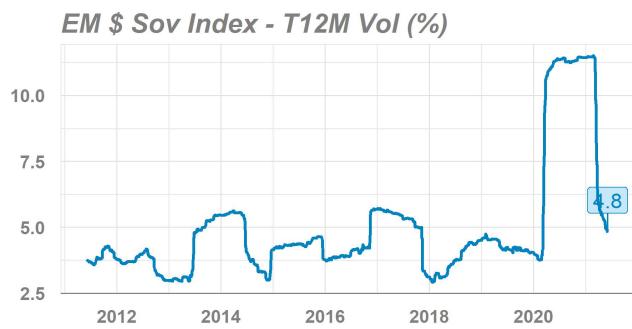
Source: Bloomberg, Morgan Stanley Research

**Exhibit 53:** EM \$ Credit Index T12M Return



Source: Bloomberg, Morgan Stanley Research

**Exhibit 55:** EM \$ Credit Index T12M Volatility



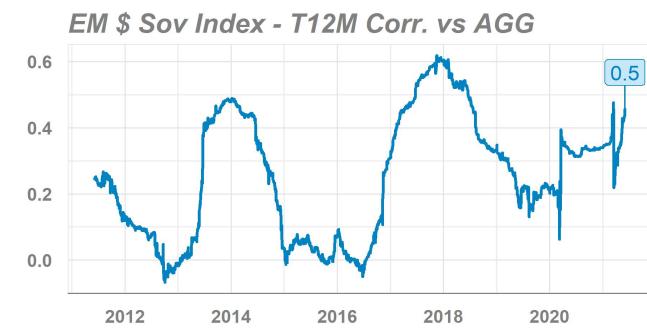
Source: Bloomberg, Morgan Stanley Research

**Exhibit 54:** EM \$ Credit Index T12M Risk-Reward



Source: Bloomberg, Morgan Stanley Research

**Exhibit 56:** EM \$ Credit Index T12M Correlation vs. AGG



Source: Bloomberg, Morgan Stanley Research

## Municipals

Michael Zezas, Samantha Favis, Barbara Boakye

- Fundamentals are sound, but the good news is in the price. Hence boring returns are our base case.** Credit fundamentals are on a clear upward trajectory, supported by ongoing fiscal stimulus and a V-shaped economic recovery. But that dynamic appears fully priced given valuations at or near historical or multi-year lows. Hence, a flat trajectory for UST rates (bull case) or a gently upward sloping one (base case) delivers only modest returns. Such conditions would be consistent with risk premia drifting modestly higher. The muni coupon would be the key driver of modest returns.
- Munis may not absorb inflation surprises well.** A more volatile path toward higher rates via more bear-steepening of the UST curve remains possible should inflation continue to surprise to the upside, pushing the Fed's taper schedule forward. While the last bear-steepener period didn't create an outflow cycle, we're not ready to lean against history, where these conditions more often than not lead to demand weakness and underperformance, despite fundamental strength. Hence, muni returns skew lower.
- Best ideas:** We prefer recovery-play sectors like transportation and higher education that have the most to gain from broad vaccinations and reopening economies. Targeted aid to these sectors allowed for a bridge to the other side of COVID. On duration, we see value in positioning in 8-12 year maturities or a 50/50 20Y-0-4Y barbell.
- Recent notable reports:**
  - [Municipal Strategy Mid-Year Outlook Playbook: Boring Is the Best Case \(28 May 2021\)](#)
  - [Podcast | Munis To The People: Ep. 9 | Mulling Over the Mid-Year Outlook: More Risk than Reward? \(2 Jun 2021\)](#)

**Exhibit 57:** Morgan Stanley Municipal Forecasts

2Q22 Target	Yld (%)	Nom. Rtn
Municipals	1.43	1.20%

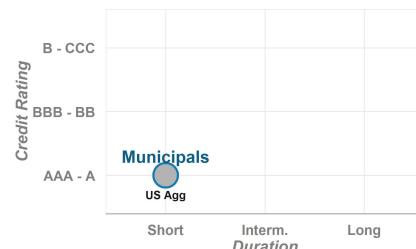
Source: Morgan Stanley Research forecasts

**Exhibit 58:** Framework Municipal Allocation



Source: Morgan Stanley Research; Note: Shows weightings versus US AGG for USD fixed income optimized portfolio targeting similar volatility as broad market, based on Morgan Stanley N12M expected returns and historical volatility.

**Exhibit 59:** Municipal vs. US AGG - Quality and Duration



Source: Bloomberg, Morgan Stanley Research

**Exhibit 60:** Municipal Index Yield



Source: Bloomberg, Morgan Stanley Research

**Exhibit 61:** Municipals Index T12M Return



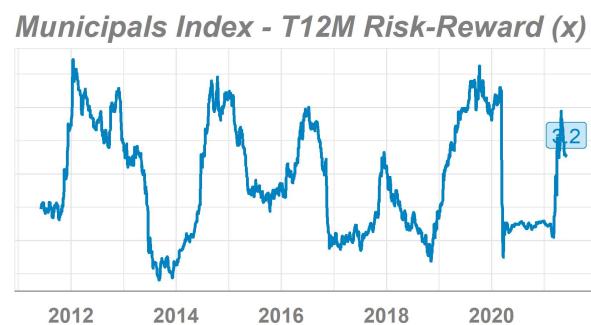
Source: Bloomberg, Morgan Stanley Research

**Exhibit 63:** Municipals Index T12M Volatility



Source: Bloomberg, Morgan Stanley Research

**Exhibit 62:** Risk-Reward



Source: Bloomberg, Morgan Stanley Research

**Exhibit 64:** Municipals Index T12M Correlation vs AGG



Source: Bloomberg, Morgan Stanley Research

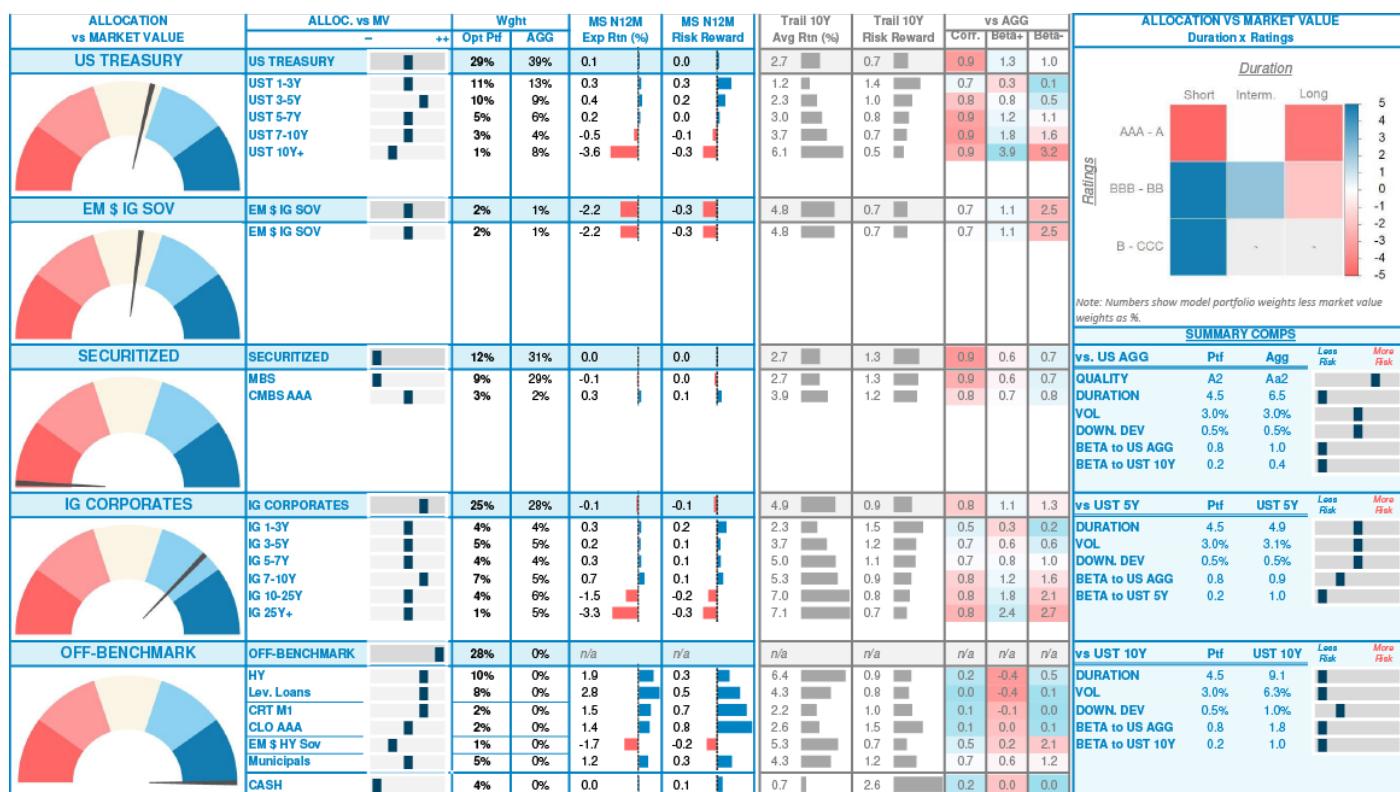
# US Fixed Income Strategic Asset Allocation Snapshot

## Key Takeaways

The optimal portfolio with similar volatility to that of US AGG that beats benchmark expected returns:

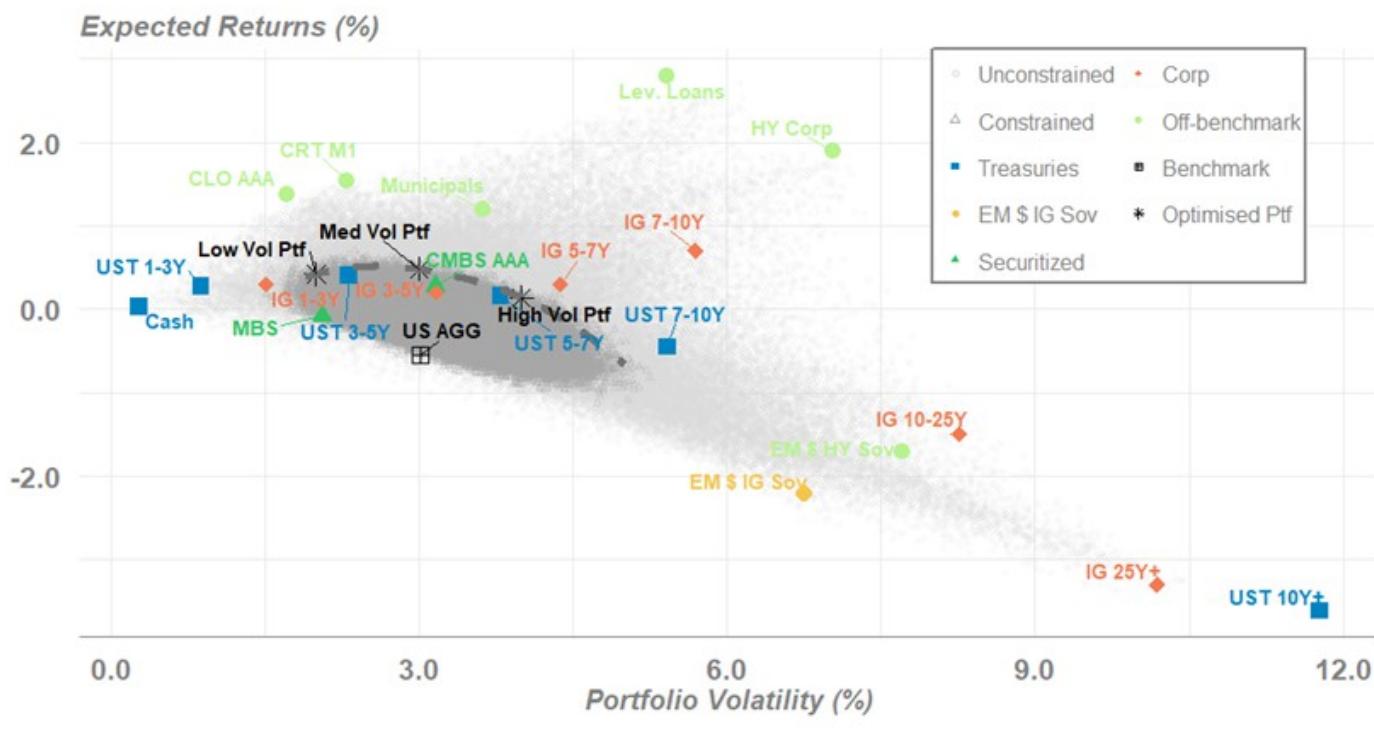
- is EW US Treasuries, EW EM \$ IG Sovereigns, UW Securitized, OW Corporates and OW Off-benchmark versus these segments' market values. In particular, portfolio has a large UW in MBS, and large OW in HY and Leveraged Loans
- has lower duration versus both the benchmark *and* UST 10Y
- is overweight lower-quality fixed income and off-benchmark bets
- is currently running low beta vs AGG

**Exhibit 65:** Morgan Stanley US Fixed Income Asset Allocation - AGG Vol



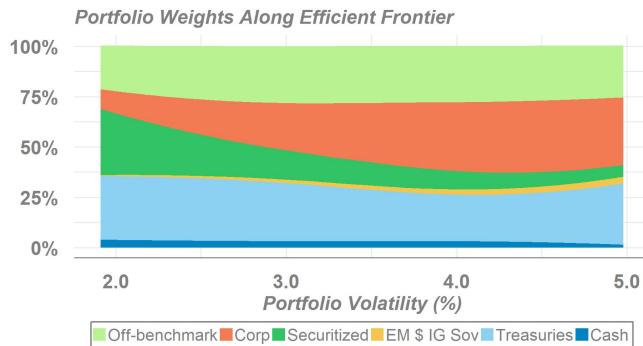
Source: Morgan Stanley Research, Bloomberg, S&P LCD. Note: Shows breakdown of portfolio targeting 3.0% annualized vol. Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments. For the 'dials', each segment represents 5% allocation, ranging from -12.5% to +12.5% vs. market weight; similarly allocation 'bars' range from -10% to +10% for all assets except Sovereign (EM), EM Sovereign (HY), CRT M1 and CLO AAA, which range from -5% to +5% versus market weight due to smaller market cap.

**Exhibit 66:** USD Fixed Income and Components Risk-Reward and Efficient Frontier Based on Morgan Stanley Forecasts



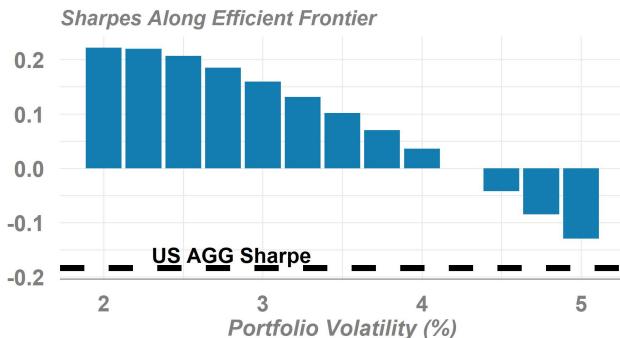
Source: Morgan Stanley Research forecasts, Bloomberg. Note: Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of market value of assets. Light grey shows feasible portfolios, darker grey shows portfolios with weight constraints.

**Exhibit 67:** USD Fixed Income Optimal Portfolios Along Efficient Frontier Based on Morgan Stanley Forecasts



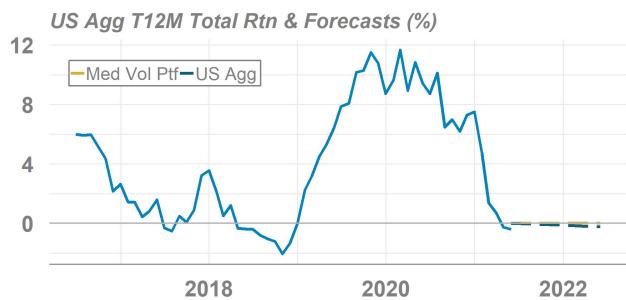
Source: Morgan Stanley Research forecasts, Bloomberg. Note: Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of market value of assets.

**Exhibit 68:** Expected Sharpes Along Efficient Frontier Based on Morgan Stanley Forecast



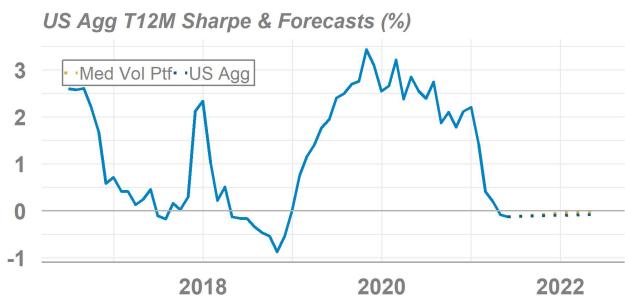
Source: Morgan Stanley Research forecasts, Bloomberg. Note: Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of market value of assets.

**Exhibit 69:** US AGG T12M Returns History



Source: Morgan Stanley Research forecasts, Bloomberg.

**Exhibit 70:** US AGG T12M Sharpe History



Source: Morgan Stanley Research forecasts, Bloomberg

## Optimal USD Fixed Income Low-Vol Portfolio – 2.0% Vol

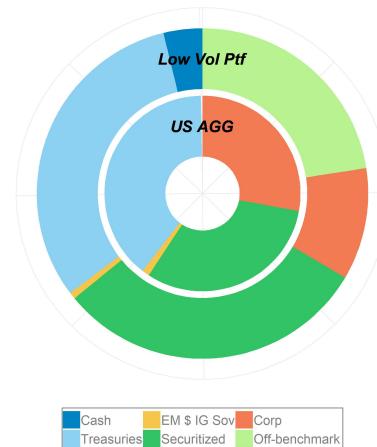
**Expected return:** The optimal USD fixed income portfolio targeting lower risk than US AGG at 2% annualized vol has an expected return of 0.5%, versus -0.2% for the benchmark.

**Asset allocation:** The low-vol portfolio is OW US Treasuries, EW Sovereigns (EM IG), EW Securitized, UW Corporates and OW Off-benchmark versus these segments' market values.

**Duration:** The low-vol optimal USD fixed income portfolio has a duration of 3.5 versus the US AGG's duration of 6.5. It also has lower duration versus UST 10Y.

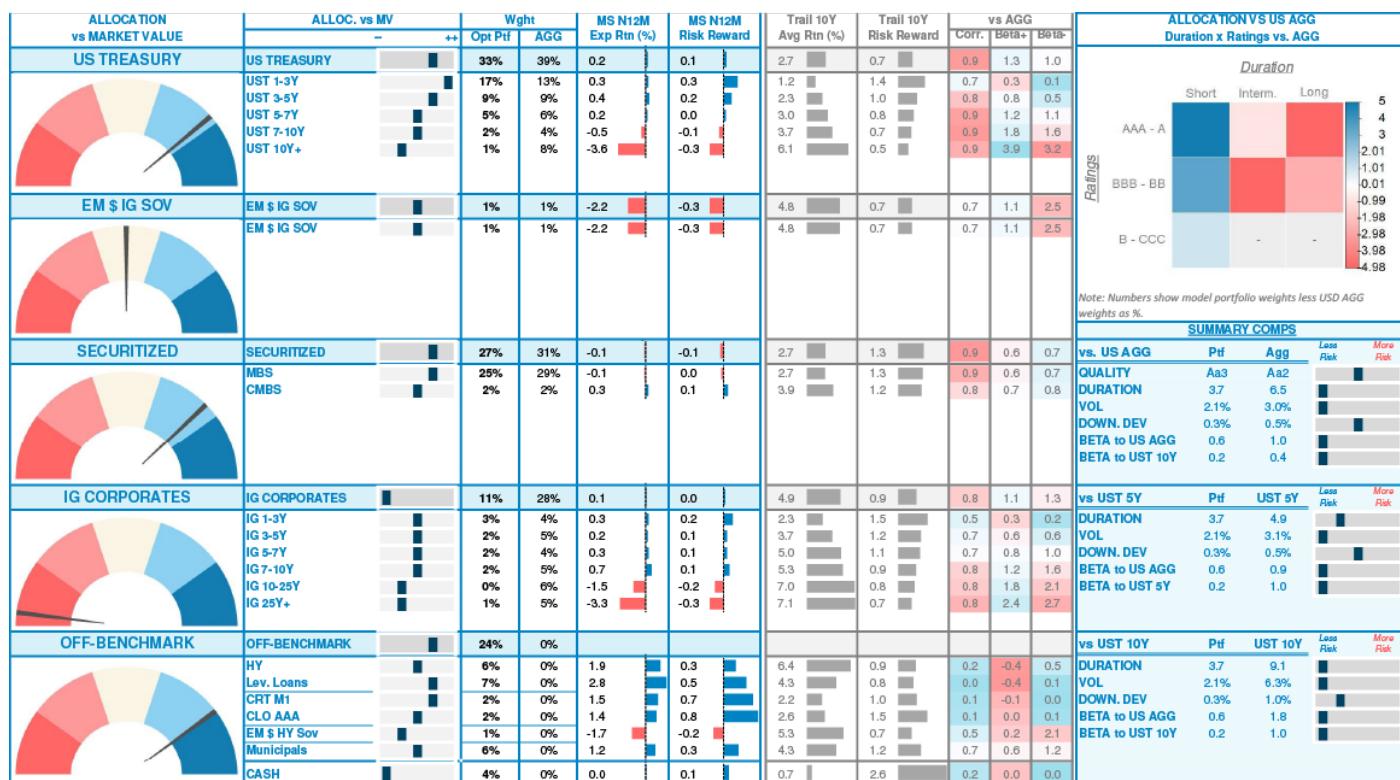
**Quality:** The low-vol optimal USD fixed income portfolio has an implied rating of Aa3 similar to the US AGG's Aa2.

**Exhibit 71:** US Fixed Income Optimal Portfolio (2.0% Vol) Breakdown



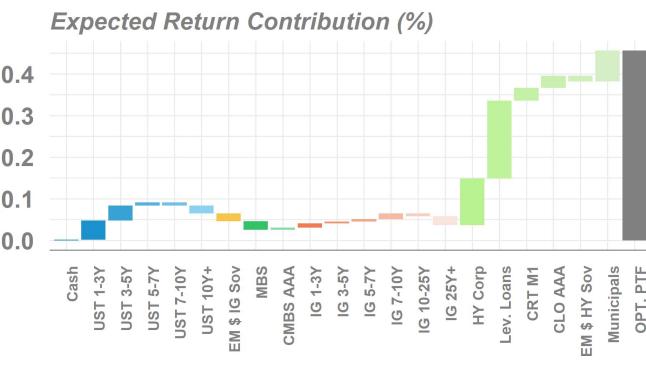
Source: Morgan Stanley Research, Bloomberg. Note: Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments.

**Exhibit 72:** Morgan Stanley US Fixed Income Asset Allocation - Low Vol Portfolio



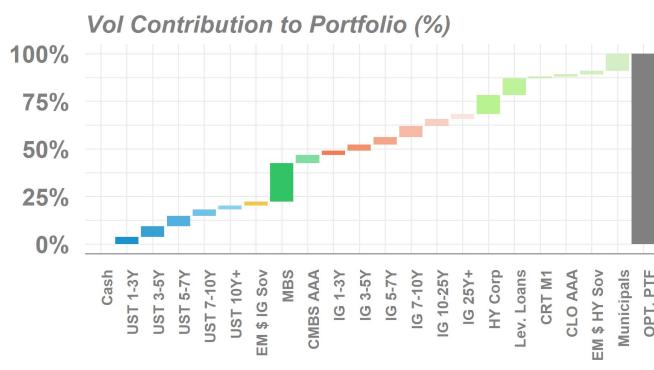
Source: Morgan Stanley Research, Bloomberg, S&P LCD. Note: Shows breakdown of portfolio targeting 2.0% annualized vol. Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments. For the 'dials', each segment represents 5% allocation, ranging from -10% to +10% for all assets except Sovereign (EM), EM Sovereign (HY), CRT M1 and CLO AAA, which range from -5% to +5% versus market weight due to smaller market cap.

**Exhibit 73:** USD Fixed Income Optimal Portfolio (2.0% Vol) Expected Return Contribution



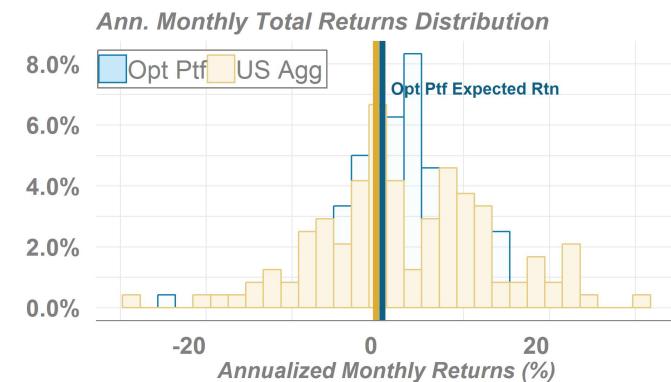
Source: Morgan Stanley Research forecasts, Bloomberg. Note: Based on Morgan Stanley N12M expected returns and optimal portfolio weights.

**Exhibit 75:** USD Fixed Income Optimal Portfolio (2.0% Vol) Risk Contribution



Source: Morgan Stanley Research; Note: Based on trailing 10Y volatility and covariances, calculated on monthly total returns.

**Exhibit 74:** USD Fixed Income Optimal Portfolio (3.0% Vol Target) Historical Returns Distribution vs US Agg



Source: Morgan Stanley Research forecasts, Bloomberg. Note: Historical returns based on realized monthly returns over last 10 years and optimal portfolio weights

**Exhibit 76:** USD Fixed Income Optimal Portfolio (2.0% Vol Target) Historical Volatility



Source: Morgan Stanley Research; Note: Based on trailing 10Y volatility and covariances, calculated on monthly total returns optimal portfolio weights.

### Optimal USD Fixed Income Medium-Vol Portfolio – 3.0% Vol

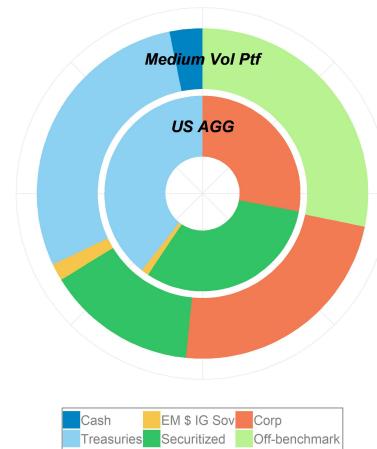
**Expected return:** The optimal USD fixed income portfolio targeting similar risk to that of US AGG at 3% annualized vol has an expected return of 0.5%, versus -0.2% for the benchmark.

**Asset allocation:** The medium-vol portfolio is EW US Treasuries, EW Sovereigns (EM IG), UW Securitized, OW Corporates and OW Off-benchmark versus these segments' market values. In particular, the portfolio has a large UW in MBS, and large OW in HY and Leveraged Loans.

**Duration:** The medium-vol optimal USD fixed income portfolio has a duration of 4.5 versus the US AGG's duration of 6.5. It also has lower duration versus UST 10Y.

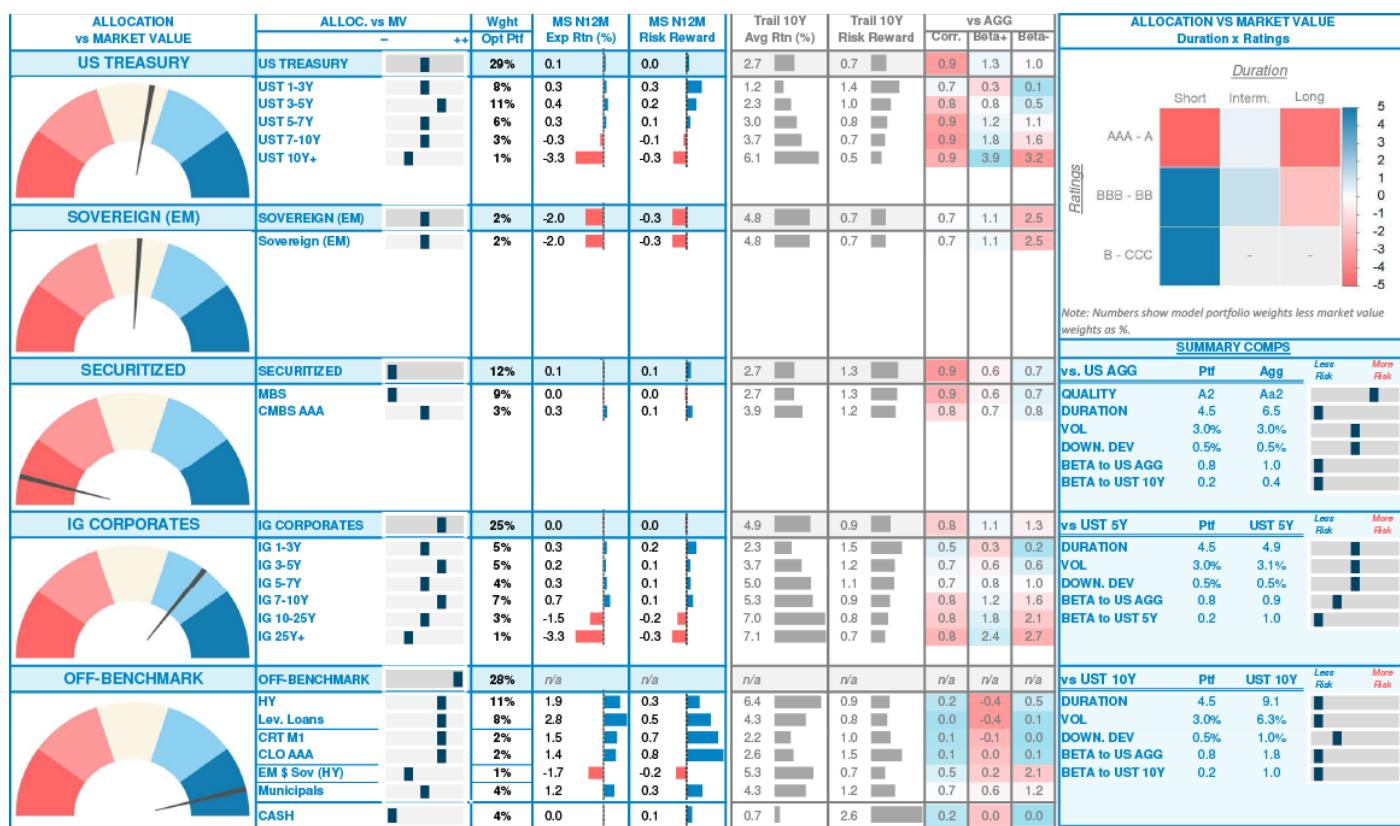
**Quality:** The medium-vol optimal USD fixed income portfolio has an implied rating of A3 versus the US AGG's Aa2.

**Exhibit 77:** US Fixed Income Optimal Portfolio (3.0% Vol) Breakdown



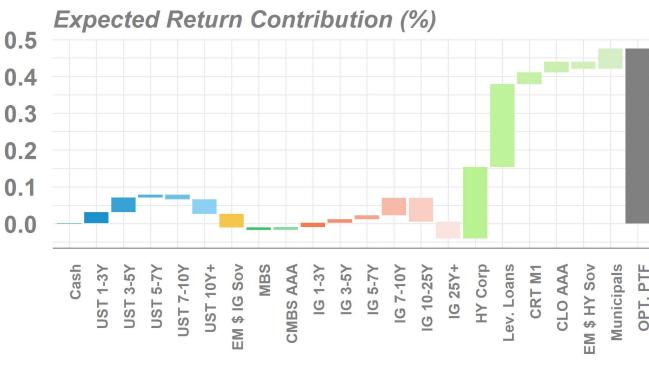
Source: Morgan Stanley Research, Bloomberg. Note: Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments.

**Exhibit 78:** Morgan Stanley US Fixed Income Asset Allocation - Medium-Vol Portfolio



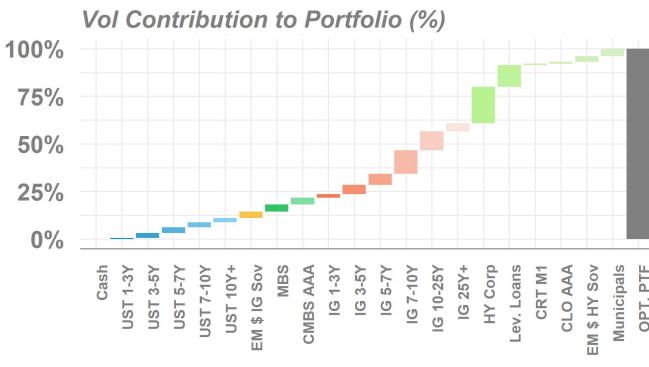
Source: Morgan Stanley Research, Bloomberg, S&P LCD. Note: Shows breakdown of portfolio targeting 3.0% annualized vol. Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments. For the 'dials', each segment represents 5% allocation, ranging from -12.5% to +12.5% vs. market weight; similarly allocation 'bars' range from -10% to +10% for all assets except Sovereign (EM), EM Sovereign (HY), CRT M1 and CLO AAA, which range from -5% to +5% versus market weight due to smaller market cap.

**Exhibit 79:** USD Fixed Income Optimal Portfolio (3.0% Vol) Expected Return Contribution



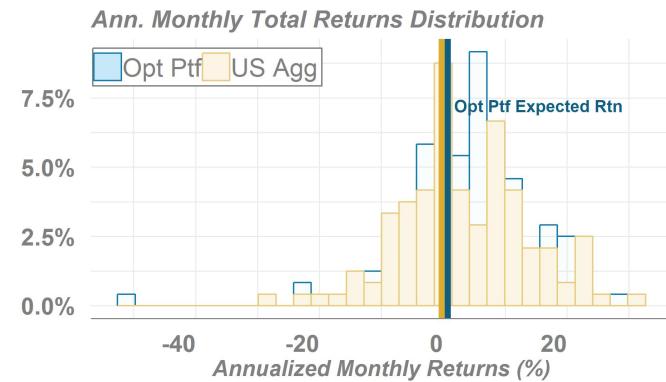
Source: Morgan Stanley Research forecasts, Bloomberg. Note: Based on Morgan Stanley N12M expected returns and optimal portfolio weights.

**Exhibit 81:** USD Fixed Income Optimal Portfolio (3.0% Vol) Risk Contribution



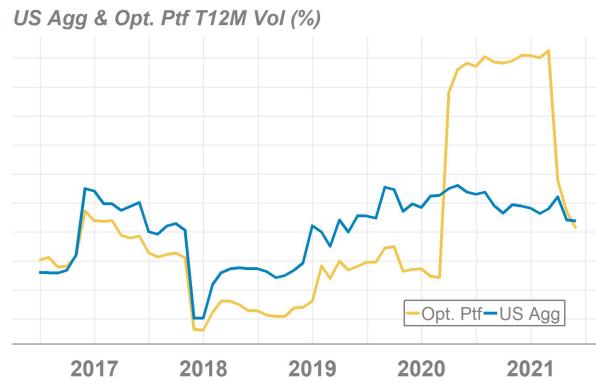
Source: Morgan Stanley Research; Note: Based on trailing 10Y volatility and covariances, calculated on monthly total returns.

**Exhibit 80:** USD Fixed Income Optimal Portfolio (3.0% Vol Target) Historical Returns Distribution vs. US Agg



Source: Morgan Stanley Research forecasts, Bloomberg. Note: Historical returns based on realized monthly returns over last 10 years and optimal portfolio weights

**Exhibit 82:** USD Fixed Income Optimal Portfolio (3.0% Vol Target) Historical Volatility



Source: Morgan Stanley Research; Note: Based on trailing 10Y volatility and covariances, calculated on monthly total returns optimal portfolio weights.

## Optimal USD Fixed Income High-Vol Portfolio – 4.0% Vol

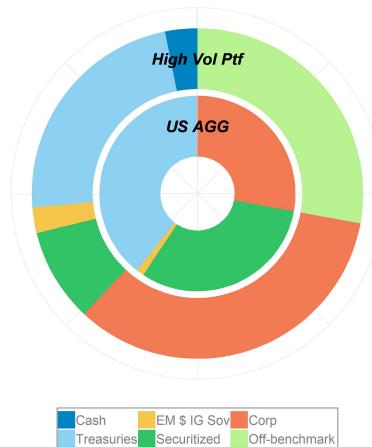
**Expected return:** The optimal USD fixed income portfolio targeting higher risk than US AGG at 4.0% annualized vol has an expected return of 0.2%, versus -0.2% for the benchmark.

**Asset allocation:** The high-vol portfolio is UW US Treasuries, EW Sovereigns (EM IG), UW Securitized, OW Corporates and OW Off-benchmark versus these segments' market values. In particular, the portfolio has a large UW in MBS, and large OW in Leveraged Loans and long-dated corporate credit.

**Duration:** The high-vol optimal USD fixed income portfolio has a duration of 7.0 versus the US AGG's duration of 6.5. It also has lower duration versus UST 10Y.

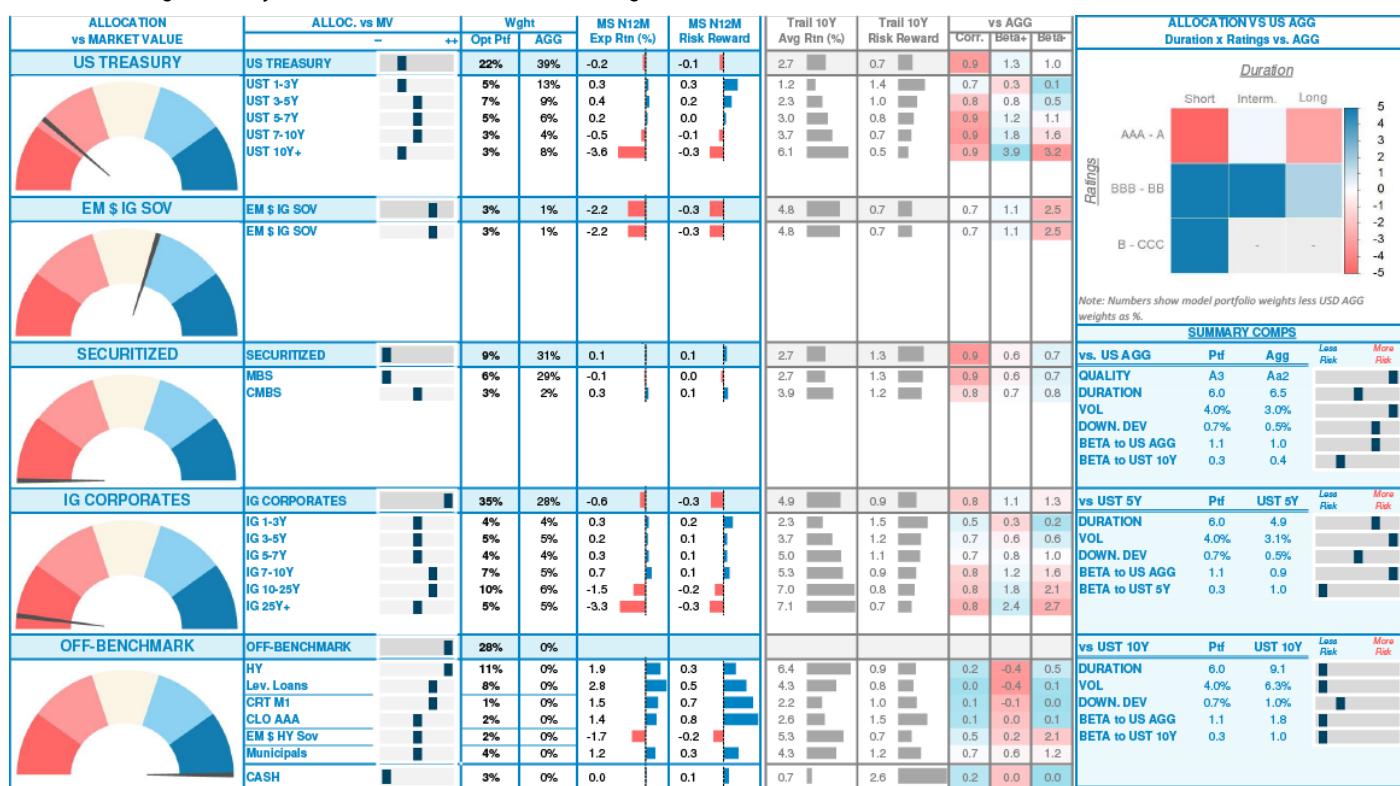
**Quality:** The high-vol optimal USD fixed income portfolio has an implied rating of A3 versus the US AGG's Aa2.

**Exhibit 83:** USD Fixed Income Optimal Portfolio (4.0% Vol) Breakdown



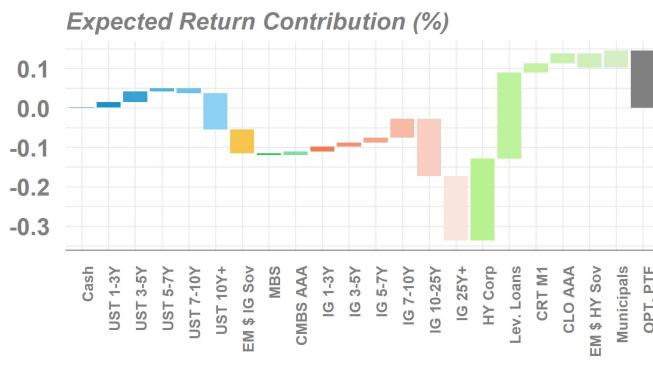
Source: Morgan Stanley Research, Bloomberg. Note: Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments.

**Exhibit 84:** Morgan Stanley US Fixed Income Asset Allocation - High-Vol Portfolio



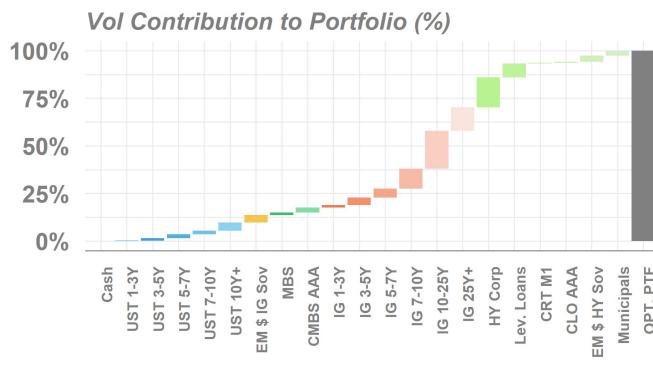
Source: Morgan Stanley Research, Bloomberg, S&P LCD. Note: Shows breakdown of portfolio targeting 3.0% annualized vol. Optimization seeks to maximize risk reward, based on Morgan Stanley N12M expected total returns, trailing 10Y volatility and correlations, and constraints on weights based on current share of amount outstanding of market segments. For the 'dials', each segment represents 5% allocation, ranging from -12.5% to +12.5% vs. market weight; similarly allocation 'bars' range from -10% to +10% for all assets except Sovereign (EM), EM Sovereign (HY), M1 and CLO AAA, which range from -5% to +5% versus market weight due to smaller market cap.

**Exhibit 85:** USD Fixed Income Optimal Portfolio (4.0% Vol) Expected Return Contribution



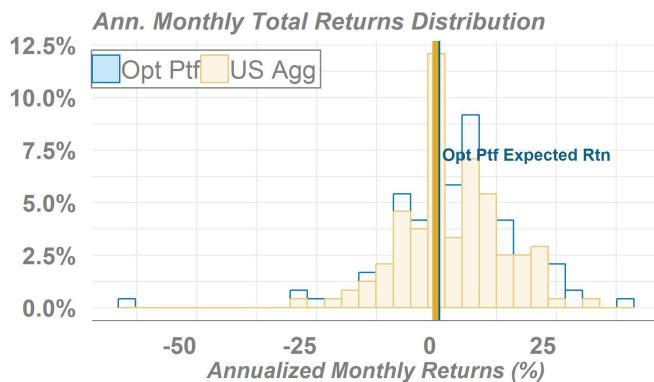
Source: Morgan Stanley Research forecasts, Bloomberg. Note: Based on Morgan Stanley N12M expected returns and optimal portfolio weights.

**Exhibit 87:** USD Fixed Income Optimal Portfolio (4.0% Vol) Risk Contribution



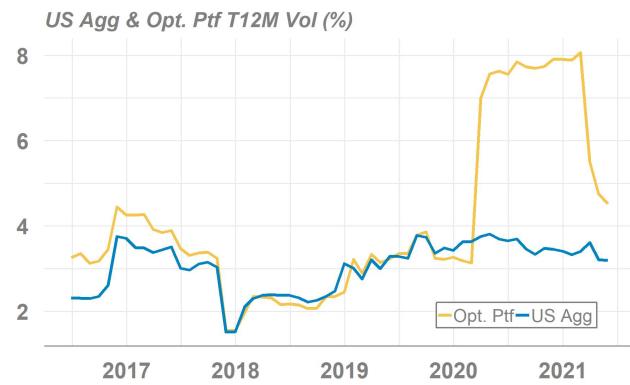
Source: Morgan Stanley Research; Note: Based on trailing 10Y volatility and covariances, calculated on monthly total returns

**Exhibit 86:** USD Fixed Income Optimal Portfolio (4.0% Vol Target) Historical Returns Distribution vs. US AGG



Source: Morgan Stanley Research forecasts, Bloomberg. Note: Historical returns based on realized monthly returns over last 10 years and optimal portfolio weights

**Exhibit 88:** USD Fixed Income Optimal Portfolio (4.0% Vol Target) Historical Volatility



Source: Morgan Stanley Research; Note: Based on trailing 10Y volatility and covariances, calculated on monthly total returns optimal portfolio weights.

## Appendix - US Fixed Income Valuations

**Exhibit 89: US Fixed Income Valuations Table**

Asset	Rating	O/S (\$ bn)	Dur.	Yld (%)	Spred (bp)	%tile	Latest		Perf. (hp)		Next 12M Exp.			
							1M Chg	12M Chg	Vol (%)	TR (%)	XS (%)	RR	RR vs Agg	
<b>US AGG</b>														
US Agg	AA1/AA2	23.9	6.5	1.5	■	31	■	■	0	-34	3.1	-0.2	-0.4	-0.1
US Treasury	AAA/AAA	9.1	6.9	1.0	■	~	~	~	3	30	3.8	0.2	0.0	0.1
UST 1-3Y	AAA/AAA	3.0	2.0	0.2	■	~	~	~	0	-1	0.6	0.3	0.0	0.5
UST 3-5Y	AAA/AAA	2.1	4.0	0.6	■	~	~	~	0	-1	1.9	0.6	0.0	0.3
UST 5-7Y	AAA/AAA	1.4	6.0	1.1	■	~	~	~	0	0	3.4	0.4	0.0	0.1
UST 7-10Y	AAA/AAA	0.9	8.2	1.5	■	~	~	~	0	1	5.0	-0.1	0.0	0.1
UST 10Y+	AAA/AAA	1.8	18.7	2.3	■	~	~	~	0	0	12.7	-1.1	0.0	-0.2
EM \$ IG Sov	BAA1/BAA2	0.3	10.2	2.7	■	121	■	■	-8	-59	5.3	-1.8	-1.2	-0.3
Securitized	AAA/AA1	7.3	4.3	1.8	■	20	■	■	6	-48	1.8	0.2	-0.5	0.1
MBS	AAA/AAA	6.7	4.2	1.8	■	17	■	■	7	-44	1.8	0.1	-0.5	0.1
CMBS AAA	AAA/AA1	0.5	5.2	1.5	■	59	■	■	-5	-89	2.7	0.5	-0.1	0.2
IG Corp	A3/BAA1	6.0	8.6	2.2	■	85	■	■	-3	-61	4.7	-1.0	-0.8	-0.2
IG 1-3Y	A3/BAA1	1.0	1.8	0.5	■	32	■	■	-3	-49	0.8	0.3	0.1	0.4
IG 3-5Y	A3/BAA1	1.1	3.7	1.2	■	55	■	■	-3	-60	2.1	0.2	0.1	0.2
IG 5-7Y	A3/BAA1	0.8	5.3	1.8	■	72	■	■	-2	-55	3.1	0.3	0.2	0.1
IG 7-10Y	A3/BAA1	1.0	7.5	2.4	■	93	■	■	-3	-65	4.6	0.7	0.6	0.2
IG 10-25Y	A3/BAA1	1.2	13.0	3.3	■	124	■	■	-4	-78	7.7	-1.5	-1.9	-0.2
IG 25Y+	A3/BAA1	1.0	18.0	3.4	■	120	■	■	-3	-54	10.7	-1.3	-2.9	-0.3
<b>OFF-BENCHMARK US FIXED INCOME</b>														
HY Corp	BA3/B1	1.6	3.9	4.1	■	295	■	■	6	-242	4.2	1.9	2.2	0.5
EM \$ HY Sov	BAA3/BA1	1.0	8.6	4.3	■	285	■	■	-16	-161	5.2	-1.7	-1.5	-0.3
Municipals	AA2/AA3	1.4	5.1	1.0	■	~	~	~	~	~	2.2	1.2	0.5	0.5
CRT M1	BAA2/BAA2	0.0	~	~	■	~	~	~	~	~	2.7	1.5	0.5	0.6
Lev. Loans	B1/B2	1.2	~	4.3	■	403	■	■	-6	-171	2.6	2.8	2.7	1.1
CLO AAA	AAA/AAA	0.4	~	1.3	■	102	■	■	0	-70	0.6	1.4	1.1	2.3

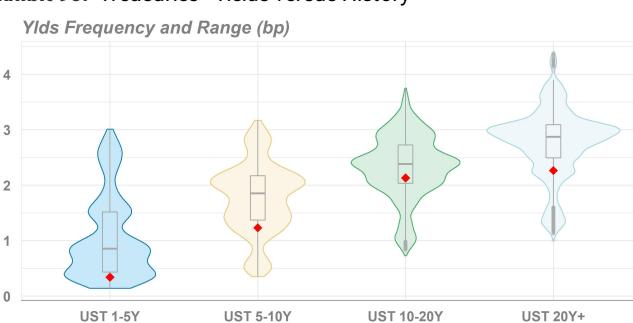
Note:

Data as of Thu 03 June 2021

'Risk-reward' estimated as next 12 months total returns divided by an average of trailing 1Y and trailing 10Y volatility.

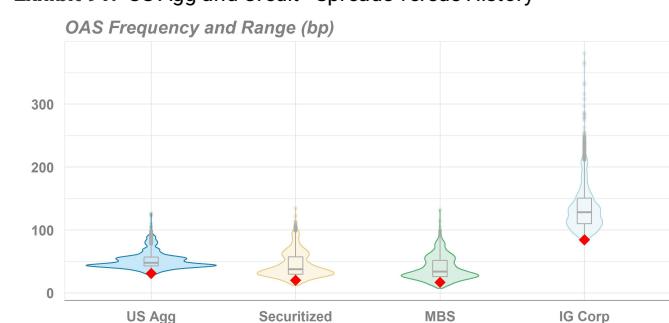
Source: Bloomberg, S&P LCD, Morgan Stanley Research

**Exhibit 90: Treasuries - Yields versus History**



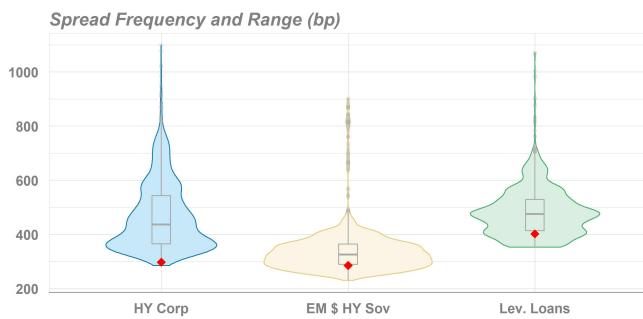
Source: Morgan Stanley Research, Bloomberg; Note: Red marker represents latest levels. Shows range and frequency over last 10 years.

**Exhibit 91: US Agg and Credit - Spreads versus History**



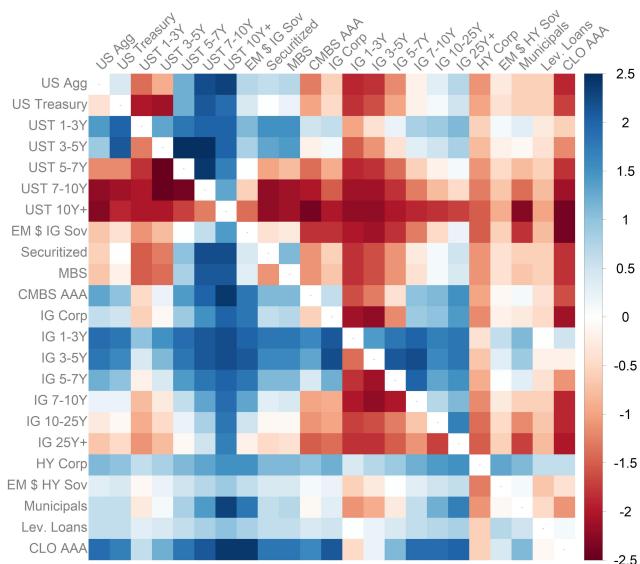
Source: Morgan Stanley Research, Bloomberg; Note: Red marker represents latest levels. Shows range and frequency over last 10 years.

**Exhibit 92:** Off-benchmark US Fixed Income - Spreads versus History



Source: Morgan Stanley Research, Bloomberg; Note: Red marker represents latest levels. Shows range and frequency over last 10 years.

**Exhibit 94:** Yields Differentials Heat Map



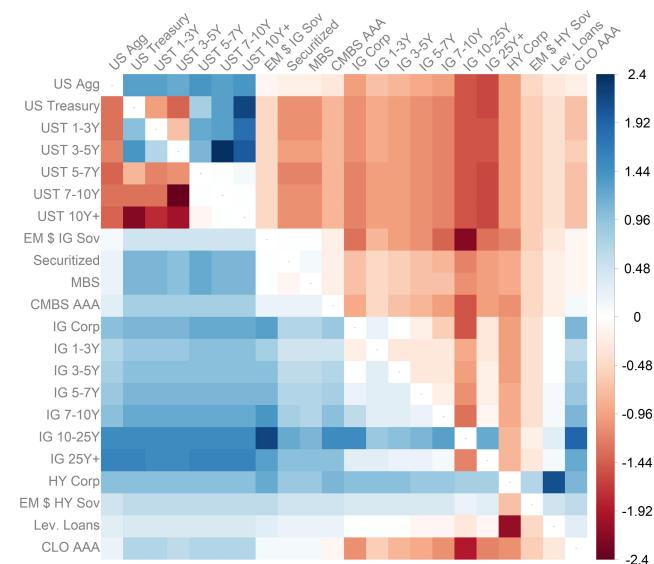
Source: Morgan Stanley Research, Bloomberg, S&P LCD; Note: Blue square means Asset A (top/horizontal) yield is high versus Asset B (left/vertical) compared to history. Red square means Asset A yield is low versus Asset B compared to history.

**Exhibit 93: Relative Spreads and Yields versus Agg**

Asset	Yld vs. USD Agg		Sprd vs. USD Agg	
	Yld (%)	Yld Z	Sprd (bp)	Sprd Z
<b>US AGG</b>				
US Treasury	-0.6	  	~	~
EM \$ IG Sov	1.2	  	91	  
Securitized	0.2	  	-11	  
MBS	0.2	  	-14	  
CMBS AAA	0.0	  	28	  
IG Corp	0.6	  	53	  
<b>OFF-BENCHMARK US FIXED INCOME</b>				
HY Corp	2.5	  	267	  
EM \$ HY Sov	2.8	  	255	  
Lev. Loans	2.8	  	372	  

Source: Morgan Stanley Research, Bloomberg; Note: Red marker represents latest levels. Shows range and frequency over last 10 years.

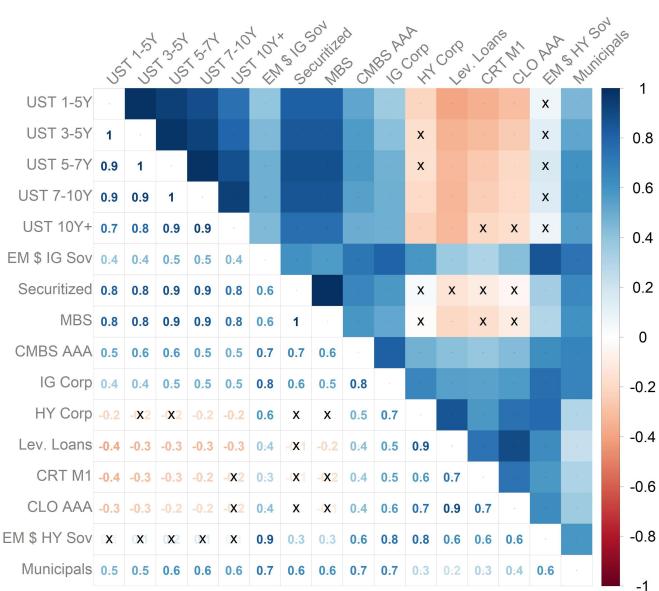
**Exhibit 95:** Spread Differentials Heat Map



Source: Morgan Stanley Research, Bloomberg, S&P LCD; Note: Blue square means Asset A (top/horizontal) spread is high versus Asset B (left/vertical) compared to history. Red square means Asset A spread is low versus Asset B compared to history.

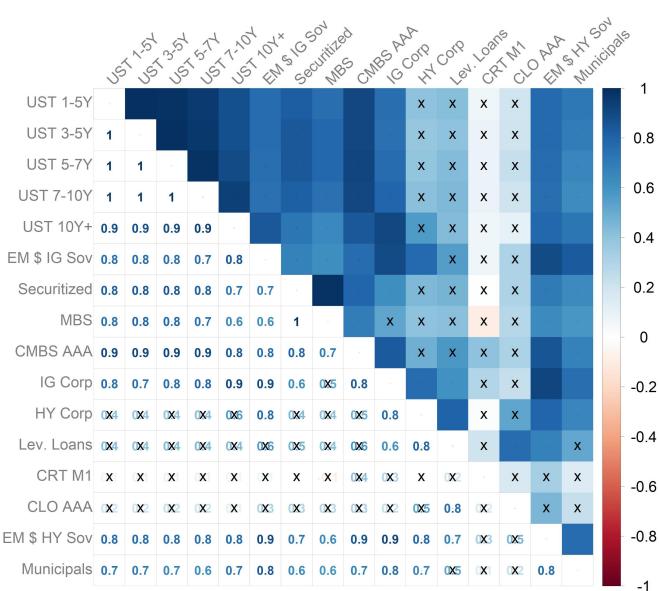
## Appendix II - Covariances and Correlations

**Exhibit 96:** US Fixed Income Return Correlations - Last 10 Years



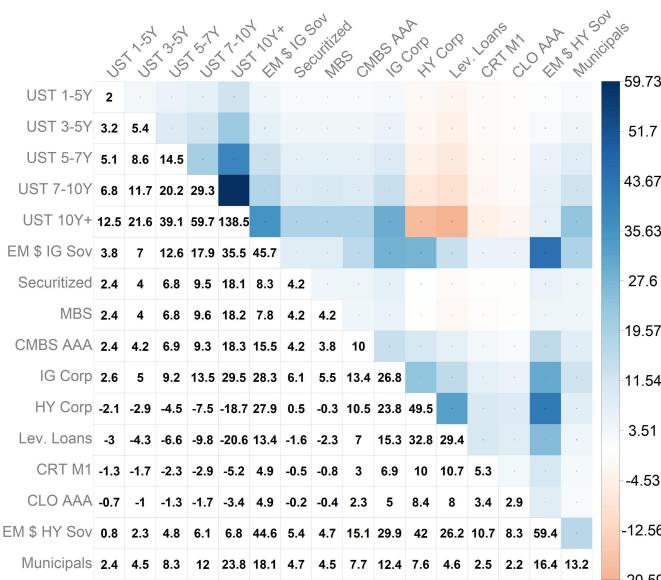
Source: Morgan Stanley Research, Bloomberg, S&P LCD; Note: Based on last 20 years weekly returns.

**Exhibit 97:** US Fixed Income Return Correlations - Last 1 Year



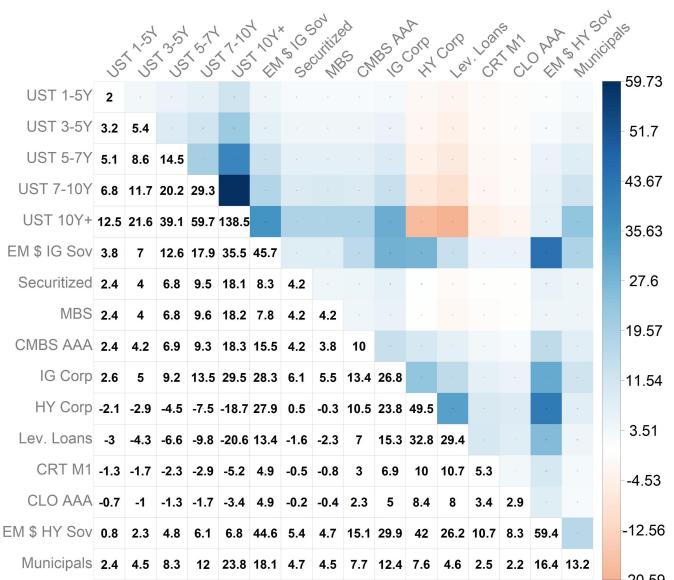
Source: Morgan Stanley Research, Bloomberg, S&P LCD; Note: Based on last 1 year weekly returns.

**Exhibit 98:** US Fixed Income Spread Covariances - Last 10 Years



Source: Morgan Stanley Research, Bloomberg, S&P LCD; Note: Based on last 20 years weekly spread change.

**Exhibit 99:** US Fixed Income Spread Correlations - Last 1 Year



Morgan Stanley Research, Bloomberg, S&P LCD; Note: Based on last 20 years weekly spread change.

## Appendix III - Methodology Notes and Assumptions

### Next 12M Expected Returns

Our 12M expected returns are based on the most current price targets from various Morgan Stanley Fixed Income strategists.

- **Treasuries** total returns forecasts for 2Y, 50Y, 10Y and 30Y incorporate Morgan Stanley strategist expectations of yield changes, as well as roll-down, based on Macro Strategy team's yield targets across the curve; forecasts for Treasury USD AGG sub-indices are then estimated on a duration-matched basis.
- **Credit** excess returns forecasts incorporate Morgan Stanley strategist expectations of spread changes and expected loss over the next 12 months, accounting for USD AGG sub-indices' spread duration. Total returns are estimate by adding duration-/maturity-matched Treasury total returns.

For market segments where there are no Morgan Stanley price targets, we use latest yield as proxy for next 12M expected returns.

### Long-Run Expected Returns

Our long-run expected returns used for this exercise are a simplified form of what we use for our cross-asset long-term capital markets assumptions. Forecasts assume investors hold duration unchanged over the next 10 years from today, and returns are based on (1) the initial level of yields less (2) average credit loss, where (2) is a function of average tenor and rating of asset. For more, please see [Cross-Asset Dispatches: What Will Markets Return? 2020 Edition \(11 Dec 2020\)](#).

### Optimization

We perform Markowitz mean-variance portfolio optimizations, attempting to solve for a set of asset weights which maximizes portfolio expected returns, subject to a target volatility level and weight constraints. More formally, for a portfolio of  $k$  assets with next 12 month expected returns of  $\mu_i$ , let  $w_i$  be the weight of asset  $i$  such that

$\sum_{i=1}^k w_i = 1$ , and  $w_{ceiling i}$  be the . With portfolio mean expected returns as  $w^T \mu$  and portfolio variance as  $w^T \Sigma w$ , where  $\Sigma$  is the covariance matrix of asset returns,  $w_e$  is the vector of weights that solves the optimization problem:

$$w_e = \arg \max_w w^T \mu \quad subject \ to \quad w^T \Sigma w = s_*^2, w^T 1 = 1, w_{ceiling i} \geq w_i \geq 0$$

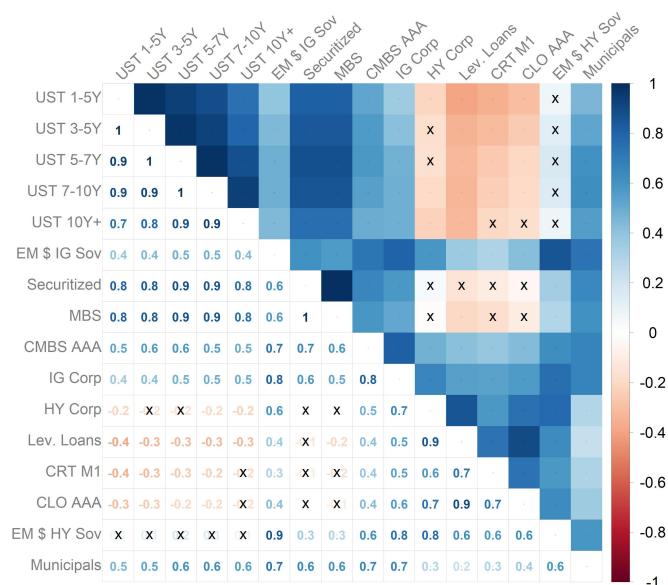
For  $\mu_i$ , we use Morgan Stanley's next 12M expected returns. For  $\Sigma$ , we estimate sample covariance matrix from monthly returns over the last 10 years ([Exhibit 100](#)).

**Exhibit 100:** Covariance Matrix - Trailing 10 Years

	UST 1-5Y	UST 3-5Y	UST 5-7Y	UST 7-10Y	UST 10Y+	EM \$ IG Sov	Securitized	CMBS AAA	IG Corp	HY Corp	Lev. Loans	CRT M1	CLO AAA	EM \$ HY Sov	Municipals	
UST 1-5Y	2															
UST 3-5Y	3.2	5.4														
UST 5-7Y	5.1	8.6	14.5													
UST 7-10Y	6.8	11.7	20.2	29.3												
UST 10Y+	12.5	21.6	39.1	59.7	138.5											
EM \$ IG Sov	3.8	7	12.6	17.9	35.5	45.7										
Securitized	2.4	4	6.8	9.5	18.1	8.3	4.2									
MBS	2.4	4	6.8	9.6	18.2	7.8	4.2	4.2								
CMBS AAA	2.4	4.2	6.9	9.3	18.3	15.5	4.2	3.8	10							
IG Corp	2.6	5	9.2	13.5	29.5	28.3	6.1	5.5	13.4	26.8						
HY Corp	-2.1	-2.9	-4.5	-7.5	-18.7	27.9	0.5	-0.3	10.5	23.8	49.5					
Lev. Loans	-3	-4.3	-6.6	-9.8	-20.6	13.4	-1.6	-2.3	7	15.3	32.8	29.4				
CRT M1	-1.3	-1.7	-2.3	-2.9	-5.2	4.9	-0.5	-0.8	3	6.9	10	10.7	5.3			
CLO AAA	-0.7	-1	-1.3	-1.7	-3.4	4.9	-0.2	-0.4	2.3	5	8.4	8	3.4	2.9		
EM \$ HY Sov	0.8	2.3	4.8	6.1	6.8	44.6	5.4	4.7	15.1	29.9	42	26.2	10.7	8.3	59.4	
Municipals	2.4	4.5	8.3	12	23.8	18.1	4.7	4.5	7.7	12.4	7.6	4.6	2.5	2.2	16.4	13.2

Source: Morgan Stanley Research, Bloomberg, S&P LCD. \* Note: Based on monthly total returns over the last 10Y; covariance is annualized.

**Exhibit 101:** Correlation Matrix - Trailing 10 Years

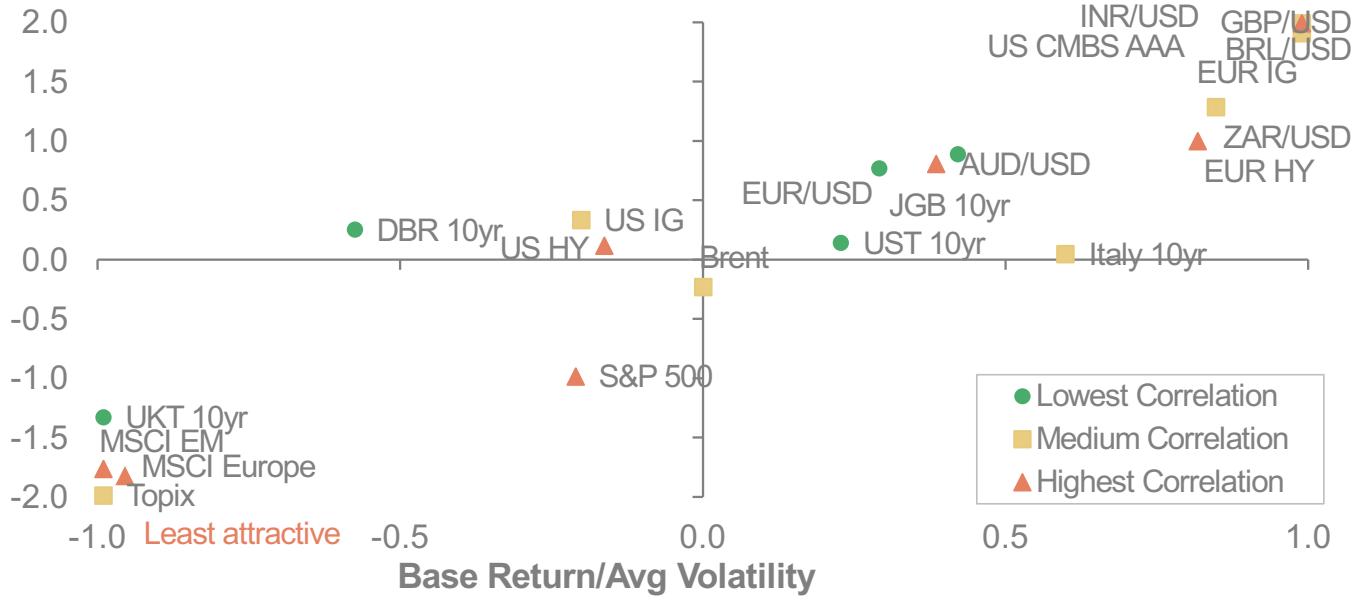


Source: Morgan Stanley Research, Bloomberg, S&P LCD. \* Note: Based on monthly total returns over the last 10Y; covariance is annualized.

## Asset class forecasts and risk/reward

Global Asset Classes - Expected 12-Month Return vs. Risk

### Skew (Bull+Bear)/Avg Vol



Source: Morgan Stanley Research. Note: 'Expected returns' based on MS Strategy 12m forecasts and current market prices. Correlation is six-month relative to global equities (MSCI ACWI). Credit returns are excess returns.

**Exhibit 102:** Morgan Stanley key market forecasts

	As of Jun 04, 2020	Q4 2020 Forecast		
		Bear	Base	Bull
<b>Equities</b>				
S&P 500	3,112	2,500	3,000	3,250
MSCI Europe	1,493	1,050	1,310	1,550
Topix	1,604	1,050	1,350	1,550
MSCI EM	989	650	800	1,050
<b>FX</b>				
USD/JPY	109	94	99	104
EUR/USD	1.13	1.10	1.16	1.22
GBP/USD	1.26	1.15	1.35	1.49
AUD/USD	0.69	0.67	0.71	0.75
USD/INR	75.6	63.0	70.5	77.0
USD/ZAR	16.9	15.2	16.0	17.6
USD/BRL	5.12	4.00	4.20	4.50
<b>Rates (% percent)</b>				
UST 10yr	0.82	1.45	0.80	0.40
DBR 10yr	-0.32	0.30	0.00	-1.00
UKT 10yr	0.31	1.40	1.20	0.15
JGB 10yr	0.04	0.10	0.00	-0.15
<b>Credit (bps)</b>				
US IG	166	250	200	100
US HY	585	925	725	400
EUR IG	114	115	55	40
EUR HY	470	590	355	265
Italy 10yr	174	350	125	50
EM Sovs	474	430	360	280
US CMBS AAA	143	125	95	75
<b>Commodities</b>				
Brent	40.0	25.0	40.0	50.0

Source: Markit, Datastream, Bloomberg, Yield Book, Morgan Stanley Research forecasts

**Exhibit 103:** 12m return and risk forecasts

Asset	12m Return			Volatility		Return/Risk Base case Return/Vol
	Bear Case	Base Case	Bull Case	Option Implied	LT Average	
<b>Equities</b>						
S&P 500	-30%	-17.4%	-2.2%	10%	23%	18% -0.21
MSCI Europe	-43%	-23.4%	-10%	20%	20%	17% -0.95
Topix	-50%	-28.1%	-3%	21%	20%	20% -1.14
MSCI EM	-49%	-28.1%	-14%	24%	16%	16% -1.41
<b>FX</b>						
JPY/USD	8%	7.7%	29%	7%	9%	2.25
EUR/USD	-6%	3.2%	12%	6%	9%	0.42
GBP/USD	-15%	12.6%	33%	10%	9%	1.35
AUD/USD	-5%	13.8%	13%	10%	11%	0.39
INR/USD	1%	16.8%	41%	7%	7%	2.46
ZAR/USD	-3%	13.4%	24%	16%	16%	0.85
BRL/USD	26%	42.3%	55%	16%	15%	2.69
<b>Rates</b>						
UST 10yr	-4%	1.4%	5%	6%	6%	0.23
DBR 10yr	-5%	-2.9%	7%	5%	5%	-0.57
UKT 10yr	-10%	-7.2%	2%	6%	6%	-1.31
JGB 10yr	0%	0.6%	2%	2%	2%	0.29
<b>Credit (Excess Return)</b>						
US IG	-5%	-1.1%	7%	8%	3%	-0.20
US HY	-10%	-1.7%	11%	15%	6%	-0.16
EUR IG	1%	4.3%	5%	4%	2%	1.56
EUR HY	-2%	1.2%	11%	13%	5%	0.82
Italy 10yr	-13%	6.1%	13%	11%	10%	0.60
EM Sovs	8%	13.2%	19%	14%	7%	1.21
US CMBS AAA	3%	6.1%	8%	5%	3%	1.43
Agency MBS	0.9%	1.2%	1.3%	2%	1%	0.67
<b>Commodities</b>						
Brent	-56%	0.0%	47%	36%	36%	0.00

Source: Bloomberg, Datastream, Markit, Yieldbook, Morgan Stanley Research forecasts; Note: LT average vol is 10 year realized. Option implied vol is 1y implied vol where available, or otherwise 1y realised vol. Returns are annualised, based on Q420 target levels.

## Morgan Stanley long-run returns forecasts

**Exhibit 104:** Morgan Stanley 10-year expected return forecasts across asset classes

	10Y Nominal Expected Rtns						Risk Premium		
	Current	(A) Income	(B) Earnings	(C) Repricing	LT Avg	Z-score	Current	LT Avg	Z-score
<b>EQUITIES</b>									
S&P 500	6.2	1.8	5.0	-0.6	8.4		5.0	4.7	
MSCI Europe	8.6	3.4	3.5	1.5	7.6		8.3	4.4	
MSCI UK	11.1	4.3	3.8	2.6	8.4		10.3	4.7	
MSCI Japan	7.1	2.1	2.4	2.6	4.5		6.1	2.7	
MSCI EM	6.8	2.5	5.3	-1.0	6.3		5.5	2.6	
<b>GOV'T BONDS</b>									
UST 5Y	1.0	0.4	0.6	0.0	3.2		-0.3	1.2	
UST 10Y	1.2	0.8	0.4	0.0	3.7		0.0	1.7	
DBR 5Y	0.1	-0.6	0.6	0.0	2.5		-0.5	1.0	
DBR 10Y	0.4	-0.3	0.7	0.0	3.2		-0.3	1.6	
UKT 5Y	0.6	0.1	0.5	0.0	3.3		-2.3	0.4	
UKT 10Y	0.8	0.3	0.5	0.0	3.7		-2.0	0.8	
JGB 5Y	0.5	-0.1	0.6	0.0	1.0		0.7	1.4	
JGB 10Y	0.9	0.0	0.9	0.0	1.8		1.1	2.1	
<b>FIXED INCOME &amp; CREDIT</b>									
USD Agg	1.9	1.4	1.1	0.0	4.1		0.8	0.6	
USD IG	3.1	2.4	1.7	0.2	5.1		1.8	1.3	
USD HY	4.2	6.4	-0.1	2.0	6.2		3.1	2.7	
USD BBB	3.4	2.8	1.6	0.3	5.5		2.1	1.7	
USD BB	3.5	4.6	-0.1	1.0	5.5		2.4	2.0	
EUR Agg	0.8	0.3	1.1	0.1	3.1		0.5	0.2	
EUR IG	1.4	1.0	1.0	0.1	3.6		1.3	1.0	
EUR HY	2.2	4.2	-0.2	1.9	5.8		2.1	3.2	
EUR BBB	1.7	1.3	1.0	0.2	4.0		1.5	1.4	
EUR BB	2.0	3.4	-0.6	1.0	5.1		1.9	2.5	
<b>EM \$ CREDIT</b>									
Global	4.1	4.8	1.1	1.2	6.3		2.9	2.5	
Asia	4.1	4.3	1.1	0.8	4.2		3.0	1.7	

Source: Bloomberg, Morgan Stanley Research forecasts

# Valuation Methodology And Risks

## Exhibit 105: Trade Ideas

Trade	Date	Entry Level	Rationale	Risks
Short beta weighted 10y breakevens (Dv01 0.7 : 1)	14-May-21	208bp	We think breakevens are too high and real yields are too low relative to nominal yields.	The risk is that breakevens continue to widen while real rates stay low.
Like Abu Dhabi Hard Currency Bonds	13-May-20	NA	Abu Dhabi's fiscal and external breakeven oil prices are low. Technicals are also supportive as investor positioning is a large underweight.	Lower oil prices.
Like Saudi Arabia Hard Currency Bonds	8-Mar-21	NA	Saudi Arabia stands to benefit from the rise in oil prices as well as production volume. We have revised our gross issuance estimate lower to US\$12 billion and see downside risk to this estimate.	Lower oil prices and higher-than-expected supply.
Buy ADGLXY 36 versus ADGB 31	6-Apr-21	73	The ADGLXY 2036 has average life and duration similar to those of the ADGB 31. The difference in spread, however, is 73bp which we think compensates enough for the bond structure and EMBI ineligibility of the ADGLXY complex.	Significant fall in oil prices.
Buy PERTIJ 49 versus INDON 50	18-Mar-21	105	The Pertamina curve has lagged the sovereign curve and some of the bonds should benefit from low cash prices now, of which PERTIJ 49 is our favoured pick. We prefer oil exporters over importers on account of their ability to benefit from a recovery in oil prices, making Indonesia as a net oil importer a less preferred curve.	M&A activity by Pertamina.
Buy PEMEX EUR 29	19-Apr-21	485	Cheap valuations. Government support is coming via both tax cuts and capital injections while no issuance is expected.	Lower-than-expected government support.
Like Mexico Hard Currency Bonds	19-Apr-21	NA	Among wider IG credits we like Mexico. We underestimated the willingness to run a tight fiscal policy despite a challenging growth backdrop. Mexico now stands out in terms of fiscal strength, with it actually having improved on a relative basis versus peers. We also expect above-consensus growth for both 2021 and 2022. Positioning has reduced recently to be flat versus the benchmark and we don't expect any further external bond issuance.	Unexpected midterm election results and fiscals deteriorating faster than expected.

Source: Morgan Stanley Research

## Exhibit 106:

### History of recommendations for Mexico Hard Currency Bonds

Trade	Entry Date	Exit Date
Like Mexico Hard Currency Bonds	18-May-20	19-Jun-20
Dislike Mexico Hard Currency Bonds	17-Aug-20	22-Oct-20
Dislike Mexico Hard Currency Bonds	4-Jan-21	22-Mar-21

Source: Morgan Stanley Research

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the swap agreement that is the subject of the investment recommendation will increase.

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Not-Rated/Hold	0	0%	0	0%	0%	0	0%
Underweight/Sell	530	15%	91	10%	17%	209	14%
<b>TOTAL</b>	<b>3,477</b>		<b>872</b>			<b>1530</b>	

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