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Evolution of the Bond Market & Current Trends

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August 13, 2023

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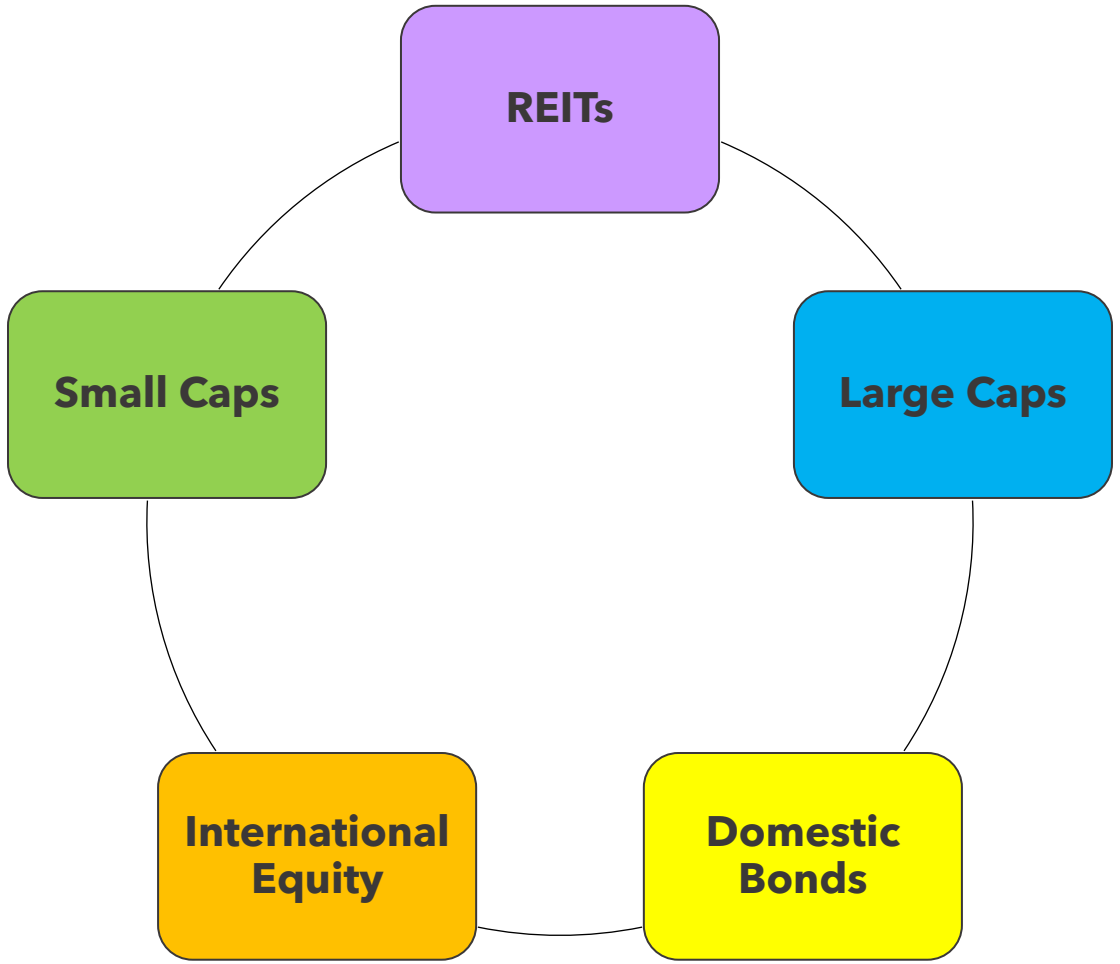
Question: Which asset class provided the highest return over the past 25-years?



25-Year Annualized Returns

- 8.52%
- 7.61%
- 7.26%
- 4.79%
- 3.90%

Asset classes represented by the following indices: Bloomberg Barclays U.S. Aggregate, S&P 500, Russell 2000, FTSE/NAREIT All Equity REITs, MSCI EAFE-GD

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Answer: REITS provided the highest return over the past 25-years.

Asset Class	
REITs	8.52%
Large Caps	7.61%
Small Caps	7.26%
International Equity	4.79%
Domestic Bonds	3.90%

Asset classes represented by the following indices: Bloomberg Barclays U.S. Aggregate, S&P 500, Russell 2000, FTSE/NAREIT All Equity REITs, MSCI EAFE-GD

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Why is return not enough?

- Return alone doesn't account for the risk required to achieve that return.
- Investors must be compensated for risk.
- Therefore, we should measure returns on a risk adjusted basis.

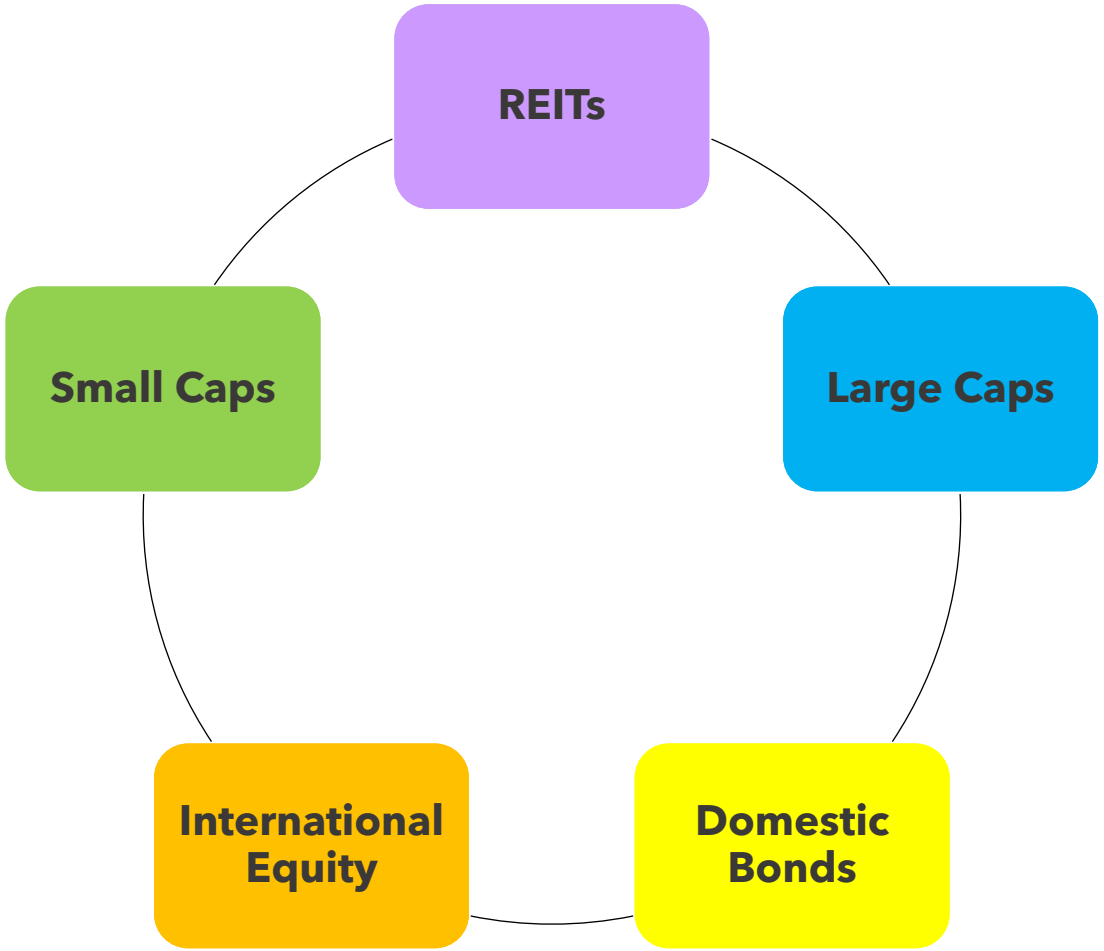
Sharpe Ratio

- Sharp Ratio is the return earned in excess of the risk-free rate per unit of total risk.

$$\textbf{Sharpe Ratio} = \frac{R - R_f}{\sigma}$$

- A higher sharpe ratio equates to better risk-adjusted total returns.

Question: Which asset class provided the highest risk-adjusted return?



25-Year Sharpe Ratios

- 0.53%
- 0.37%
- 0.33%
- 0.26%
- 0.18%

Asset classes represented by the following indices: Bloomberg Barclays U.S. Aggregate, S&P 500, Russell 2000, FTSE/NAREIT All Equity REITs, MSCI EAFE-GD

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Answer: Domestic Bonds produced the highest risk-adjusted return.

Asset Class	25-Year Sharpe Ratios	25-Year Annualized Returns
Domestic Bonds	0.53	3.90%
Large Caps	0.37	7.61%
REITS	0.33	8.52%
Small Caps	0.26	7.26%
International Equity	0.18	4.79%

Asset classes represented by the following indices: Bloomberg Barclays U.S. Aggregate, S&P 500, Russell 2000, FTSE/NAREIT All Equity REITs, MSCI EAFE-GD

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Why Fixed Income?

- Anchor to the Asset Allocation
- Ongoing Cash Flows
- Diversification Benefits

Asset Class 25-Year Index Correlations

	Aggregate	Large Caps	Small Caps	International	REITS
Aggregate	**1.00**	0.06	0.01	0.12	0.26
Large Caps	0.06	**1.00**	0.84	0.86	0.63
Small Caps	0.01	0.84	**1.00**	0.77	0.66
International	0.12	0.86	0.77	**1.00**	0.61
REITS	0.26	0.63	0.66	0.61	**1.00**

Asset classes represented by the following indices: Bloomberg Barclays U.S. Aggregate, S&P 500, Russell 2000, FTSE/NAREIT All Equity REITs, MSCI EAFE-GD

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What are Bonds?

Bonds 101: What are bonds, and why do they exist?

- A bond is a debt security, similar to an **I.O.U.**
- When you purchase a bond, you are ***lending*** money to an ***issuer***.
- In return for that money, the issuer provides you with a promise to pay a specified rate of ***interest*** during the life of the bond and to repay the ***principal*** when it comes due.

Types of Bonds

Treasury

Agency

Corporate

Securitized

Features: Coupon

Coupon:

A feature of a bond that denotes the amount of interest due and the date payment will be made.

- A bond is normally an interest-only loan, meaning the borrower pays the interest every period, but none of the principal is repaid until the end of the loan.

Features: Maturity

Maturity:

The date when the principal amount of a security is due to be repaid.

- Generally, bond terms range from one year to 30 years.
- **Short-term bonds** generally **offer lower yields.**
- **Long-term bonds** generally **offer higher yields.**

Features: Rating

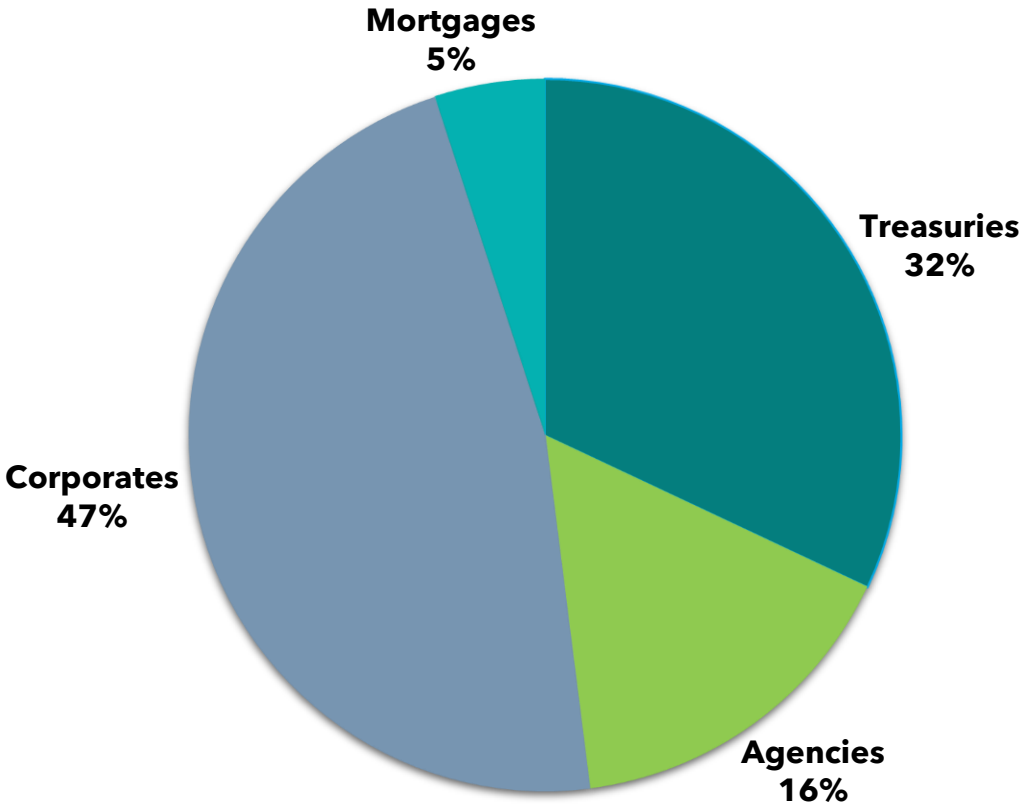
Rating:

Designations used by credit rating agencies to give relative indications as to opinions of credit quality.

- Generally speaking, a **higher rating** means **less risk** but a **lower potential return.**
- A **lower rating** means **more risk** but a **higher potential return.**

Bloomberg US Aggregate Index

1976



$456 Billion

As of December 31, 1976 | Bloomberg

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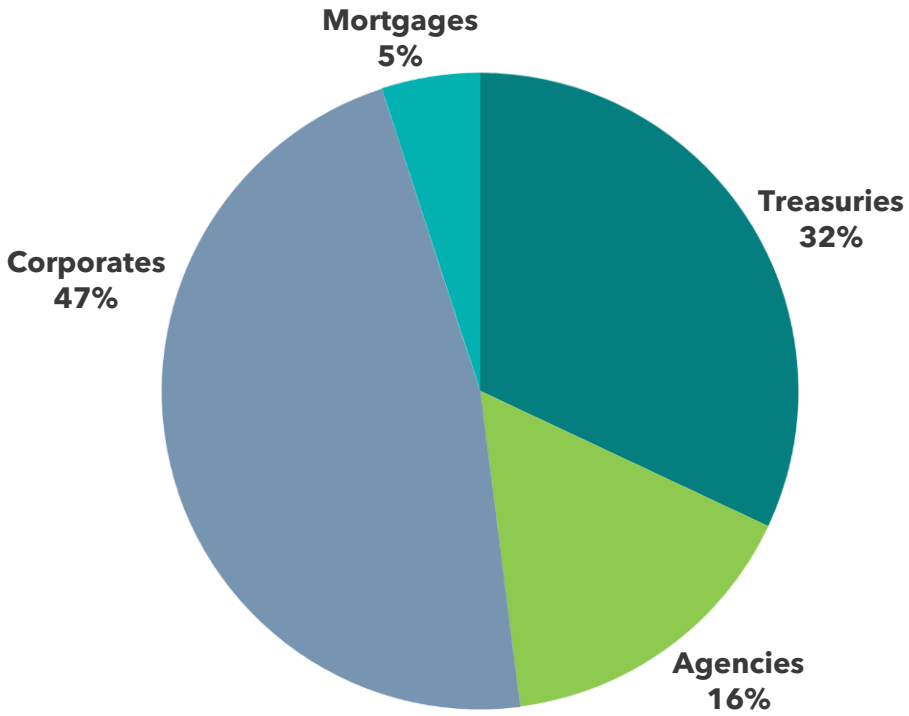
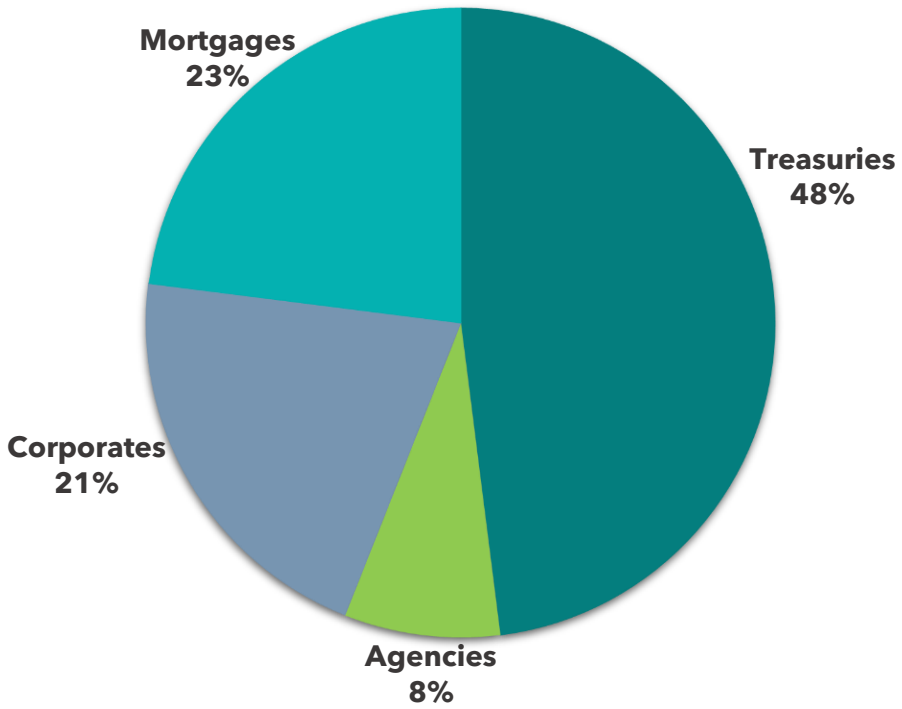
Bloomberg US Aggregate Index

1976



$456 Billion

1986



$2.1 Trillion

As of December 31, 1976, December 31, 1986 | Bloomberg

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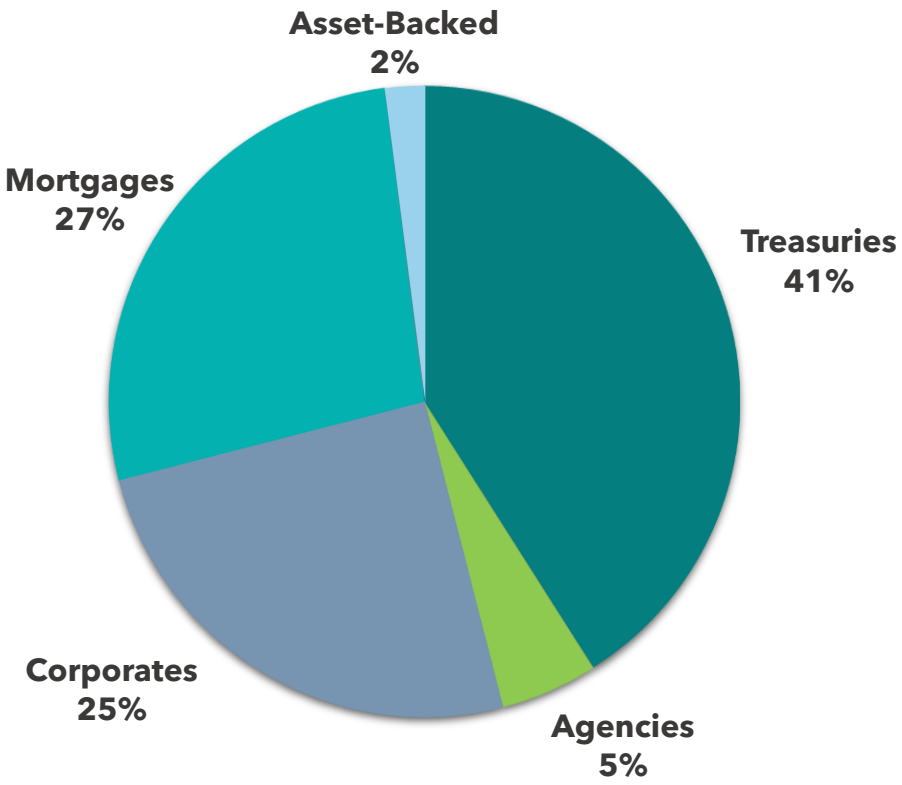
Bloomberg US Aggregate Index

2023



$25.5 Trillion

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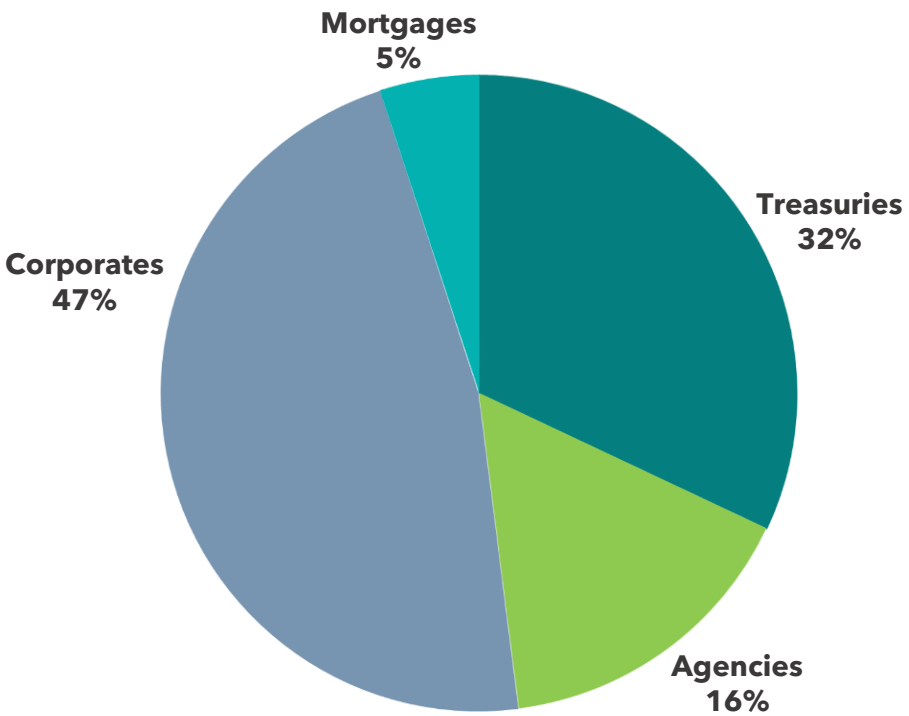
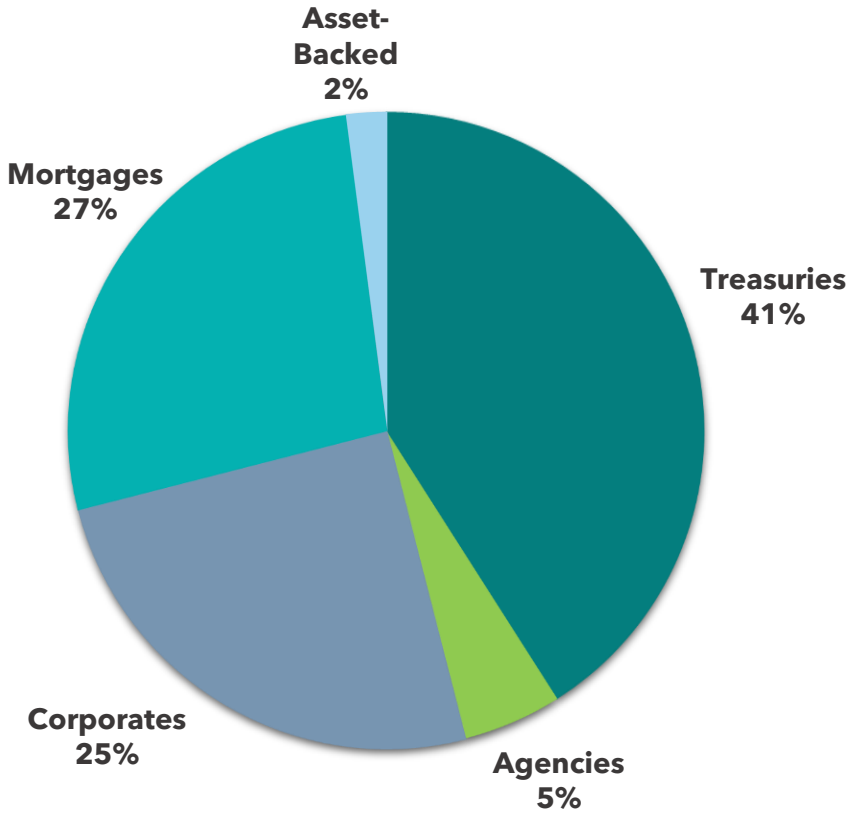
Bloomberg US Aggregate Index

1976



$456 Billion

2023

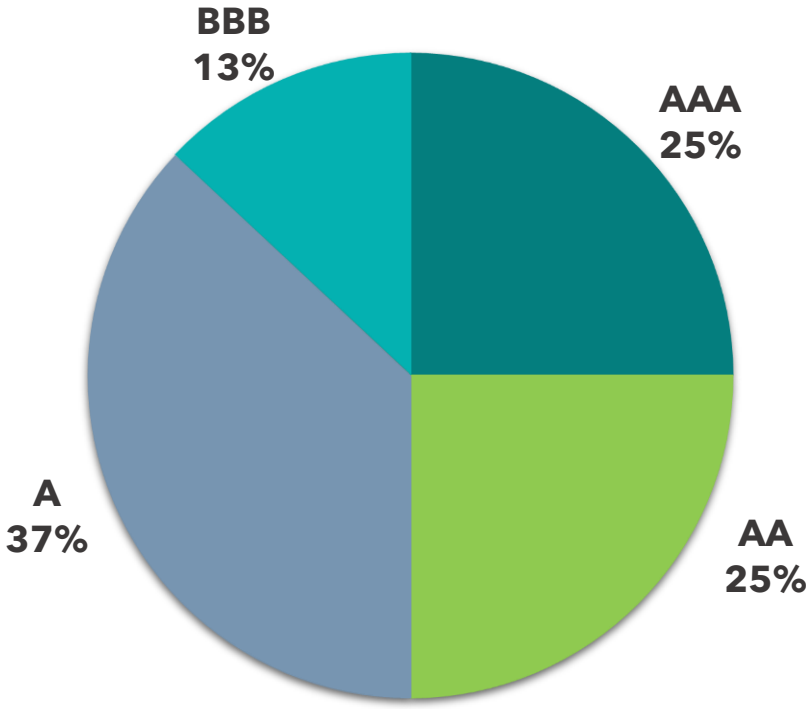


$25.5 Trillion

As of December 31, 1976, June 30, 2023 | Bloomberg

Corporate Credit Quality Distribution

1980



$192 Billion

As of December 31, 1980 | Bloomberg

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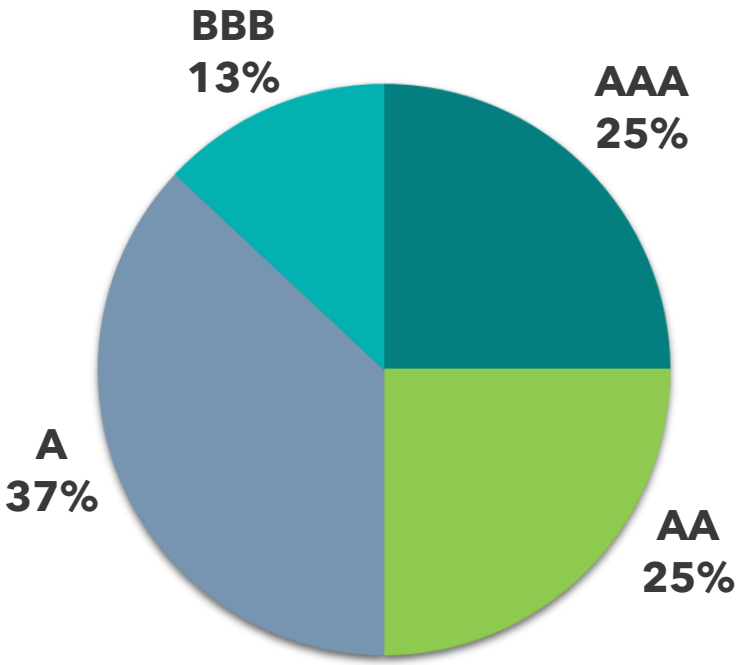
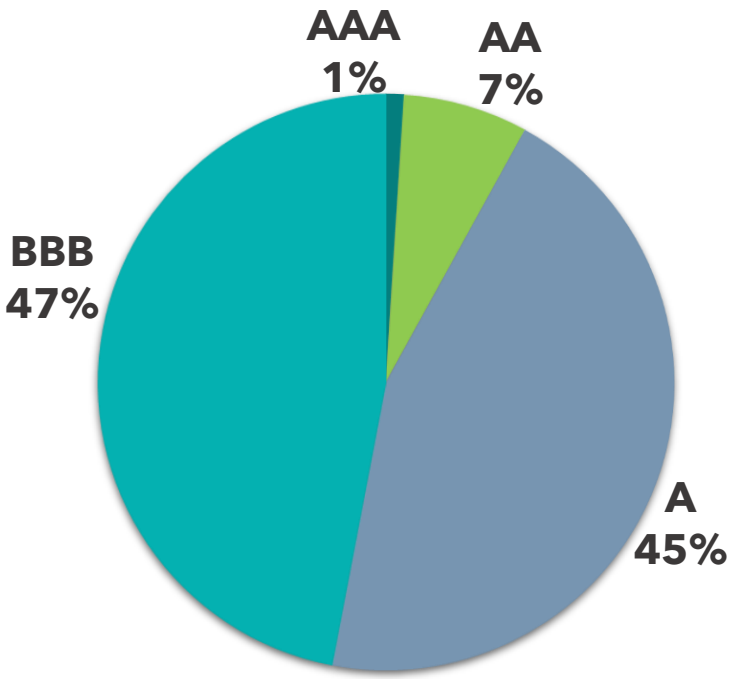
Corporate Credit Quality Distribution

1980



$192 Billion

2023

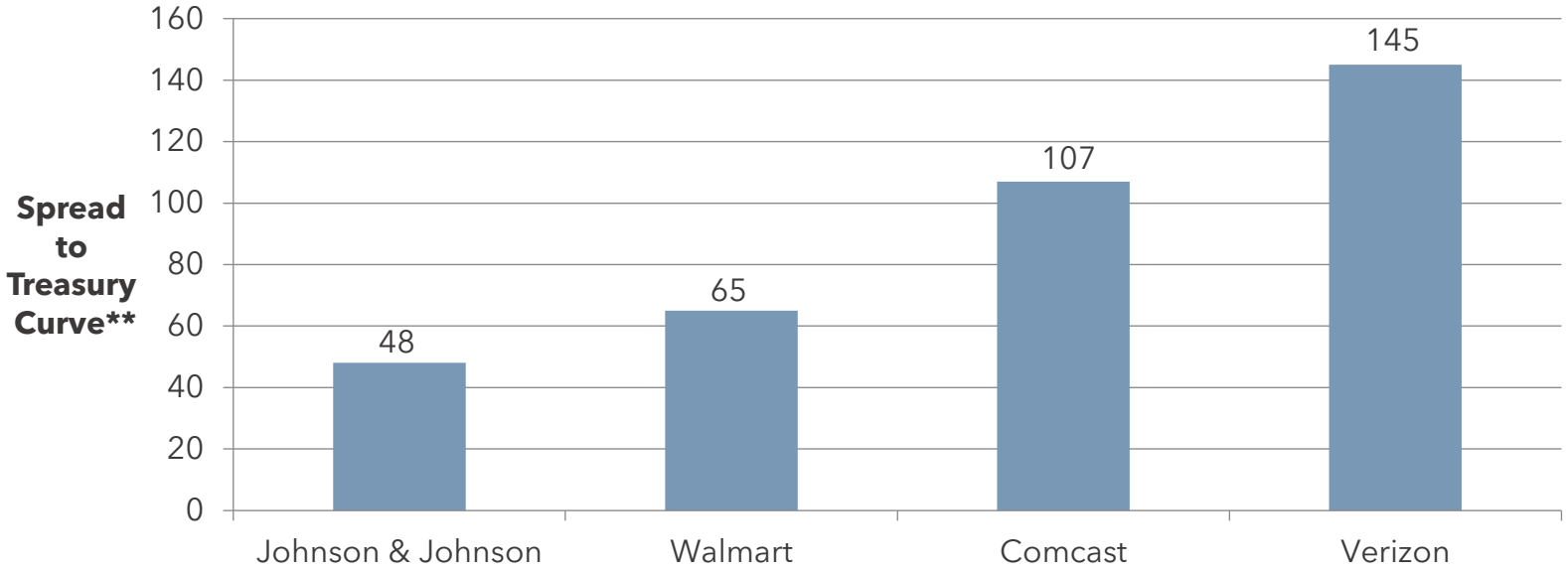


$6.3 Trillion

As of December 31, 1980, June 30, 2023 | Bloomberg

Valuation by Quality

Ratings	Examples	% of Index*
AAA	Microsoft, Johnson & Johnson	1.2%
AA	Berkshire Hathaway, Apple, Wal-Mart	6.9%
A	JP Morgan, Citigroup, Comcast, Pepsi	44.7%
BBB	Verizon, CVS, Fifth Third Bank, Starbucks	47.2%



*Percentage of Bloomberg Barclays Investment Grade Corporate Index **Option Adjusted Spread

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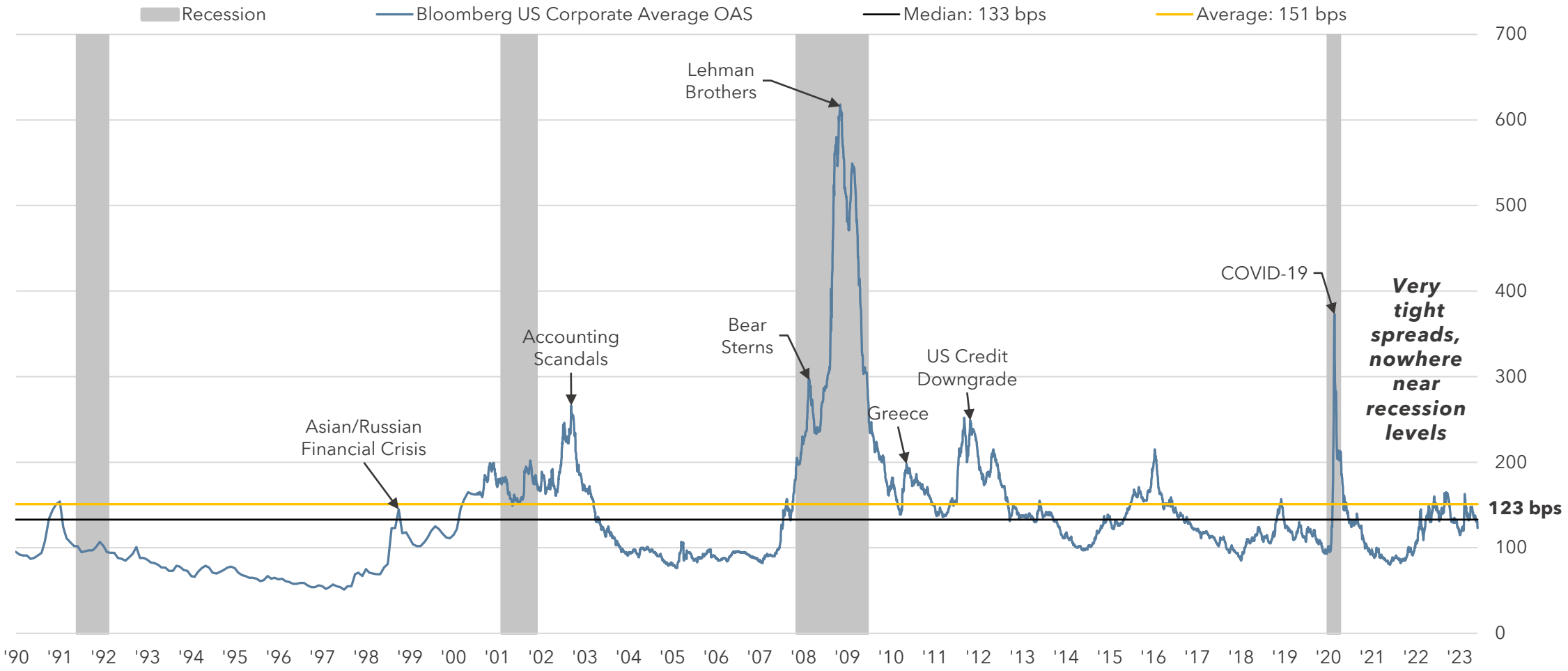
Nuances in the Bond Market

- Fixed Rate vs. Floating Rate
- Fixed-to-float Bonds
- Callable vs. Bullet
- Yankees
- Inflation Protected Securities
- Secured/First Mortgage Bonds

Average Option Adjusted Spreads (OAS)



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Breakeven Analysis – Corporate Spreads

6 - Month Horizon

Initial Spreads	2 -Year	5 -Year	10 -Year	30 -Year
100	36	12	6	2
200	72	23	12	5
300	108	35	18	8
400	145	47	24	11

12 - Month Horizon

Initial Spreads	2 -Year	5 -Year	10 -Year	30 -Year
100	108	26	12	5
200	217	53	25	10
300	328	79	37	16
400	440	106	50	23

Market Developments

- Electronic Trading
- TRACE Data

Electronic Trading

- Price transparency and operational efficiency
- Diminished relationships and less proactive sales force
- Dark pool liquidity

TRACE Example - Corporates

CMCSA 4.8 05/15/33 Corp | 1) Actions | 97) Settings | Page 1 Trade/Quote Recap

Range 07/03/23 07:00:00 - 07/21/23 16:30:00 | 95) Buy | 96) Sell

2) Trade Recap | 3) Quote Recap

Source TRMT | Show Ticks All | Cond Code Definitions

High -- Low --

Date	Time	Size (M) > 100	Price	Yield	RPS All	RPT	CPT	Sprd	Benchmark	Trd Date	Trd Time
07/21	11:52:32	2400	↓99.219	4.900	B	D	C	107.0	T 3 3/8 05/15/33	07/21	11:52:29
07/21	10:14:19	3000	↑99.413	4.875	S	D	C	105.8	T 3 3/8 05/15/33	07/21	10:14:17
07/21	10:01:17	3120	99.091	4.917	B	D	C	108.7	T 3 3/8 05/15/33	07/21	10:00:18
07/20	15:01:30	750	↑99.082	4.918	S	D	C	107.0	T 3 3/8 05/15/33	07/20	15:01:25
07/20	11:48:23	5000	↓98.860	4.947	B	D	C	108.1	T 3 3/8 05/15/33	07/20	11:48:18
07/20	08:42:35	1100	↓99.272	4.893	S	D	C	106.8	T 3 3/8 05/15/33	07/20	08:42:33
07/20	08:02:21	650	↓99.382	4.879	S	D	D	106.5	T 3 3/8 05/15/33	07/20	08:02:09
07/20	08:02:07	650	↑99.413	4.875	S	D	D	106.2	T 3 3/8 05/15/33	07/20	08:02:06
07/20	07:46:22	1350	↓99.305	4.889	S	D	T	106.8	T 3 3/8 05/15/33	07/20	07:46:19
07/20	07:43:58	1350	↓99.368	4.881	S	T	D	105.8	T 3 3/8 05/15/33	07/20	07:43:44
07/19	15:02:15	1000	↑99.934	4.808	B	D	C	106.6	T 3 3/8 05/15/33	07/19	15:00:16
07/19	14:17:09	5000+ e	↓99.845	4.819	B	D	C	107.2	T 3 3/8 05/15/33	07/19	14:16:02
07/19	13:39:17	1801	↓99.961	4.804	S	D	D	106.0	T 3 3/8 05/15/33	07/19	13:39:14
07/19	13:39:14	1801	↑100.054	4.792	S	D	C	104.8	T 3 3/8 05/15/33	07/19	13:39:14
07/19	10:47:48	1000	↑99.675	4.841	S	D	C	105.7	T 3 3/8 05/15/33	07/19	10:45:42
07/18	15:10:50	1383	99.540	4.858	B	D	C	106.7	T 3 3/8 05/15/33	07/18	15:10:40
07/18	15:10:48	1383	99.540	4.858	S	D	T	106.7	T 3 3/8 05/15/33	07/18	15:10:40
07/18	15:10:48	1383	↓99.540	4.858	S	T	D	106.7	T 3 3/8 05/15/33	07/18	15:10:40
07/18	15:10:48	1383	↑99.600	4.851	S	D	A	105.9	T 3 3/8 05/15/33	07/18	15:10:40

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TRACE Example - Mortgages

Hide Filters | Export | Settings | TRACE Activity

Corp Bonds | Agencies | Mortgage TBA | Mortgage Pool | ABS | CMO | Convertibles | ELNs

Agency	All	WAC	-	Period	Today	As of	13:43
Prop Type	All	WAM	-	Side	All		
Amort	All	WALA	-	Loan Size	-		
Maturity	>=360	Size All Size	OLTV -	Coupon	2.5 - 4		

Agency	Ppty	Cpn	Mty	Amo...	WAC	WAM	WALA	Ln Sz	OLTV	R	C	S	T	Size(M)	Price	Trd	Vol(M)	Time
																756	300,691	
Uniform MBS	SF	3.5	360	LP	4.1	250	100	0	80	D	C	B		4	90.875	2	8	14:43
Uniform MBS	SF	4	360	LP	4.7	290	60	25	100	D	C	B		10000+	94.703	1	10,000	14:43
Uniform MBS	SF	4	360	LP	4.4	280	80	0	80	D	C	B		10000+	95.047	1	10,000	14:42
Uniform MBS	SF	4	360	LP	4.3	270	80	250	80	D	C	B		5300	95.172	1	5,300	14:42
Uniform MBS	SF	3	360	LP	3.8	310	40	250	93	D	C	B		2	83.656	4	10	14:42
Uniform MBS	SF	4	360	LP	4.5	290	50	75	80	D	C	B		4	92.063	4	16	14:39
Uniform MBS	SF	3.5	360	LP	3.9	280	70	100	80	D	C	B		4	88.938	3	20	14:39
Uniform MBS	SF	3.5	360	LP	4.3	300	50	125	80	D	C	B		3	86.844	2	6	14:38
Uniform MBS	SF	2.5	360	LP	3.3	340	20	375	80	D	C	S		189	84.703	4	6,196	14:37
Uniform MBS	SF	2.5	360	LP	3.3	310	30	300	80	D	C	S		38	84.938	3	42	14:37
Uniform MBS	SF	4	360	LP	4.4	200	140	0	93	D	C	B		3	92.375	4	12	14:35
Uniform MBS	SF	3.5	360	LP	4.2	340	20	375	80	D	C	B		29	90.930	41	15,025	14:32
Uniform MBS	SF	3.5	360	LP	4.4	340	20	400	80	D	D	S		3	89.684	3	9	14:32
Uniform MBS	SF	2.5	360	LP	3.3	340	20	350	93	D	D	S	Y	4	83.496	14	153	14:31
Uniform MBS	SF	3.5	360	LP	4.3	300	50	0	80	D	C	B		2	87.344	7	20	14:31
Uniform MBS	SF	3	360	LP	3.8	340	20	350	80	D	C	S		71	88.184	1	71	14:30
Uniform MBS	SF	2.5	360	LP	3.2	330	30	200	80	D	C	S		10000+	85.344	2	10,011	14:28
Uniform MBS	SF	4	360	LP	4.9	340	20	400	80	D	C	B		17	93.563	27	524	14:25
Uniform MBS	SF	3	360	LP	3.7	330	20	50	80	D	D	S	Y	24	87.565	9	152	14:25
Uniform MBS	SF	2.5	360	LP	3.2	330	30	325	80	D	C	B		53	84.609	18	1,908	14:23
Uniform MBS	SF	4	360	LP	4.8	300	50	275	100	D	C	B		5	92.953	3	7	14:22
Uniform MBS	SF	4	360	LP	4.9	300	60	250	80	D	C	B		3	92.953	2	4	14:22
Uniform MBS	SF	4	360	LP	4.8	300	50	0	93	D	C	B		5	92.953	4	14	14:22
Uniform MBS	SF	4	360	LP	4.8	330	30	275	80	D	C	B		2	92.953	4	8	14:22
Uniform MBS	SF	4	360	LP	4.7	290	60	250	80	D	C	B		3	92.953	7	21	14:22
Uniform MBS	SF	4	360	LP	4.9	290	60	225	80	D	C	B		60	92.953	4	66	14:22
Uniform MBS	SF	4	360	LP	4.8	300	50	250	80	D	C	B		2	92.953	8	10	14:22
Uniform MBS	SF	4	360	LP	4.8	340	10	400	80	D	C	B		1	92.953	6	342	14:22
Uniform MBS	SF	4	360	LP	4.8	310	40	225	80	D	C	B		3	92.953	1	3	14:22
Uniform MBS	SF	4	360	LP	4.7	300	50	0	93	D	C	B		2	92.953	7	13	14:22

SN 810912 CDT GMT-5:00 H910-1542-165 24-Jul-2023 13:43:47

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Conclusion

- Historically, investment-grade fixed income has provided an attractive risk-adjusted return relative to other asset classes.
- The composition of the market has changed over time, which has created both risks and opportunities.
- Recent market developments have increased transparency in the bond market.
- There is always a place for high quality fixed income in your asset allocation as it is the anchor which allows you to take risk elsewhere.
- At these current yield levels, bonds are the most attractive they have been in 16 years.