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FINC 462/662 -- Fixed Income Securities

FINC-462/662: Fixed Income Securities

Introduction to Fixed Income Markets

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Overview

Our goals for today

- ☐ Get a sense of what "Fixed Income" means.
- ☐ Learn about different segments of the Fixed Income markets.
- ☐ Get to know different types of Fixed Income securities

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Introduction

What is a Fixed Income Security?

- **NASDAQ's definition:** "Investments that have specific and fixed interest rates or dividend rates, such as bonds."
- **Fabozzi's definition of a bond:** "A bond is a debt instrument requiring the issuer (also called the debtor or borrower) to repay to the lender/investor the amount borrowed plus interest over a specified period of time."
- For now, let's just think of a fixed income security as a loan with a standardized structure.
- We will also consider derivatives on fixed income securities.

Fixed Income Security Example

- On August 5, 2020, the US Government announced the auction of a 30-year coupon bond.
 - The face value issued was 26bn.
 - Every six months, starting on February 15, 2021, the US Government would pay interest. (coupons)
 - The US Government agreed to pay the face value back on August 15, 2050. (maturity)
- **Auction announcement**
- **Auction results**

Types of Fixed Income Securities

- The US Government bond discussed on the last slide gives us a framework for how to think about fixed income securities, but this example is just the tip of the iceberg.
- **Issuers:** Federal government, municipalities, corporations, foreign governments, government agencies
- **Coupons:** Fixed, Zero, Variable
- **Option-like features:** option to call, conversion, option to put
- **Collateral**

Sectors of the Fixed Income Market

We can classify the Fixed Income Market into *sectors* based on the **issuer** of fixed income securities.

- **U.S. Treasury Securities**
 - Securities issued by the U.S. government
- **Agency Securities**
 - Securities issued by federally related institutions and government-sponsored enterprises
- **Municipal Securities**
 - Securities issued by state and local governments
- **Corporate Bonds**
 - Securities issued in the U.S. by U.S. corporations and foreign corporations
- **Asset-backed Securities (ABS)**
 - Securities backed by a pool of assets
- **Mortgage-Backed Securities (MBS)**
 - Securities backed by mortgage loans

Size of the Fixed Income Market

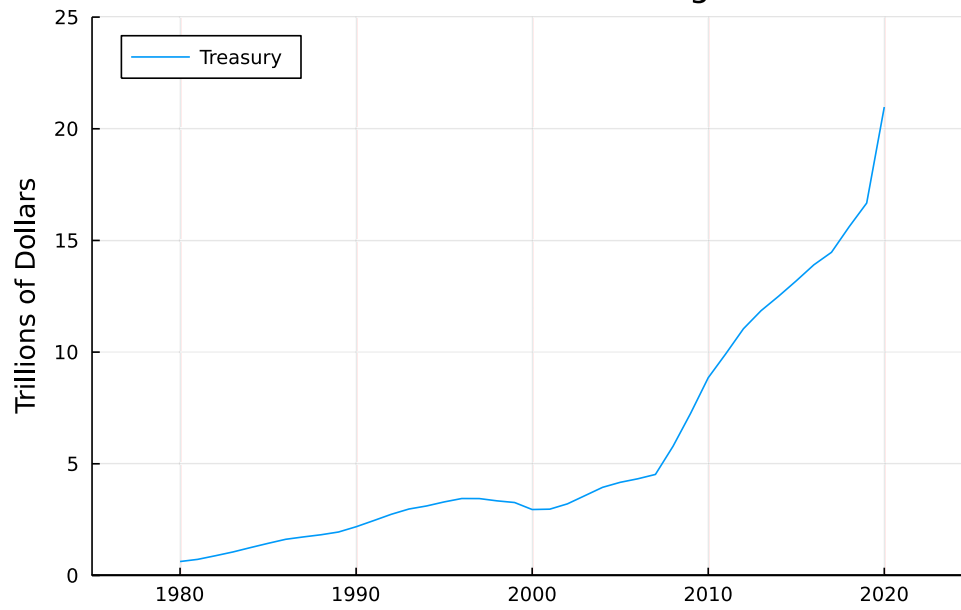
Fixed Income Amounts Outstanding

Year-end data in trillions of dollars.

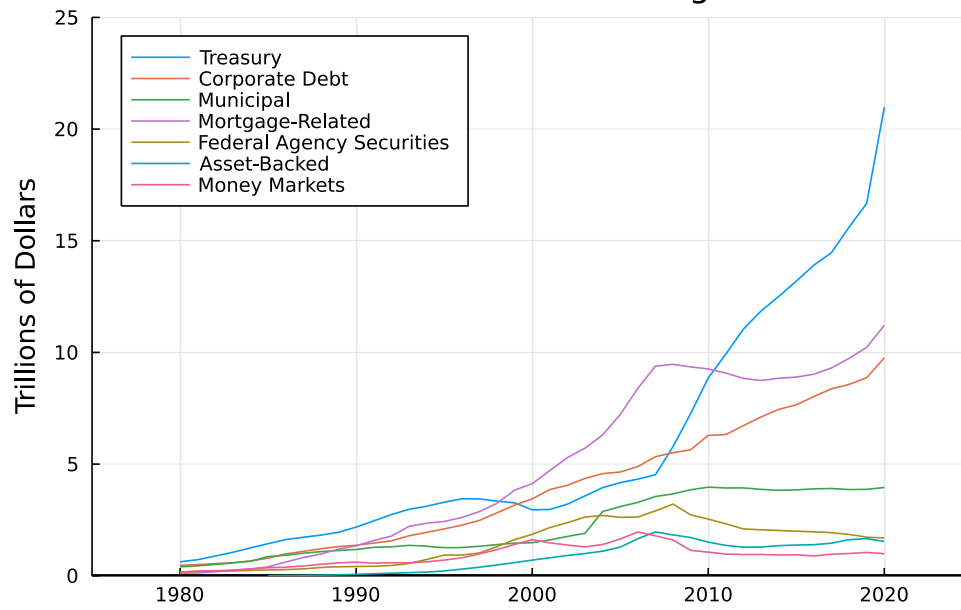
Source: SIFMA

Treasury	▲
Corporate Debt	
Municipal	
Mortgage-Related	
Federal Agency Securities	
Asset-Backed	
Money Markets	▼

Amount Outstanding



Amount Outstanding

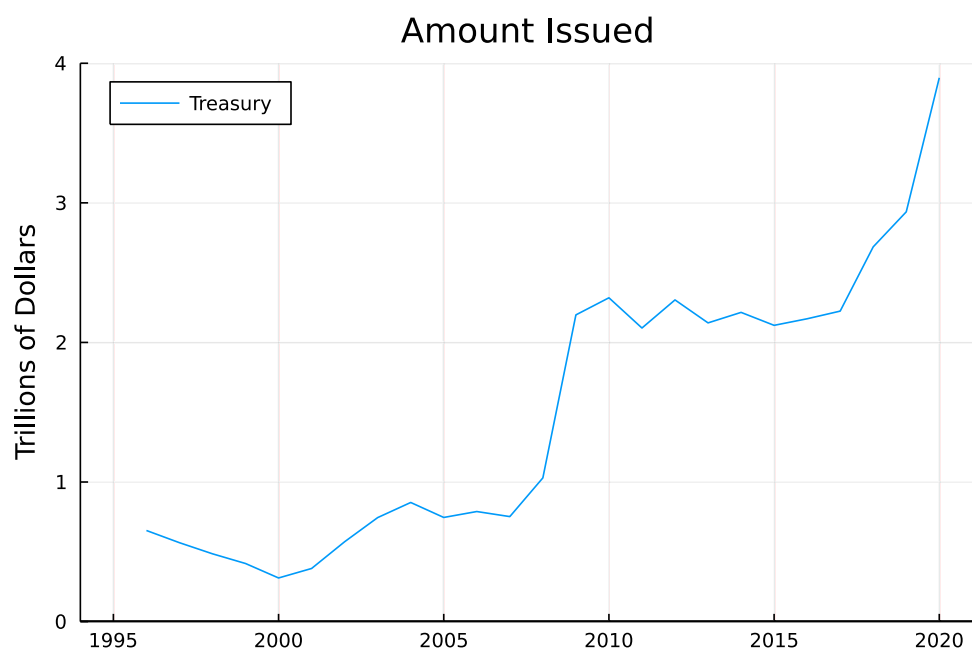
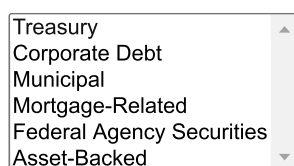


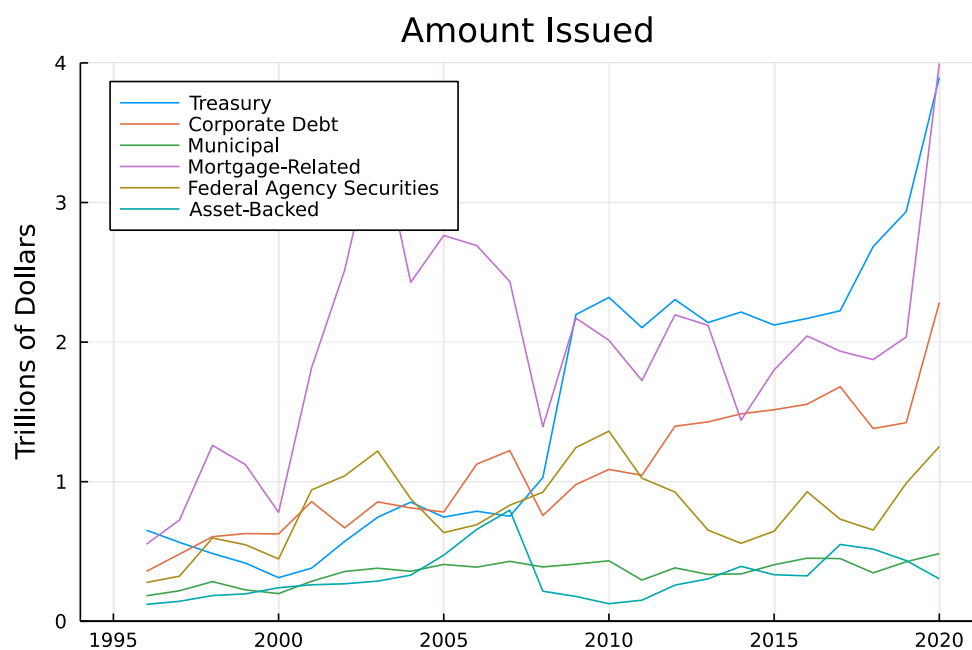
	Year	Municipal	Treasury	Mortgage-Related	Corporate Debt	Federal Agency Securities	Asset-Backed	Money Markets	To
1	1980	399.44	623.2	111.397	467.853	164.3	missing	163.82	193
2	1981	443.653	720.3	127.028	499.018	194.5	missing	215.07	219
3	1982	508.049	881.5	177.073	544.961	208.8	missing	226.843	254
4	1983	575.106	1050.9	248.265	585.888	209.3	missing	253.778	292
5	1984	650.603	1247.4	302.943	663.303	240.4	missing	305.701	341
6	1985	859.484	1437.7	399.878	789.096	261.0	1.3208	358.526	410
7	1986	920.383	1619.0	614.675	976.085	276.6	11.841	384.904	480
8	1987	1011.98	1724.7	815.994	1092.07	308.3	18.5896	437.922	540
9	1988	1079.96	1821.3	973.623	1212.52	370.7	26.1825	513.359	599
10	1989	1129.8	1945.4	1192.7	1307.81	397.5	37.616	579.222	659
more									
41	2020	3952.91	20973.1	11214.0	9756.39	1693.55	1535.85	986.897	501

Fixed Income Amounts Issued

Annual data at year-end in trillions of dollars.

Source: SIFMA





	Year	Municipal	Treasury	Mortgage-Related	Corporate Debt	Federal Agency Securities	Asset-Backed	Total
1	1996	182.899	652.722	551.782	357.88	277.9	121.159	2144.34
2	1997	218.619	565.246	725.208	480.879	323.1	143.097	2456.15
3	1998	284.096	485.641	1260.57	605.928	596.4	184.166	3416.8
4	1999	224.643	416.138	1121.58	628.326	548.0	196.294	3134.98
5	2000	198.239	312.585	779.884	625.82	446.6	240.273	2603.4
6	2001	286.496	380.636	1816.71	857.028	941.0	261.4	4543.27
7	2002	356.616	572.188	2514.88	669.441	1041.5	268.57	5423.19
8	2003	380.291	745.156	3537.13	855.419	1219.47	287.573	7025.04
9	2004	358.1	853.376	2428.32	812.144	877.775	330.576	5660.29
10	2005	407.137	746.101	2764.14	782.536	635.012	473.714	5808.64
	more							
25	2020	484.547	3895.8	3996.48	2282.3	1251.32	304.283	12214.7

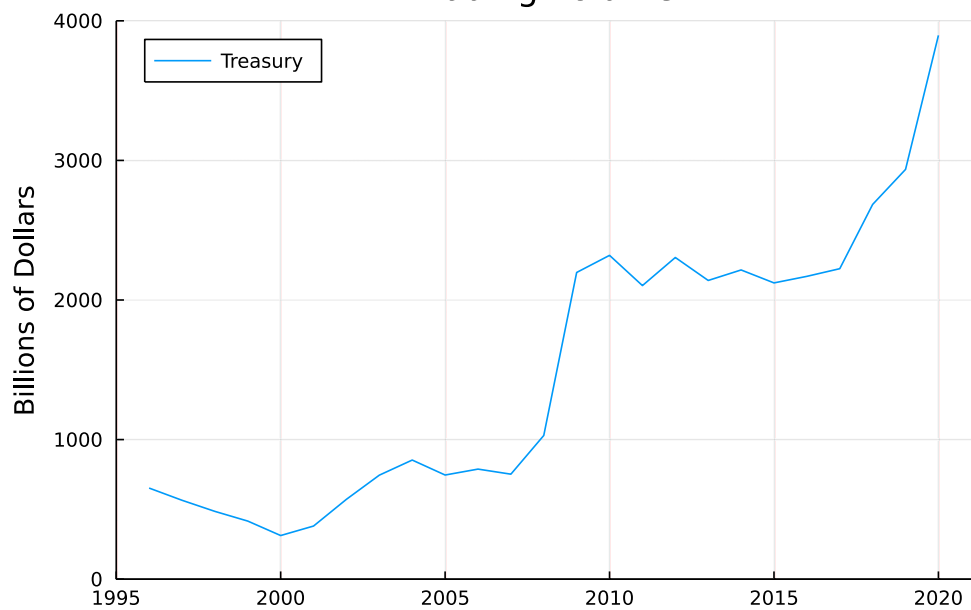
Fixed Income Trading Volume

Annual data at year-end in billions of dollars.

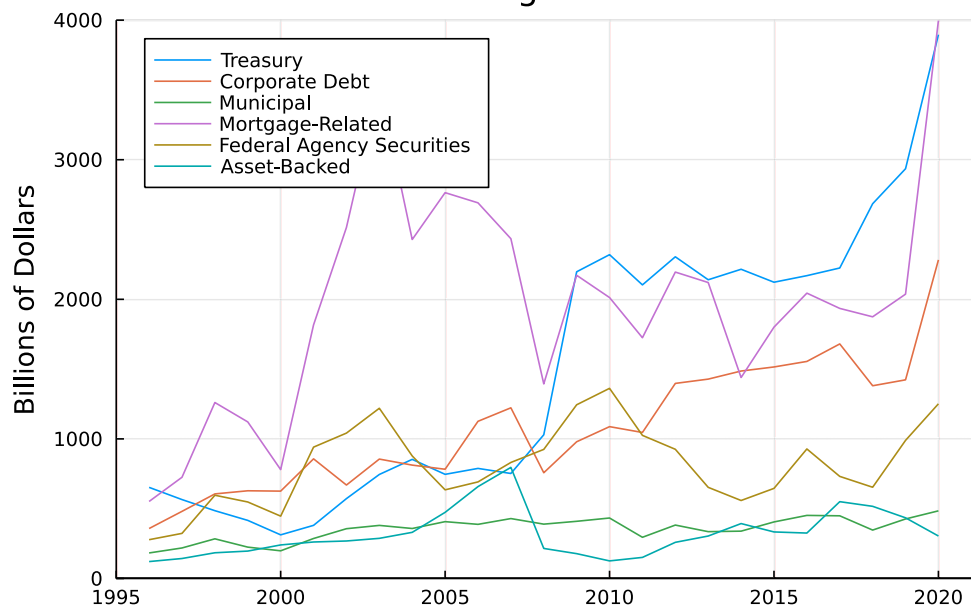
Source: SIFMA

- Treasury
- Corporate Debt
- Municipal
- Mortgage-Related
- Federal Agency Securities
- Asset-Backed

Trading Volume



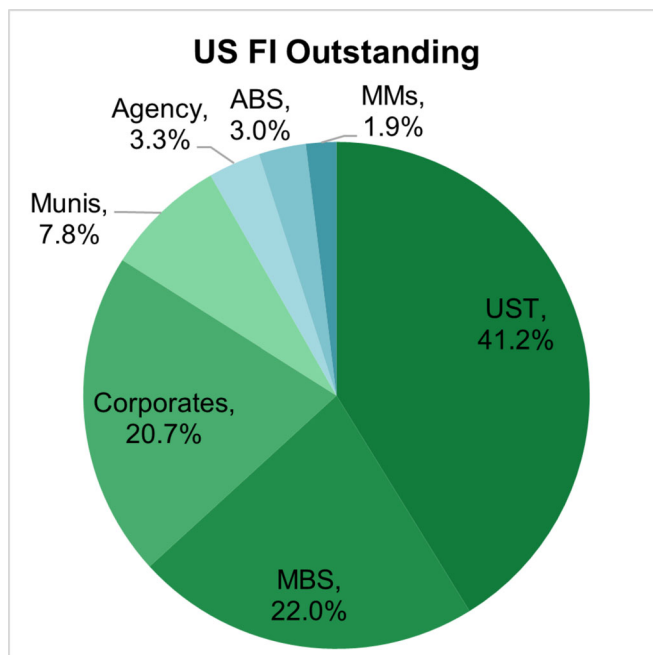
Trading Volume



	Year	Municipal	Treasury	Agency MBS	Non-Agency MBS	Corporate Debt	Federal Agency Securities	Asset-Backed	Total
1	1996	1.1	203.685	38.148	missing	missing	missing	missing	242.9
2	1997	1.1	212.1	47.076	missing	missing	missing	missing	260.2
3	1998	3.3	226.635	70.926	missing	missing	missing	missing	300.8
4	1999	8.2922	186.547	67.116	missing	missing	missing	missing	261.9
5	2000	8.7727	206.51	69.471	missing	missing	missing	missing	284.7
6	2001	8.7971	297.9	111.956	missing	missing	missing	missing	418.6
7	2002	10.716	372.714	154.491	missing	17.8322	missing	missing	555.7
8	2003	12.602	427.612	206.0	missing	18.0254	missing	missing	664.2
9	2004	14.796	497.478	207.4	missing	17.2871	missing	missing	736.9
10	2005	16.875	549.686	251.8	missing	16.558	missing	missing	834.9
more									
25	2020	11.9818	603.182	291.123	1.88175	38.949	5.34017	1.8855	954.3

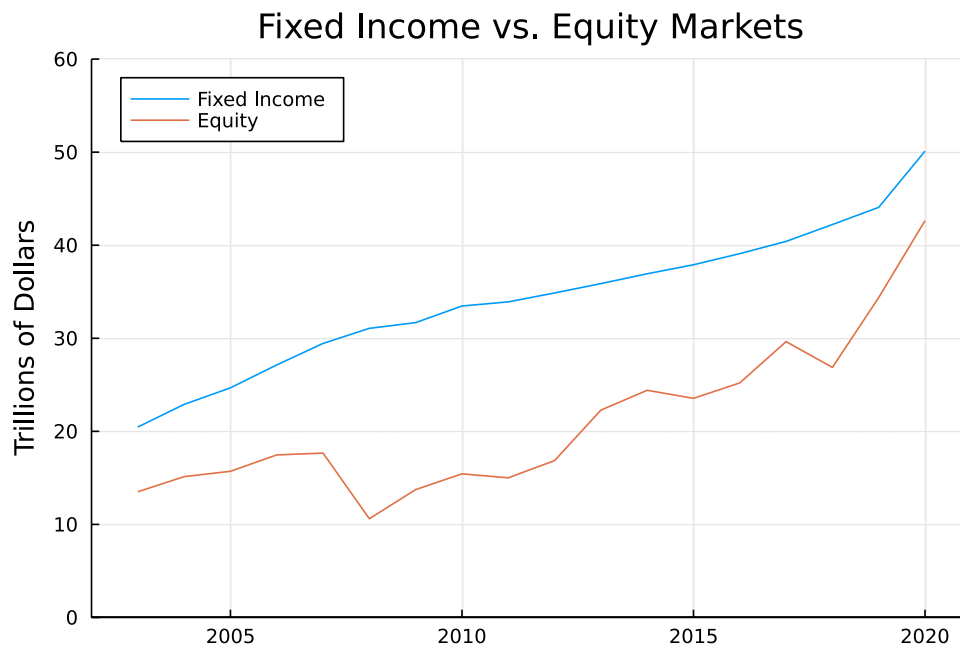
Sectors of the Fixed Income Markets

Source: SIFMA



Market Size of Fixed Income and Equity Markets

Source: SIFMA and Bloomberg



Treasury Securities

- Obligations of the US Government, used to finance government spending.
- US Treasury is the largest single issuer of debt in the world.
- Most active and hence the most liquid market in the world.
- Perceived to be among the safest in the world.
 - S&P cut the rating of US Government debt to AA+ in August 2011.
 - As of October 2021, still at AA+.

Credit Rating of US Treasury Debt

1501510D US Equity		Company Tree Ratings ▾	Alert	Page 1/2	Credit Profile
United States Treasury Note/Bond					
Moody's			Fitch		
1) Outlook	STABLE		16) Outlook		NEG
2) CC LT Foreign Bank Depst	WR		17) LT Issuer Default Rating		AAA
3) CC LT Foreign Curr Debt	Aaa		18) LT LC Issuer Default		AAA
4) CC ST Foreign Bank Depst	WR		19) Local Currency LT Debt		AAA
5) CC ST Foreign Curr Debt	WR		20) ST Issuer Default Rating		F1+
6) Long Term Rating	Aaa		21) ST LC Issuer Default		F1+
7) LC Curr Issuer Rating	Aaa			DBRS Morningstar	
8) FC Curr Issuer Rating	Aaa		22) Outlook		STABLE
9) Local Currency LT Debt	Aaa		23) Foreign Currency LT Debt		AAA
10) Standard & Poor's			24) Local Currency LT Debt		AAA
11) Outlook	STABLE		25) Foreign Currency ST Debt		R-1H
12) Foreign Currency LT Debt	AA+u		26) Local Currency ST Debt		R-1H
13) Local Currency LT Debt	AA+u				
14) Foreign Currency ST Debt	A-1+				
15) Local Currency ST Debt	A-1+				

Credit Default Swaps on US Treasury Debt

- Credit Default Swaps will be covered in more detail later in this course.
- For now, think of the graph below as the price that investors are willing to pay to insure against a default of the US Government on its debt obligations.

Are U.S. Treasury Securities Riskfree?

- In this course, we will treat US Government debt as default-free.
- This, however, does not mean that Treasury securities are “risk-free.”
- We will study these risks in this course in detail and learn strategies to hedge such risk.

Types of Treasury securities

- Treasury Bills: maturity 1 year or less
- Treasury Notes: maturity from 1 to 10 years
- Treasury Bonds: maturity greater than 10 years, up to 30 years.
- Treasury Inflation Protected Securities (TIPS)
- Treasury Floating Rate Notes (FRNs)

Agency Securities

- Debt issues by US Agencies
 - Example: **Tennessee Valley Authority**
- Debt issues by Government-sponsored entities (GSEs)
 - Examples: **Fannie Mae**, **Freddie Mac**, **FHLB**
- Mortgage-backed securities issued by Fannie Mae, Freddie Mac, and **Ginnie Mae**
- GSEs have the dual purpose of earning profits for shareholders and also serving a public purpose (i.e. promoting home ownership).

Municipal Securities

- Issued by municipalities
- **General obligation**: backed by full faith and credit of the issuing municipality
- **Revenue bonds**: backed by cash flows from a particular project
- Default risk may be significant depending on the municipality
- Tax exemption from federal taxes (and many state and local taxes)
- Examples: **Build America Bonds**, **Delaware Municipal Bonds**, **University of Delaware Bonds**

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SER A				CUSIP	914245DT9
Ticker UNIHGR		Cpn 5.000	Maturity 11/01/2043	Dated 10/09/2019	State DE
25) Municipal Bond		26) Series		27) Issuer Description	
Pages		Municipal Bond Information		Trading Information	
11) Bond Info	Issue Type		REVENUE BONDS		1st Settle Dt 10/09/2019
12) Addtl Info	Ult Borrower		University of Delaware		Next Settle Dt 10/14/2021
13) Involved Parties	Maturity Type		M-W CALL		Int Accrual Dt 10/09/2019
14) Adj Cpn Info	Ext Redemption		NONE		1st Coupon Dt 11/01/2019
15) Credit Enhance	Coupon		FIXED 5.000		Week of Sale 09/16/2019
16) Credit Ratings	Prc/Yld @ Iss		140.723/2.690		Piece/Inc/Par 5,000/5,000/5,000
17) Call Sched & ERP	Coupon Freq		SEMI-ANNUAL		Make-Whole Information
18) Put Schedule	Tax Provision		FED & ST TAX-EXEMPT		1st Call Date 10/09/2019
19) Sink & Est Sink	Credit Enhancement				Type ANYTIME
20) Refunding Info					Benchmark MMD
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Quick Links		Bond Ratings			
31) TDH	MSRB Trade	Moody's(Unl)		Aa1	
32) CACS	Material Evt	S&P(Stnd)		AA+ NEG	
33) CF	Filings				
34) CN	Sec News				
35) HDS	Holders				
66) Send Bond					

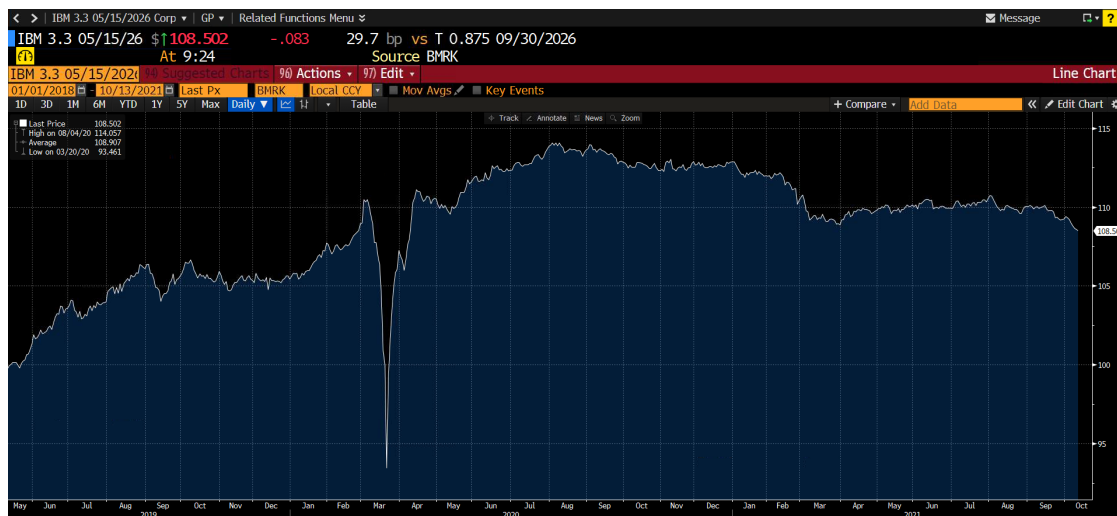


Corporate Bonds

- Issued by companies.
- Subject to default risk.
- Major issuers include:
 - Financial firms: Goldman Sachs, Bank of America
 - Large manufacturers: Ford, GM, Caterpillar, GE
 - Telecommunications companies: AT&T, Verizon

Example: IBM

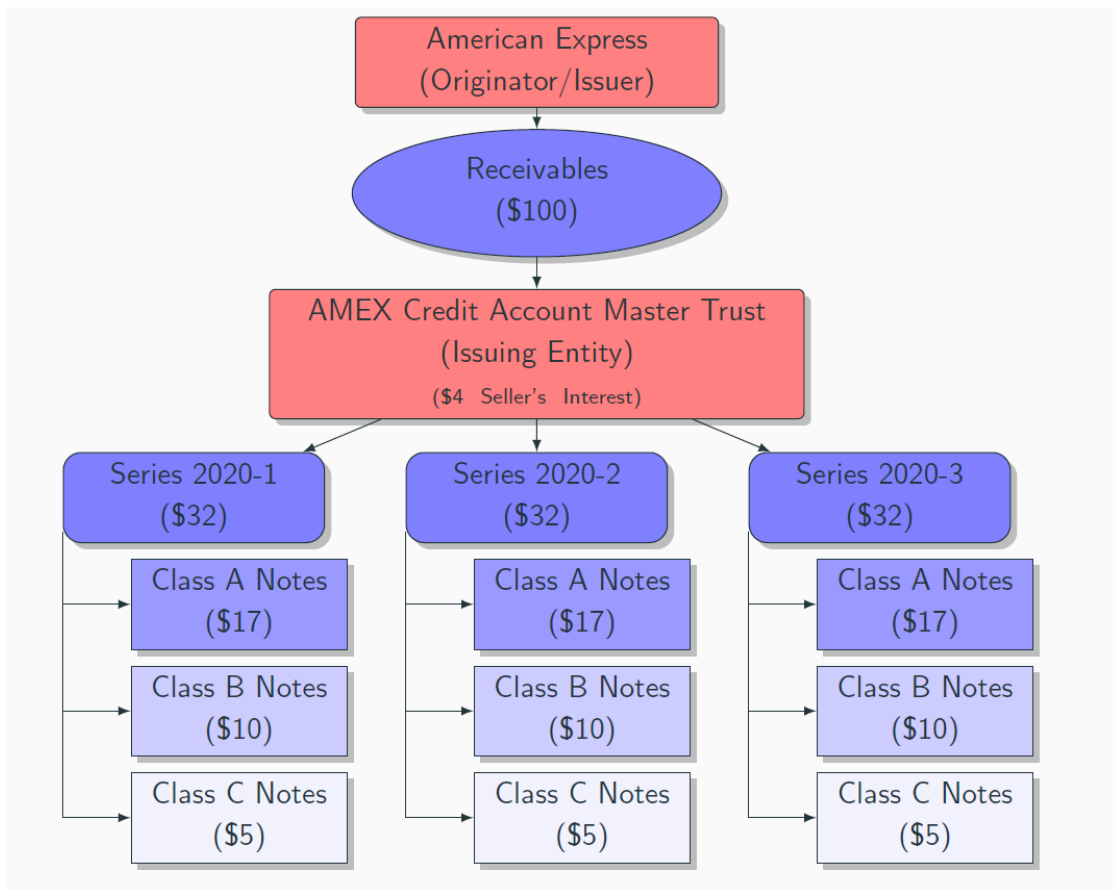
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At 9:23			Source BMRK		
IBM 3.3 05/15/26 Corp			Actions	Settings	
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26) Issuer Description			95) Buy		
27) Sell					
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12) Addtl Info			CUSIP		
13) Reg/Tax			ISIN		
14) Covenants			Bond Ratings		
15) Guarantors			Moody's		
16) Bond Ratings			S&P		
17) Identifiers			Composite		
18) Exchanges			Issuance & Trading		
19) Inv Parties			Amt Issued/Outstanding		
20) Fees, Restrict			USD		
21) Schedules			USD		
22) Coupons			Min Piece/Increment		
Quick Links			100,000.00 / 1,000.00		
32) ALLQ Pricing			Par Amount		
33) QRD Qt Recap			Book Runner		
34) TDH Trade Hist			Reporting		
35) CACS Corp Action					
36) CF Prospectus					
37) CN Sec News					
38) HDS Holders					
66) Send Bond					
Issuer Information					
Name IBM CORP					
Industry Technology (BCLASS)					
Security Information					
Mkt Iss GLOBAL					
Ctry/Reg US					
Rank Sr Unsecured					
Coupon 3.300000					
Cpn Freq S/A					
Day Cnt 30/360					
Maturity 05/15/2026					
MAKE WHOLE @15.000 until 05/15/26/BULLET					
Iss Sprd +95.00bp vs T 2 3/8 04/30/26					
Calc Type (1)STREET CONVENTION					
Pricing Date					
Interest Accrual Date					
1st Settle Date					
1st Coupon Date					



Asset Backed Securities

- Mortgages
- Securitized mortgages
- Pools of loans (CLO and CDO)
- Credit Cards
- Student Loans

Example: Credit Card Asset Backed Securities



Derivatives of Fixed Income Securities

- Futures and Forwards
- Interest Rate Swaps
- Call options
- Caps and floors
- Swaptions
- Credit Default Swaps

Short-Term Funding Markets

- "Short-term" fixed income securities with maturities from overnight, to a few months.
- Commercial Paper
- Certificates of Deposit
- Money Market Funds
- Repurchase Agreements
- Monitored by the Federal Reserve Board in Washington, DC.
 - Short-Term Funding Markets
 - Money Market Analysis

Question 1

What is a Treasury Bill?

Hint

A Treasury Bill is a short-term fixed income security issued by the U.S. Treasury with a maturity of less than one year. A Treasury Bill does not pay regular interest.

Question 2

What is the longest time-to-maturity of Treasury bonds in years?

20

Incorrect

Keep working on it!

Wrap-Up

Our goals for today

- ✓ Get a sense of what "Fixed Income" means.
- ✓ Learn about different segments of the Fixed Income markets.
- ✓ Get to know different types of Fixed Income securities

Reading

Fabozzi, Fabozzi, 2021, Bond Markets, Analysis, and Strategies, 10th Edition
Chapter 1