

# Index interest rate sensitivity analysis

## Hypothetical estimated impact of parallel shifts in the U.S. Treasury yield curve

Index	Instantaneous rate shock (%)					
	Curve shifts up 50 bps	Curve shifts up 100 bps	Curve shifts up 150 bps	Curve shifts down 50 bps	Curve shifts down 100 bps	Curve shifts down 150 bps
<b>Bloomberg US Aggregate Bond Index</b>	-3.03	-5.90	-8.62	3.19	6.55	10.08
<b>Bloomberg US Universal Index</b>	-2.92	-5.69	-8.31	3.07	6.29	9.67
<b>Bloomberg US Government/Credit Index</b>	-3.09	-5.98	-8.69	3.30	6.84	10.64
<b>Bloomberg US Intermediate Aggregate Index</b>	-2.22	-4.38	-6.48	2.26	4.55	6.86
<b>Bloomberg US Intermediate Government/Credit Index</b>	-1.85	-3.65	-5.41	1.90	3.86	5.86

Index	12-month gradual rate shock (%)					
	Curve shifts up 50 bps	Curve shifts up 100 bps	Curve shifts up 150 bps	Curve shifts down 50 bps	Curve shifts down 100 bps	Curve shifts down 150 bps
<b>Bloomberg US Aggregate Bond Index</b>	2.61	0.04	-2.40	8.18	11.17	14.31
<b>Bloomberg US Universal Index</b>	3.03	0.56	-1.79	8.35	11.21	14.21
<b>Bloomberg US Government/Credit Index</b>	2.47	-0.11	-2.53	8.18	11.35	14.75
<b>Bloomberg US Intermediate Aggregate Index</b>	3.45	1.63	-0.14	7.17	9.06	10.94
<b>Bloomberg US Intermediate Government/Credit Index</b>	3.71	2.29	0.91	6.64	8.16	9.71

As of 12/31/23. Source: FactSet Multi-Asset Class Risk Model

Index duration (years): Bloomberg US Aggregate Bond Index (5.80), Bloomberg US Government/Credit Index (5.88), Bloomberg US Intermediate Aggregate Index (4.34), Bloomberg Intermediate Government/Credit Index (3.67)

### Assumptions:

1. Assumes parallel up/down shifts in the U.S. Treasury yield curve, either instantaneously or gradually (in equally-spaced and equally-sized increments over a 12-month period).
2. Assumes credit spreads remain constant over the observation period.
3. 12-month gradual rate shock assumes all coupon income and principal repayments are reinvested at pre-determined forward interest rates over the observation period.

For illustrative purposes only and not indicative of any specific investment. Indexes are unmanaged and investments cannot be made in an index.

In addition, indexes do not reflect the impact of advisory or other fees. These hypothetical scenarios are based on a simple mathematical formula and are not a guarantee of future performance.

Bond prices are sensitive to changes in interest rates and a rise in interest rates can cause a decline in their prices.

**Bloomberg US Aggregate Bond Index:** Is an unmanaged index composed of securities from the Bloomberg Government/Corporate Bond Index, Mortgage-Backed Securities Index and the Asset-Backed Securities Index. Total return comprises price appreciation/depreciation and income as a percentage of the original investment. Indices are rebalanced monthly by market capitalization.

**Bloomberg US Universal Index:** represents the union of the US Aggregate Index, US Corporate High-Yield, Investment-Grade 144A Index, Eurodollar Index, US Emerging Markets Index and the non-ERISA eligible portion of the CMBS Index. The index covers USD-denominated, taxable bonds that are rated either investment grade or below investment grade.

**Bloomberg US Government/Credit Index** includes all medium and larger issues of U.S. government, investment-grade corporate and investment-grade international dollar-denominated bonds.

**Bloomberg US Intermediate Government/Credit Index** is an unmanaged index based on all publicly issued intermediate government and corporate debt securities with maturities of 1-10 years. This index represents asset types which are subject to risk, including loss of principal.

**Bloomberg US Intermediate Aggregate Index** is an unmanaged index that consists of 1-10 year Governments, 1-10 year Corporates, all Mortgages and all Asset-Backed Securities within the Aggregate Index (i.e. the Aggregate Index less the Long Government/Corporate Index).

**Performance quoted represents past performance which is no guarantee of future results.**

Investments are subject to risks and fluctuate in value.

Investment-grade securities are securities that are rated at least "BBB" or unrated securities of a comparable quality. Non-investment-grade securities are securities that are not rated at least "BBB" or unrated securities of a comparable quality.

The value of some mortgage-backed securities may be particularly sensitive to changes in prevailing interest rates, and although the securities are generally supported by some form of government or private insurance, there is no assurance that private guarantors or insurers will meet their obligations.

Bond prices are sensitive to changes in interest rates, and a rise in interest rates can cause a decline in their prices.

Duration is a measure of a security's price sensitivity to changes in interest rates. Securities with longer durations are more sensitive to changes in interest rates than securities of shorter durations.